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ORGANIZATION OF TRADE IN ONE TROPICAL
MUNICIPALITY OF VERA CRUZ, MEXICO

by

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Purpose and Method of Study

This is a study of how agricultural trade is organized in one small city of Mexico. By making market organization in that city a focal point for inquiry, the study deals with each of the institutions which in some way impinges on productive and marketing activity in that area for agricultural products other than fiber and forestry. These include:

- (a) government institutions or agencies in buying, financing, insuring, maintaining floors, ceilings, wage rates, etc.,
- (b) the central market organization, (c) the beef cooperative and the beef and pork syndicate, (d) merchant truckers, and
- (e) the wholesale buyers of staple crops grown locally.

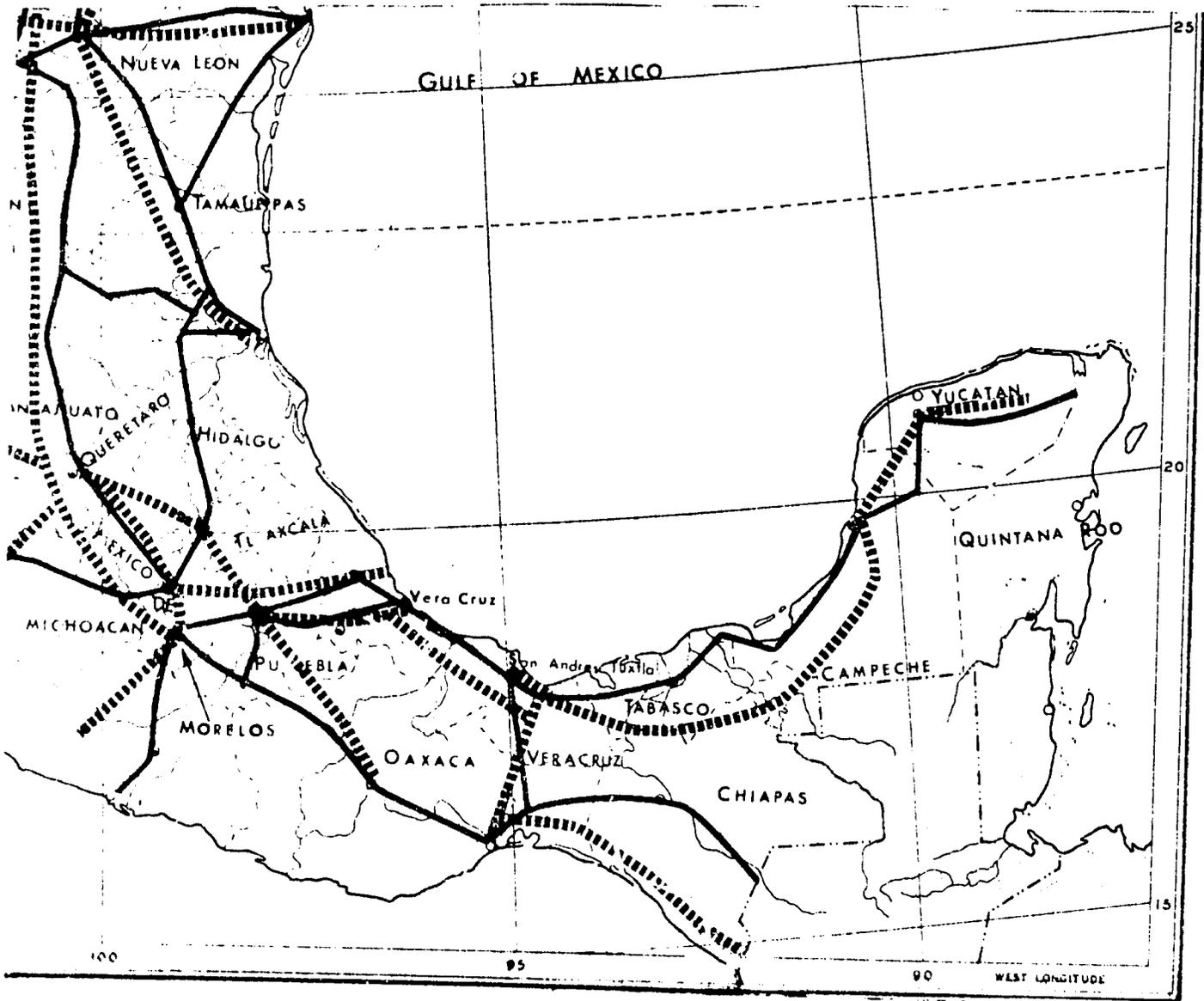
It is hoped that this description will furnish some insights on how market organization permits or furnishes incentives for agricultural growth and development. Ancillary to the main purpose, a number of other observations have been made. The study shows some of the inadequacies of the ejidal system. In addition, it furnishes evidence that the smaller the farm the more disadvantaged the farmer is in marketing.

San Andres Tuxtla was selected as the city to be studied primarily for its comparability to Ivory Coast, West Africa, where similar research on markets was being carried on by Professor Marvin Miracle, Agricultural Economics, University of Wisconsin. It was the area in Mexico and indeed in Latin America thought to be most nearly similar, in the various physical factors that condition production, to Ivory Coast. A major difference is that soils in the Mexican area are much younger than those in West Africa although of the same general type. Some care was taken to make comparable the methodology of the research in the two areas. Marketing appears much more direct in this area of Mexico than in West Africa for various reasons not discussed here.

San Andres Tuxtla, established in the latter part of the 17th century, has a population of about 20,000 people, and is located 100 miles south of the port of Vera Cruz and a little over 300 miles southeast from Mexico City. The entire area is considered Tierra Caliente (hot land with average temperatures ranging from 68 degrees to 85 degrees throughout the year, a high relative humidity etc.). The soils are considered fertile, though deficient in nitrogen. It is surrounded by various types of agricultural land holdings which include all Mexican types known.

A considerable part of the produce which is consumed by the households of San Andres Tuxtla originates somewhere

TRANSPORTATION SYSTEM OF MEXICO, 1968



▬▬▬▬▬ Railroads

▬▬▬▬▬ Principal Through Highways

In the state of Vera Cruz or in adjoining states. Furthermore, there is a great surplus of certain products in the general area of San Andres Tuxtla which cannot be consumed in so small a city. These products, which include staple crops such as corn, rice, beans, and also tobacco and livestock, are transferred out to the rest of Mexico.

The railroad extended through this municipio in 1913 had the effect of greatly increasing the acreages planted to corn, beans, wheat and rice, tobacco, sugar and some cattle since surpluses of these crops could be shipped by rail to other markets. Railroads also brought in machinery and fertilizers. Rails did not handle perishable products, however, so all other food products were produced and consumed locally, there being no satisfactory all-weather roads connecting to distant points. The railroad likewise fostered domination of two or three large grain buyers who, though monopolistic, furnished credit to local farmers.

The completion of a hard surface road connecting San Andres Tuxtla Municipio to the national highway system (1950) brought the producers and handlers of all commodities into competition with other areas of the country. Effects of this road included the following: (a) Products flowed in from distant specialized areas with comparative advantage over San Andres Tuxtla, especially better quality and lower prices were apparent for poultry, eggs, fish, oranges and

nearly all other fruits and vegetables. Some grain finished pork came in. In general, grass-fed locally slaughtered beef and grains continued to supply the local market and to be shipped out. However, the number of buyers was greatly increased by the merchant trucker. These, however, did not extend credit and thus though they broke the 'monopoly' of farmer buyers and had other beneficial effects, they left small farmers without a reliable production and consumption credit system which thus far has not been satisfactorily replaced by government or other.

Food Production Patterns

Most of the basic food items not produced in great quantity in Vera Cruz can be obtained from nearby states. Of the 43 agricultural items of any consequence, including cattle, that are listed in the Mexican census, the state of Vera Cruz leads in the production of 12. These are bananas, dried beans, cattle, coffee, common corn, mangos, oranges, papaya, green peppers, pineapple, sugar cane, and sweet potatoes. This is almost a list of the basic foodstuffs used by the average Mexican household. The principle items needed to round out the list of basic foodstuffs might be cantaloupes, onions, dried peppers, potatoes, rice, red tomatoes, wheat, pork, and chicken. As was said, most of these are produced nearby. Therefore, the cost of basic

foods and their availability in the markets of the state of Vera Cruz should be no greater, and on an average perhaps less, than that to be found in most of Mexico insofar as total quantities of production affect price. Vera Cruz contains a larger percentage of the ejidos relative to other types of tenure than Mexico as a whole. It also has a smaller percentage of underdeveloped land and of forest than Mexico as a whole.

Organization of farm production is described at various points below. Most of the larger holdings are cattle ranches, and a major part of the smaller ones are ejidos (holdings of 8 hectares which resulted from Mexican land reform) that are subsistence farms worked as intensively as the nature of the land will permit. Medium-sized holdings handled as commercial enterprises are a relatively small part of the total.

National Policies for Agriculture

It was stated above that one of the purposes of this study was to find instances of how national policies and national economic growth patterns work themselves out at a local level. There are a number of national policies which in one way or another affect agriculture, but to go very far into these would be beyond the scope of this study. One of the major policies is the so-called Mexicanization policy.

Most of the people interviewed in the various Mexican government agencies, foreign and domestic banks, and the U.S. Embassy in Mexico City seemed to feel that the Mexicanization policy has had little direct effect on agriculture and the food processing industry. The Mexicanization policy is essentially one to assure that control of basic industry in Mexico is in Mexican hands, as opposed to foreign domination, while at the same time encouraging foreign investment, to the maximum extent possible, particularly the non-ownership type. Thus, some kinds of business or manufacturing facilities must be established with over 50 percent equity capital of Mexican ownership, the amount varying by type of industry.

Agricultural policies and programs of Mexico cover a number of areas. Many pertain to foreign trade, including tariffs, various quantitative controls on imports and exports, trade agreements, and policies dealing with the Latin American Free Trade Association. Other policies and programs deal with internal market price regulations, various development plans such as irrigation programs, and agricultural education and extension in general. The effect of most of these on the municipality of San Andres Tuxtla was quite indirect.

Government Institutions in Production and Marketing

Several government agencies are involved in one or another function affecting marketing. A state price-fixing agency sets the prices of meats and milk. Federal government agricultural banks provide very limited credit in the region. No bank, federal or commercial, has effectively replaced the credit formerly extended by wholesale buyers. The National Minimum Salary Commission nominally sets minimum wages for all regions of the country, although wages in San Andres do not always meet the legal minimum set for its area.

Three programs were selected for some individual study in the municipality of San Andres Tuxtla. These were CONASUPO, FONDO, and ASEGURADORA. In San Andres Tuxtla municipality, these may be viewed as the principal programs affecting agricultural production and marketing. A brief description and analysis of each follows:

CONASUPO: CONASUPO is the governmental agency in charge of regulating supplies of basic foods. To do this, it carries on a number of programs which may be grouped as follows: 1) It maintains minimum prices for certain basic farm products, particularly dried corn, beans, rice and wheat; 2) It carries on operations to maintain ceiling prices of certain basic foods. To maintain minimum prices to farmers, it makes

direct purchases. These purchases are stored in CONASUPO regional warehouses. Trade channels lead from these warehouses. CONASUPO also is instrumental in arranging export trade.

For purpose of maintaining ceiling prices, CONASUPO carries on activities such as importing basic commodities which are in short supply. During drought years, such as 1963, it imports corn. It also imports substantial quantities of non-fat dry milk solids. CONASUPO has established more than 200 retail outlets at which basic foodstuffs are provided at less than ceiling prices.

The official buying prices of CONASUPO, as of June, 1966, were: corn, 940 pesos per metric ton; beans, 1470 pesos per metric ton; rough rice, 1000 pesos per metric ton; wheat, 913 pesos per metric ton. These were above prices actually received by farmers as explained at a later point.

In San Andres Tuxtla, it appeared that very few of the smaller farmers were selling directly to CONASUPO. The reasons included the following: 1. The moisture maximum as established by the CONASUPO was considerably less than the moisture content of most of the corn in that region. The maximum permitted was 18 percent, whereas most of the corn in the region appeared to run up to about 22 percent. It appeared that the CONASUPO buying stations had drying facilities, but did not keep them in operation; 2. CONASUPO's

requirement that commodities purchased must be bagged in a standard bag. These bags could be obtained from the government, but a deposit of 4 pesos per bag was required; 3. The requirements of the government grading program on price supported products were such that some of each lot delivered would not meet the government grade; 4. The inconvenience of finding the government buyer, who was not in the San Tuxtla warehouse all the time; 5. The obligation incumbent on any farmer who has obtained advance credit from a private grain buyer to deliver all of his grain to that buyer.

The combined effect was that most of the small farmers in the vicinity were not selling their grain or beans directly to the government. Instead they were accepting 200-300 pesos less per metric ton for beans than they might have obtained from the government, and from 100-250 pesos less for corn than they might have received from the government. The farmers said that the combined effect of the various government requirements plus the cost of hiring the grain deliverer to the government warehouse amounted to as much as the difference between what the government and a private buyer would pay.

THE FONDO: In the organization of the central bank, there is a trust fund called the FONDO. This trust fund is administered through several regional offices, one of which

is located in the city of Vera Cruz. Regional offices such as this administer funds under three different programs, all of which are really operated through private banks as required by FONDO regulations. The one of the three programs which is of principal importance for San Andres Tuxtla is funded by the Alliance for Progress, and is called the Rural Credit Program. The general objective of this program, as it is now administered, is to get the commercial banks to make credit available to farmers (including ranchers)-- particularly to the medium sized and somewhat smaller farmers. The funds go through the U.S. Agency for International Development to the central bank in Mexico and thence through its FONDO fund to commercial banks in the State of Mexico.

The private commercial banks arrange a loan for the farmer or the rancher at 6 percent annual interest and take responsibility for security and collection. Of the funds for the loan, 90 percent come from the FONDO by discounting the paper. The FONDO charges 3 percent interest to the bank, which leaves the bank with 3 percent return on the capital it takes from the FONDO. The loans are made only for productive purposes, and not for dwellings, consumption expenditures and the like.

The response of commercial banks in making these funds available for agriculture and ranching has been quite satisfactory to the AID Administration. According to AID reports,

by 1965-66 the 200 basic banks were making loans under this program. In the winter of 1965, FONDO itself had 125 technicians who were supervising the credit given by the commercial banks under the Rural Credit Program. The program calls for supervised credit. The FONDO technical advisors begin work with the ranchers at the time the loan is made. The farm plan is made and the loan is supervised to see that the money is used according to the advice of the technical representative of FONDO.

An example of how the Rural Credit Program works out, at the level of the local commercial bank, was obtained by interviewing the manager of the principal commercial bank in San Andres Tuxtla. The manager of this bank reported that about 55 percent of his total loans are made to agricultural and livestock producers. Livestock loans are in a large part discounted with the FONDO, which is to say that around 90 percent of the commercial mortgages or notes received as guarantees for loans to livestock men were discounted to the FONDO. The manager reported that his bank made three to four times as many loans by volume to cattlemen as it would make if it were not for the arrangement with FONDO. He considered his operation with FONDO funds as a major lending activity.

The manager reported that the minimum size of the cattle operation on which he made FONDO loans was 50 to 70 cattle.

The minimum size of loans extended to these cattlemen has been about 50,000 pesos. Loans to cattlemen are made on the basis of actual value of cattle. No collateral except the cattle is required. In May of 1966, there were approximately 300 Rural Credit loans of the type described above currently outstanding in the state of Vera Cruz. About a third of these were in the southern zone of that state which includes San Andres Tuxtla. Six ranchers who had received these loans were interviewed, and their reports verified what the banker had said.

The requirements for credit under this program are set up to insure that farmers who might not otherwise receive credit through regular commercial sources would be served. For example: 1) The farmer must be engaged in a specified type of farming thought essential to the economic development of the area; 2) The farmer's principal source of income must be farming; 3) He must personally direct the operation of the farm; 4) His income must be no more than 100,000 pesos per year; 5) His land holding must be within the legal requirements of the Agricultural Code.

The FONDO program has two revolutionary effects: 1) Rural banks before the credit program had always required payment within a maximum of three years with a rigid schedule requiring repayment in equal amounts for each of the three years. Under the Rural Credit Program, the repayment period

was increased to 5 years and the practice of tailoring the repayment schedule to the productivity period of each loan was begun; 2) There was a beneficial effect from the general practice of supervising the use of credit, particularly where technical production ideas were advanced by the AID Administration through their contacts with FONDO technicians who would carry these ideas to the farmer, thereby injecting advanced farming ideas into the system.

ASEGURADORA: The ASEGURADORA is the government crop and livestock insurance agency. This agency furnishes a sort of stop-loss insurance program. Crops that are insured include: corn, beans, bananas, grain sorghum, papaya, rice, wheat, cotton, and livestock.

When an individual farmer obtains loans from the government agricultural bank, for instance, an insurance policy is required to cover the crop for which the loan was obtained. Insurance is not required when a loan is made to cattlemen, although cattle production usually is insured voluntarily.

The procedure is for the individual to seek his insurance through a private insurance company. The government does not actually write insurance policies with the individual farmer but, instead, it pays half of the insurance premium charged by the insurance company up to the approved maximum for the region. The private insurance company pays claims

for losses. However, where the loss has been general, covering all or a considerable part of the region, the government helps the insurance company pay for the losses. So the government pays part of the premium which helps the farmer and part of the claims which helps the insurance company and also holds down the premium rate to the farmer.

ASEGURADORA came into existence in 1959, prior to which there was no crop insurance plan of any kind in Mexico. Five years after the program was begun, the area covered by the crop insurance program had reached 1,733,144 hectares. Sixty-nine percent of the hectarage covered by the crop insurance program was ejido land. The livestock program during the year 1963 had expanded to include 3,379 producers with a total of 71,764 head of cattle. Whatever its use may have been in other parts of Mexico, the crop insurance was little used in the San Andres area, except by those for whom it was required as a condition of getting government credit.

The Central Market

The central marketplace in San Andres Tuxtla is by far the most important retail outlet for local foodstuffs, superseding an open air market located a block away which had served San Andres for many decades. The new building was first used in January 1964. A market administrator is responsible for collecting stall rents, overseeing maintenance,

and enforcing market rules. Some of the most important rules are:

1) Rights to use permanent stalls inside the building are dependent almost entirely on payment of daily rent. Vendors who pay this rent may sell whatever products they choose in any stall assigned to them.

2) Rights to vendors who do not rent regular stalls are restricted to sales of only regional and seasonal products on the patio outside.

Vendors with permanent stalls inside are professionals who rarely have other business interests. Some of the vendors outside the building are also professionals, but most are occasional or part-time vendors frequently selling produce from their own farms.

The new marketplace occupies about a city block in all and is located two blocks from the city square. It is the largest marketplace to be found within a radius of some 50 miles. The building was financed by the National Urban and Public Works Bank, which was established in 1933 to act as an agent for the Federal government in financing public works, among its other duties. Rent from the stands is expected to amortize the cost of the market building in about 10 years. At the time of this study the monthly income of the market was about 52,000 pesos (\$4,160 U.S.), with 43,000 being paid to the bank holding the mortgage and the remainder covering operating expenses.

Cost of the market facility was slightly more than 4 million pesos. When the mortgage is paid off the building will become the property of the municipality, which will operate the facility as it sees fit. Rents for the stalls range from 4 pesos daily up to a high of 14 pesos daily, depending upon the location. When a renter discontinues use of a stall he frequently receives compensation ranging as high as 600 pesos from the next person to occupy the stall, particularly if it is in a good location.

There are 246 permanent stalls in the market building. The main products sold there include clothing, shoes, prepared foods in restaurant stands, refreshments, bread, tortillas, dry groceries, fish, beef, poultry, pork and fruits and vegetables. The building is divided into one main section and three sub-sections. One hundred seventy-seven of these stands are located in a main building. Of these, 148 sell food in one form or another. Stalls as rented consist only of walls and a display counter. With the market administrator's approval almost any modification can be made. There is no refrigeration unless the renter adds his own.

Fruit and Vegetable Vendors: Originally there were 61 fruit and vegetable vendors but only 20 remain today. Between January 1964 when the market was opened and June 1966, an additional 29 entered the business. Only five of them now

remain. Thus, there are 25 remaining from the total of 90 that have entered. The turnover among fruit and vegetable vendors has been very high. The barriers to entry appear to be low. The capital requirements are not great, considering that initially the vendor would not want to buy much stock and could get some credit from a few truckers. Although he might have to pay the previous occupant to get a choice stall, he could always get one not so favorably located with only the payment of a day's rent in advance. The principal barrier is technical knowledge of the business of handling fruits and vegetables. This includes the techniques of recognizing and getting good quality products from the truckers, proper display of the goods, keeping spoilage losses to a manageable level, developing sales ability and such. It is estimated that the two top vendors account for 20-25 percent of total fruit and vegetable sales. The top four account for about 35 percent.

Competitive Behavior Among Vendors: Behavior among the regular fruit and vegetable vendors shows many of the elements of the Chamberlin large numbers case, and could be called monopolistically competitive. Very little overt price competition could be found among vendors. Various hidden forms of competitive practices by the vendor served to attract and hold customers. These include more careful

selection of goods, giving a little extra quantity for regular customers, and a little more personal attention in other respects. There may have been a little short-term credit to customers for a day or so, though it was carefully kept secret.

Any form of overt price cutting would have been met with retaliatory action by other vendors almost at once, probably before the instigator could gain much from it. The general layout of the market and the fact that the shoppers know each other very well mitigated against some types of competitive behavior. There was a tendency for the regular vendors to be grouped together depending on the general type of produce they sell. The itinerant vendors outside in the patio bring their own seasonal produce and individual ones come infrequently to the market, but they do compete with the regular vendors.

Fruit and vegetable vendors inside the market facility usually have an extensive variety of products, making some dozen vegetables and a dozen or so fruits available all year, with perhaps another dozen of each available seasonally. The majority of the itinerant vendors handle from one to three products at a time.

Goods are sold either by weight or by measure and number, according to the product. Most fruits and vegetables are sold by piece, in mounds and bunches or by the plateful,

cupful and so on. Beef and pork are sold only by weight and at official prices although the weight may be skimmed upon if the quality is particularly high. Poultry is usually sold by the piece, such as the leg or the thigh. Fish are sold both by weight and by the piece. The outside vendors or itinerants usually sold by the mound or piece with the price being fixed at some amount such as 20 centavos or a peso, although the sizes and quantities were varied competitively.

With reference to the infrequency of overt price competition, there are three sources of information: 1) Prices of the principal items which were carefully tabulated in the market over a two-month period. The two-month price check on the principal items showed a great similarity of overt prices among all the vendors. This was done by the following procedures: Local women were hired by the researchers periodically to buy small amounts of each of several items from sample vendors in the market. These were weighed by the researchers and weights and prices were recorded and analyzed. Little or no differences in overt prices could be found among vendors in the marketplace, and so the data are not shown here. However, there may well be important differences in quality (this is in spite of the fact that the researchers attempted to price goods of equal quality), as one dealer culls his goods more thoroughly or selects

goods for the better customers with more care; there may also be differences in the pilon among various customers (a 'free' amount given at the end of the transaction).^{1/} Overt price concessions are usually reserved for large purchases or for goods that are defective. Bargaining or haggling over overt prices, although often declared to be a national pastime in Mexico, was rare in San Andres. Closer observation in other market places in different parts of Mexico revealed a much lower incidence than seemed to be popularly assumed; 2) Most of the housewives who were interviewed said that the prices were about the same in most of the stands; 3) Fruit and vegetable vendors, when asked about their pricing policy, said they could not successfully get more than the going price and they felt few customers would respond if prices were lower.

Personal relations among the inside vendors seem to be best characterized as wary. They are almost never seen chatting with each other, even when their stands are located

^{1/} Marvin Miracle notes a similar practice of giving 'free' goods at the end of a transaction in markets in the African Copperbelt. He says its "primary function...seems to be to provide scope for bargaining, or to make possible a hidden price reduction in situations where an overt price reduction would risk retaliatory action by one's competitors. Whether it is given, and its size, depends on one's skill in bargaining, the commodity, conditions of supply and demand, the kind of competition one faces, and whether the buyer is known or liked." See "The Copperbelt--Trading and Marketing," in Paul Bohannon and George Dalton (eds.), Markets in Africa, New York, Anchor Books, 1965, p. 298.

quite close together. The authors were very rarely able to engage two of them in conversation at the same time. Outside in the patio the itinerants seem to be less wary of each other than the regular vendors inside the market facility. Some of the larger outside fruit vendors would occasionally cooperate by buying a load of fruit together.

In terms of days of the week, a three month tabulation of fees collected by market authorities show activity to be about the same for every day of the week except Sunday, when it was somewhat less.

The Beef and Pork Dealers: Inside the Central Market 48 of the stalls are occupied by butchers, some of whom have more than one stall. There are a total of 31 butchers, 10 selling pork and 21 selling beef. These butchers may be grouped into three groups: Those belonging to the cooperative, those belonging to the syndicate, and those that are independent. Eight of the beef butchers form the cooperative, while the syndicate has seven pork and nine beef butchers; the remaining three pork and four beef butchers make up the independents. The cooperative and syndicate were both formed shortly after the new market opened.

The membership of the cooperative, in addition to the eight retail butchers that sell in the Central Market facility, includes nine others who perform buying, slaughtering

and similar operations. The buyer procures cattle for the entire cooperative as it is slaughtered at the municipal slaughter facility and furnishes dressed beef quarters at agreed price of 7 pesos per kilogram. The cooperative furnishes cold storage facilities near the market place. It furnishes short-term credit to its members.

The syndicate differs from the cooperative in that it is affiliated with a national labor organization. The nine retail beef butchers that belong to the syndicate have a buyer who supplies all their animals. Although his price to them is not fixed by any formal agreement, nevertheless it is quite stable for long periods of time. The primary purpose in belonging to the syndicate is to establish the retail butchers as workers rather than business heads to foil attempts at unionization at future times. Actually the pork butchers that belong to the syndicate receive nothing from it except protection against unionization; they buy their own animals and see to the slaughter themselves.

The seven independent butchers supply and slaughter their own animals. They may or may not own cold storage facilities.

Butchers' stalls occupy all one end and most of one side wall of the marketplace, with some stalls across the adjacent aisles. The cooperative, syndicate and independent

stalls are interspersed without particular order. Cooperative and syndicate members all have their affiliation painted on the back wall of the stalls.

The two largest beef butchers handle about 15 percent of total sales. No estimate of market shares was made for pork butchers.

Essentially this is a "hot meat" market, so called because consumers prefer to get their beef or pork as soon as possible after slaughter. Slaughtering of cattle is done daily except Sunday in municipal facilities. Slaughtering of hogs is done daily by the butchers themselves wherever they see fit to operate.

Retail prices are set by state government but frequently are circumvented by short weights or by charging more than the official price. The official price is 10 pesos per kilogram of beef without bones or excess fat. The de facto price for full weight is 12 pesos per kilogram with a 750 kilogram being given at the official price. State inspectors pass through once or twice a year and levy routine fines for price violations on all the butchers. Price competition is slight. The quality of the meat is generally the same. The real competition lies in customer treatment by giving choicer cuts for some, by trimming more fat off and so on.

It is quite possible that entry is more difficult for the butchers than for the fruit and vegetable vendors and other types of vendors in the market. Butchers usually have gone through an apprenticeship as a helper or in many cases are sons of butchers or ranchers. The actual money outlay to enter the business, however, is not great. About three-fourths of those who enter the business as butchers in the Central Market are said to survive. In 1966 there were 31 total butchers, to be compared with the 20 that began in business, when the market was opened two and one half years earlier. No record was obtained of entries and exits.

Poultry Vendors: There are seven vendors of poultry, with eight stalls. The largest of these sells perhaps a third of the total poultry sold in the market. The poultry is sold as dressed birds. Each vendor purchases his own birds, usually the night before they are retailed. The birds are old hens and commercial broilers, the former still being preferred by most customers. The old hens are raised as scavengers. The broilers, produced in large flocks with modern technology, are rising in favor with consumers as they learn to prepare them. Initially there were 10 vendors. Five of these dropped out and two new ones have entered. Competition is quite severe in spite of the small

number of vendors. They appear to be among the economically poorer classes and tend to be elderly. Neither sex predominates.

Profitability of Vending Operations: To bear on profitability of the vendors' operations, spot checks were made to see if profitability was similar to that reported from an earlier study made in the regional market of Tehuacan, state of Puebla.^{2/} That market is located about 125 miles west of San Andres Tuxtla. Size of the city and major characteristics of the market do not differ greatly from San Andres Tuxtla, so the data should apply reasonably well to the vendors at San Andres Tuxtla (Tables 1 and 2). Spot checks appeared to bear this out satisfactorily. The meat vendors appear to enjoy much more profitable operations than the vendors of other products. The value of daily sales to about half of the meat vendors is around 1,000 pesos (\$30 U.S.). Gross margins are estimated to be about 42 percent which must cover all the expenses of the retail butcher over and above the cost of the raw meat. Thus he has a gross margin of about \$33.60 per day. The other 50 percent of the meat vendors have gross daily sales of 1,000 to 1,500 pesos per day. The value of the daily sale of the other vendors of agricultural products

^{2/} Jose M. Sato Angli, "El Mercado Regional De Tehuacan," Thesis, Escuela Nacional De Agricultura, Chapingo, Mexico, 1961.

Table 1. Value of daily sales. 105 stands of agricultural type. Tehuacan, Pue. 1959. (Excluding expenditures for meat.)

Pesos	Number of Stands	% Total
Up to 9.99	30	28
From 10 " 19.99	25	24
" 20 " 29.99	20	19
" 30 " 39.99	9	8
" 40 " 49.99	5	5
" 50 " 59.99	5	5
" 60 " 69.99	2	2
" 70 " 79.99	3	3
" 80 " 89.99	0	0
" 90 " 99.99	1	1
100 or more	5	5
TOTAL	105	100

Source: Jose M. Sato Angli, "El Mercado Regional De Tehuacan," Thesis, Escuela Nacional De Agricultura, Chapingo, Mexico, 1961.

is much lower. About half of them have total sales of 20 pesos or less per day (\$1.60 U.S.). Around 80 percent of all the vendors of such products receive less than 40 pesos per day (\$3.20). No data are available on the gross margin but it is doubtful if it is more than 50 percent of the retail price.

Table 2. Value of daily sales. 19 stands of meat.
Tehuacan, Pue. 1959.

Pesos	Number of Stands	% Total
Up to 499.99	2	10
From 500 " 999.99	8	42
" 1000 " 1499.99	6	32
1500 or more	3	16
TOTAL	19	100

Source: Jose M. Sato Angli, "El Mercado Regional De Tehuacan," Thesis, Escuela Nacional De Agricultura, Chapingo, Mexico, 1961.

Vendor Characteristics: There seem to be no customary restrictions against women selling any products except beef and pork (and there is one butcher's wife and another butcher's daughter who help at pork stands). On the other hand, no male was observed selling with the basket women or other female itinerants.

There are no Indian tribes in this immediate area, although during the Easter celebrations fairly large numbers of non-Spanish-speaking indigenous people come here to visit San Andres and a nearby religious shrine. Only rarely were families of these people to be seen during the remainder of the time. They do not normally constitute a significant factor in the local market.

There are noticeably different individual characteristics of the vendors of different products. However, they all have one common characteristic almost without exception--they are married or widowed. The butchers: 1) are all men; 2) 55 percent are between the ages of 31 and 40, 3) all have attended school; 4) most are natives of San Andres (there are only three exceptions); 5) nearly all are relatives of butchers or ranchers, (four are not), and have spent most of their adult lives in the trade; and 6) most have hired non-related helpers, (six have relatives as helpers).

The fruit and vegetable vendors inside the market: 1) are about equally divided between men and women; 2) their ages range over all age groups, from 21 to "over 50" years of age; 3) a sizeable minority is illiterate; 4) most of them (67 percent) are not natives of San Andres (20 percent come from a distance of more than 200 miles; only one of the illiterates is a native); 5) 80 percent are children of small farmers, 6) few have been vendors all their adult lives, and 7) none have hired helpers (all helpers are children or spouses of the vendor).

The outside produce vendors, (the itinerants and basket women): 1) are all women; 2) no age group predominates; 3) few are literate; 4) most are natives of the area; 5) almost all are relatives of peasants; 6) few of the basket women have been professional vendors all their adult lives,

although many of the itinerants have been irregular vendors since youth; and 7) none have any helpers other than their children.

The poultry vendors: 1) are nearly evenly divided as to sex; 2) half are between 41 and 50 years of age; 3) about half are illiterate; 4) most are natives here; 5) many are children of farmers, though some had trading in their backgrounds; 6) few have been vendors throughout their adult lives; and 7) only one has a helper, his wife.

The produce truckers supplying San Andres: 1) are all males; 2) six are in their 20's and the other two in their 30's; 3) all are literate; 4) only the youngest is a native of San Andres; 5) most are children of farmers; 6) most have been selling only a part of their adult lives; and 7) all have helpers who are not related to them.

Marvin Miracle says most African vendors consider their occupation to be the only way of earning a comparable income and he refutes the validity of the frequent references to their "quest for leisure and the desire to gossip", (Miracle, op. cit.). Vendors with produce stalls in San Andres begin work at 6:30 a.m. and continue until 8:30 p.m., seven days a week and with no holiday even on Christmas Day. Other vendors keep shorter hours in the marketplace, but many spend long hours seeking to locate and to buy their products. As to the purported love of gossip, it was noted that only the outside vendors seem at all disposed to chat.

Merchant Truckers

There are generally two classes of truckers who supply the San Andres central marketplace: 1) truckers who make regularly scheduled trips with market supplies, of which there are about eight; and 2) truckers who make irregular trips either on speculation or on special orders.

The regular truckers, with fresh fruits and vegetables and some non-perishables, service towns along a fixed route about 125 miles long, each of them making one trip weekly. Nominally each is completely independent of the others. Loading principally in Mexico City, deliveries are begun about 50 miles before reaching San Andres and continue about 75 miles beyond.

The itinerant truckers from outside San Andres arrive irregularly, usually carrying a truck load of a single perishable product from their home region. At times their load has been ordered by a vendor in the San Andres market; at times the trucker has brought the load on speculation, making stops at town markets along the highway. Truckers living in San Andres are available for hire to go anywhere desired. They usually are employed for trips up to about 100 miles.

Although local and itinerant truckers supply the local marketplace with some products at some times, the basic stock of products is brought in by regular truckers. These men buy

their goods in the Mexico City wholesale market and, in their own or rented truck, make wholesale stops on a fixed route.

The trucks carry 10 to 12 tons, mostly fruits and vegetables, but some sugar, beans, eggs, and canned goods. Each trucker arrives on a fixed day, usually at about the same hour. He parks beside the market place for two to three hours, taking and filling orders at the truck, as well as going inside the market place to solicit orders from certain vendors who haven't come out. There is some bargaining. The trucker has some information not readily available to the retailers, e.g., the going price and the trend on the Mexico City market, and the price he himself paid. On the other hand, the retail vendors have some information the trucker doesn't have, e.g., their stocks, sales activity in the local market, and whether they're going to receive goods from another source.

As a rule one trucker arrives each day, each trucker making one trip per week. Nominally, the truckers operate independently of each other (one trucker does have a second truck with a hired man in charge). However, two of them are brothers and, in addition, these two maintain close ties with two other truckers on this route; whether there are other ties wasn't discovered. In this case, at any rate, the men see each other at least once or twice a week, passing hours in conversation. It would be strange if they didn't discuss their customers, sources of supply, etc.

Credit is normally extended by the truckers to the local retailers. In some cases, goods left on one trip are paid for on the following trip one week later. In other cases, half the amount due is collected as the driver returns on the back trip to Mexico City two or three days later. There is no discount for cash, but there are some who must pay cash, e.g., those who have poor reputation because of not paying, those who are buying small amounts, those who seldom patronize this trucker, those who are new in the market, and those who do not have stands in the market place, carrying their purchases to other villages to retail. The truckers, without exception, indicated their biggest problem was collection. They believe the granting of credit is indispensable, however, The truckers themselves receive credit from their Mexico City suppliers if they wish, but they all said they preferred not to ask for credit, if possible, to avoid being tied to those particular suppliers. They say the prices are usually quite uniform among the various suppliers, but they can choose for quality differences and other advantages if they are free of credit obligations.

The first truckers began coming to San Andres as soon as the new road was usable. The number making stops in San Andres has gradually increased. There are no legal barriers to entry as a trucker; the main obstacle would appear to be knowledge of the vendors' product needs and their status as credit risks, and building up personal relations among them.

Itinerant truckers are also free to sell to the vendors and arrive at infrequent, unannounced times, usually with a single product. They normally sell only for cash. Formerly, they were permitted to sell both at wholesale and retail, but the recently reactivated vendors' organization got the promise of the municipal government not to issue any more itinerant vendors' retail permits to such truckers.

The vendors' organization had long been little more than a name, but a recent change of officers brought in a group determined to protect their interests more energetically. Many vendors joined; many others were waiting for more proof of its effectiveness.

Wholesale Buyers of Local Products

Staples grown around San Andres, such as corn, beans, and rice, are principally sold to local buyers who either store and sell later for regional consumption or who assemble loads and sell for export from the region. Prior to construction of the highway there were only five buyers; since then many small local buyers and truckers passing through have begun buying.

The buyers formerly provided credit to many farmers in order to insure receiving their production, but with the opening of the highway the farmers frequently sold to new buyers and failed to pay their debts. Buyers today provide much less credit.

Most of the tropical fruit production of the region is sold through local commission men to outside buyers, with lesser amounts being sold for local consumption and directly to outside buyers at recognized concentration points.

Fine tobacco is produced on a few large holdings and exported directly by the producers except for small amounts used by local factories making handrolled cigars.

Consumer Characteristics, Buying Habits and Expenditures

To obtain data on consumer characteristics, buying habits and expenditures for food, a survey was made in three small villages within the municipality of San Andres Tuxtla. The survey was made with the cooperation of the principal health officer of the municipality. A total of 397 households were surveyed, though the schedules were not complete in all respects. Table 3 groups these households according to size.

Table 3. Proportions of 386 sample households and people in various family-size brackets, three villages, Municipality of San Andres Tuxtla, State of Vera Cruz, Mexico, August 1966.

Household size bracket	Number households	% Total	Number People	% Total
(number)	(number)	(percent)	(number)	(percent)
1 - 3	59	15	150	6
4 - 6	169	44	810	37
7 and up	158	41	1301	57
TOTAL	386	100	2291	100

Table 4 shows income brackets and total food expenditures as a percentage of family income in these brackets for all three villages combined. In each income bracket the percentage of income spent on food is greater than 100. In the weekly income bracket of 50 pesos or less, 186 percent of total income was spent on food. This ratio of food expenditures to total income declined to the bracket of 151 and up pesos per week, in which bracket 104.9 percent of total income was spent on food.

Table 4. Total food and tobacco expenditures as a percent of total income for 271 households in three villages, Municipality of San Andrés Tuxtla, State of Vera Cruz, Mexico, August 1966.

Weekly Income Bracket	Number Households	Percent Total Income Spent on Food and Tobacco
(pesos)	(number)	(percent)
50 or less	71	186.4
51 - 70	63	135.5
71 - 100	72	130.7
101 - 125	25	103.8
126 - 150	18	118.2
151 and up	22	104.9

These results are consistent with those reported in another study which made projections of supply and demand for agricultural products in Mexico based on research of the U.S.D.A.

Economic Research Service, in cooperation with several agencies in the Mexican government (See Table 5).

Table 5. Family Income and Expenditure Survey, 1963: average per capita monthly income and expenditure, by family income levels.

Monthly family income (Pesos)	Average per capita income (Pesos)	Average per capita expenditure (Pesos)	Per capita expenditure as a % of income
0 - 300	43.27	94.80	219.0
301 - 600	79.32	116.84	147.3
601 - 1,000	133.22	158.04	118.6
1,001 - 1,500	209.65	240.89	114.9
1,501 - 3,000	333.75	326.77	97.9
3,001 - 4,500	515.54	469.91	91.1
4,501 - 6,000	782.70	596.60	76.2
6,001 - 10,000	1,266.83	948.74	74.8
Over 10,000	1,874.49	1,011.61	53.9
AVERAGE	221.78	225.16	101.5

Source: "Projections of Supply of and Demand for Agricultural Products in Mexico, etc." Secretaria De Agricultura y Ganada et al, published for the USDA, Washington, 1966.

In that study the households in all the lower income brackets spent more than their income. That study pointed out that consumption of food does not decline below the minimum level,

even though income may decline. It is quite possible that the family may not be the appropriate unit to study for such purposes as these, and that some sort of extended family concept should be used. No doubt many of these families are receiving some help from sons and daughters that have gone elsewhere to work, or from more prosperous relatives in the city. Of course, some reporting errors may help explain this. Such errors seem more likely to occur among lowest income people who may have the least education.

Table 6 shows the frequency of purchases of several basic foods--coffee, sugar and tobacco--by these households. The frequency of purchase of an item directly reflects its importance in the diet or consumption pattern of the family, because almost nothing is bought more than one day in advance. Even if only a small amount of an item is used at a time, that amount will be bought each day if it is used each day. The reasons for every day shopping include: a) most families have difficulty in getting enough money together to buy large quantities; b) refrigeration is lacking to preserve meats and such; c) the head of the family may not care to intrust whoever does the shopping with more than the minimum necessary to shop for one day. Frequency is deemed regular if buying is daily, every-other-day, or weekly. Occasional buying is not deemed regular. Most of the staple items are bought regularly by over 50 percent of the families. A

Table 6. Frequency of purchase of basic foods and tobacco by 397 households in villages of Sihupan, Tepanacan, and El Laurel, Municipality of San Andres Tuxtla, State of Vera Cruz, Mexico, August, 1966.

Product	Frequency of Purchase							# Who buy regularly	% Who buy regularly
	Daily	E. O. Day	Weekly	Occasion-ally	Self-supplied	Never			
	----- (number) -----							----- (percent) -----	
Beef	34	141	152	41	0	29	327	82.4	
Pork	2	76	138	89	0	92	216	54.4	
Chicken	2	5	33	102	84	171	43	10.1	
Fish	6	51	115	148	19	58	172	43.0	
Milk, Cheese	194	67	48	41	24	23	309	78.0	
Eggs	44	47	81	81	55	89	172	43.0	
Wheat Bread	239	59	30	27	1	41	328	83.0	
Corn	200	17	52	1	114	13	269	68.0	
Rice	75	106	165	21	0	30	346	87.0	
Beans	180	54	114	2	30	17	348	88.0	
Potatoes	5	45	140	108	1	98	190	48.0	
Pastas	6	45	117	87	0	142	168	42.0	
Coffee	201	9	164	1	10	12	374	94.0	
Sugar	207	18	162	1	0	9	387	97.5	
Oil Lard	202	22	159	5	1	8	383	96.5	
Chili	88	49	102	18	68	72	239	60.0	
Onions	122	63	188	8	1	15	373	94.0	
Tomatoes	141	49	162	2	10	33	352	89.0	
Other Veg's	6	19	30	55	7	230	105	26.0	
Fruit	1	12	30	32	35	287	43	11.0	
Tobacco	38	33	74	21	11	220	145	37.0	
Other	63	19	102	1	0	212	184	46.0	

substantial number of the families supply all or a part of their own corn. Products bought regularly by less than 50 percent of the families include chicken, fish, eggs, potatoes, pastas, vegetables other than tomatoes, fruit, tobacco and certain miscellaneous items. Products that were bought regularly by about half of the families include pork, eggs, potatoes, and chili. Beef is a product bought regularly by the highest percentage of families among the meats, followed by pork, fish, and chicken. This buying pattern is to a great extent a function of price. In the markets of this municipality, chicken is the highest priced, followed by pork and beef, with fish prices varying greatly by species. This relatively low price of beef, which helps explain the higher consumption of that meat, results from beef being more plentiful in that part of Mexico than chicken, pork, or even fish.

Table 7 shows family and per capita expenditures on both basic foods and tobacco by family size for each commodity. Family size is cast into three groups, one to three persons, four to six persons, and seven persons and up. As would be expected, in almost every instance, the expenditures per family increased as the size of the family increased. However, it is equally noteworthy that the expenditures per person in almost every instance declines as the size of the family increases.

Table 7. Daily household and per capita expenditures on basic foods and tobacco, averaged for 386 households in villages of Sihuanpan, Tepanacan, and El Laurel, Municipality of San Andres Tuxtla, State of Vera Cruz, Mexico, August, 1966.

Item	FAMILY SIZE			Total
	1 - 3	4 - 6	7 and up	
	-----pesos-----			
Total Expenditures	488.00	1811.43	2364.80	5164.23
Per Family	8.27	10.72	18.13	13.38
Per Person	3.25	2.16	2.20	2.25
Beef	245.75	296.00	434.75	976.70
Per Family	4.16	1.75	2.75	2.53
Per Person	1.64	.35	.33	.43
Pork	27.95	114.40	219.20	361.55
Per Family	.47	1.94	1.39	.94
Per Person	.19	.14	.17	.16
Chicken	2.20	5.50	43.65	51.35
Per Family	.04	.03	.28	.13
Per Person	.015	.006	.03	.02
Fish	17.60	61.15	116.25	195.00
Per Family	.30	.36	.74	.51
Per Person	.12	.07	.09	.09
Milk, Cheese	29.20	95.75	189.20	314.15
Per Family	.49	.57	1.20	.81
Per Person	.19	.11	.15	.14
Eggs	11.70	41.45	113.10	166.25
Per Family	.20	.25	.72	.43
Per Person	.08	.05	.09	.07
Bread	32.80	117.75	184.10	334.65
Per Family	.56	.70	1.17	.87
Per Person	.22	.14	.14	.15
Corn	61.60	204.25	356.25	622.10
Per Family	1.04	1.21	2.25	1.61
Per Person	.41	.24	.27	.27

(Continued)

(Table 7 continued)

Item	FAMILY SIZE			Total
	1 - 3	4 - 6	7 and up	
	-----pesos-----			
Rice	15.85	68.10	88.20	172.25
Per Family	.27	.40	.56	.45
Per Person	.11	.08	.07	.08
Beans	82.20	169.25	235.25	486.70
Per Family	1.39	1.00	1.49	1.26
Per Person	.55	.20	.18	.21
Potatoes	3.95	14.45	34.20	52.60
Per Family	.06	.09	.22	.14
Per Person	.03	.02	.03	.02
Pastas	4.45	16.05	34.00	54.50
Per Family	.08	.09	.22	.14
Per Person	.03	.02	.03	.02
Coffee	27.50	107.55	150.70	285.75
Per Family	.47	.64	.95	.74
Per Person	.18	.13	.12	.12
Sugar	26.50	92.75	126.42	245.67
Per Family	.45	.55	.80	.64
Per Person	.18	.11	.10	.11
Oil, Lard	44.15	166.55	222.20	432.90
Per Family	.75	.93	1.41	1.12
Per Person	.29	.20	.17	.19
Onions	9.20	25.40	26.80	61.40
Per Family	.16	.15	.17	.16
Per Person	.06	.03	.02	.03
Chilies	4.95	17.15	28.95	51.05
Per Family	.08	.10	.18	.13
Per Person	.03	.02	.02	.02
Tomatoes	15.50	56.25	70.60	142.35
Per Family	.26	.33	.45	.37
Per Person	.10	.07	.05	.06

(Continued)

(Table 7 continued)

Item	FAMILY SIZE			Total
	1 - 3	4 - 6	7 and up	
	-----pesos-----			
Tobacco	4.25	11.80	17.00	33.05
Per Family	.07	.07	.11	.09
Per Person	.03	.01	.01	.01
All Other	7.35	23.60	30.70	61.65
Per Family	.12	.14	.19	.16
Per Person	.05	.03	.02	.03
No. of Families	59	169	158	386
No. of People	150	840	1301	2291

Table 8 was designed to show the effect of income on the purchases of particular foods. As was expected, families with higher incomes spend more on certain types of food, such as pork, chicken, milk and cheese, than do the low income families. As a matter of fact the higher income families spend more on all foods, including the cheap ones such as beef, beans, onions and corn. However, the percentage by which expenditures are increased from income bracket to income bracket tends to be greater with the more expensive foods than with the cheaper ones.

Some rough calculations were made of the price spread between wholesale and retail prices. The price spread varied greatly by commodity. It was as low as 3 percent for rice and as high as 40 percent for milk. There appears to be little

Table 8. Relationship between household income and expenditures for selected foods, Villages of Sihuapan, Municipality of San Andres Tuxtla, State of Vera Cruz, Mexico, August, 1966.

Item	Income for a "good" week (pesos)			
	<u>up to 75</u>	<u>75-124</u>	<u>125-174</u>	<u>175 and up</u>
Corn				
Daily expenditures per family (pesos)	2.13	2.42	2.41	2.65
Index	100	114	114	124
Onions				
Daily expenditures per family (pesos)	0.12	0.25	0.16	0.17
Index	100	203	129	134
Pork				
Daily expenditures per family (pesos)	0.80	1.93	1.21	2.68
Index	100	241	151	335
Beans				
Daily expenditures per family (pesos)	1.36	2.21	2.09	5.88
Index	100	163	154	432
Rice				
Daily expenditures per family (pesos)	0.36	0.36	0.77	0.74
Index	100	100	214	206
Milk, Cheese				
Daily expenditures per family (pesos)	0.75	1.80	1.84	5.89
Index	100	240	245	797
Beef				
Daily expenditures per family (pesos)	1.65	3.22	4.10	13.30
Index	100	195	248	806
Chicken				
Daily expenditures per family	0.10	0.46	0.55	3.76
Index	100	460	550	3760

or no relationship between the price spreads determined for Mexico and those which are to be found in the United States. The Mexican price spreads do not appear to be higher, although they vary greatly commodity by commodity compared to the United States. The Mexican price spreads are nothing like as high as those usually thought to prevail in underdeveloped countries.

Relation Between Farm Size and Marketing Agency or Institution

Farmers with small land plots nearly always receive less per unit from the marketplace for their resources used in farming than do farmers with larger and more adequate landholdings. There is a minimum size of output for reasonably efficient marketing just as there is a minimum size of farm unit for each type of farming enterprise or enterprise combination if it is to be reasonably efficient.

Though data are not available for the San Andres Tuxtla Municipio, a fair indication of farm size and land use for that area is furnished by data for the State of Vera Cruz. That State has nearly 10 percent of the censused farms of Mexico. A little over half of these are ejidos (eight hectares) and other small farms (five hectares or less). Though the proportion of small holdings is quite high, it is smaller than for Mexico as a whole where small holdings are two-thirds of the total. Nearly all the small private farms are

in what the census calls cropland (52.2 percent) with about half the remaining productive land being in pastures (21.8 percent of their total). The method of apportioning the ejidal land in San Andres Tuxtla results in a family plot of about half lowland and the balance upland, suitable only for pasture or forest if it is productive at all.

For practical purposes there is little difference between the way marketing is performed by ejiditarios and its performance by other farmers with small land plots. The farmers in the three villages surveyed for food consumption data were 80 percent ejiditarios. Only 2 percent were small holders, meaning full owners of plots of less than five hectares. The rest were tenants or part owners. The larger landowners live in villages or cities which are of greater size than those three villages.

The small farmer is disadvantaged in marketing largely because he has few or no alternative marketing agencies bidding for his output. This means he must perform the marketing function in all its complexities himself or be a price taker from at most one buyer who, so far as that farmer is concerned, is a monopsonist. If the small farmer performs the marketing function himself, it almost inevitably means less return to his resources, especially labor, than he could get from efficient use of those resources in farming and perhaps more importantly it means that some farm enterprises

are closed to him because he cannot perform the required functions in any case. The minimum size unit then becomes a function of many things.

Fast transportation, afforded by good roads and trucks, makes regional specialization feasible and such specialization brings great pressure on local producers. They then must compete for buyers with other regions where comparative advantage is greatest. Economical lot sizes become greater, quality demanded by local consumers edges up. Examples include oranges, pineapple, bananas, tomatoes, and most vegetables, fish, broilers and eggs to an increasing extent although there is still an average preference for poultry grown as scavengers.

The marketing disadvantage of the small farmer is dramatized by comparing:

- (a) The size necessary to produce enough products so that the farmer may choose among alternative market outlets;
- (b) The size necessary to produce quality products;
- (c) The size necessary to obtain credit for production.

A farmer producing a truck load of good quality product can find alternative buyers. Truckers or other buyers will come to his farm for this load or he can own or rent a truck and haul to alternative outlets near and distant. Only in areas where production of any one product is concentrated

will a buyer come in expecting to make up a load from more than one farmer. In most areas, farms producing any one product are considerable distances apart, feeder roads are poor, and usually are not constructed for all-weather conditions, a situation especially important in tropical rain belts such as San Andres Tuxtla.

Of course, some products may be taken to the nearest town by the farmer by horseback, cart or headload (or driven in the instance of cattle) and peddled or sold to the local buyer, but few would deny that only the farmer with a truckload of quality products has a reasonable commercial relationship in the marketplace. Also, where the farmer "peddles" his products, something around half his return (varying by product) must be viewed as a return not from farming but instead for his labor and other resources used off the farm.

Taking the truckload as a minimum unit of product for reasonable marketing efficiency, it is possible to consider what size farms can produce it, leaving aside for the moment the questions of the technology for quality production, and the size necessary to obtain credit.

Estimated Capacity of a 4 Ton Truck

Beef cattle.	8
200 lb. hogs	25
Corn, beans or wheat (tons).	5
Bananas (stems).	160
Vegetables or small fruits	2-4

Cattle: Some reasonable indication of minimum sized cattle operation can be gained from the enterprises to which the banks made government secured loans. A FONDO technician accompanied the researchers to visit six cattle enterprises to which such loans had been made in the San Andres Tuxtla municipality. These were operations the government agency viewed as viable. The smallest landholding was 25 hectares, on which the loan of 20,000 pesos had been used to clear and fence the land, to sow pasture grasses and buy improved animals. On this holding the pasture had a carrying capacity of one animal per hectare. The carrying capacity of improved pastures on the six farms ranged from 0.75 to 1.3 cattle per hectare. The other five farms ranged from 75 to 300 hectares with about two-thirds in improved pastures. The calf crop averaged about 60 percent, and the offtake rate about 48 percent, which means that on the farm of 25 hectares about 10 grass finished cattle could be sold per year, or about the number that could be hauled on a heavily loaded four-ton truck when roads were dry.

Hogs: No specialized commercial hog production was observed around San Andres Tuxtla, though the size requirements for producing hogs by the truckload may be estimated as follows.

About 220 bushels of corn are required to feed one sow and 2 litters of pigs to market weights of 200-220 lbs.

Under commercial conditions this amounts to 15.6 pigs per year. Thus about 4 sows would be required to produce 2 truckloads of market weight hogs per year. Around 880 bushels of corn (or its equivalent nutritionally) would be required to feed this number. Since the best corn observed in this area was about two metric tons per hectare, about 12 hectares would be required for corn to feed these hogs.

Bananas: A four-ton truckload of bananas amounts to about 150 stems of the variety usually grown in this area. Yield variations are usually great, ranging from as high as 10 tons per acre, with irrigation and ideal culture, to as low as 0.6 tons per acre, with five tons being a good commercial yield. Bananas require careful selection of planting material, proper spacing, appropriate fertilization practices, cultural practices to avoid the dreaded panama disease and extremely careful timing of harvest to bring them to market at the proper stage. Only soils with certain characteristics are actually suitable. Commercial buyers reject a substantial percentage, after harvest including those with less than the appropriate number of hands per stalk, those too green, too ripe, or "green ripe", and so on. Rejections frequently run as high as one-third of those delivered to assembling points. All in all, the minimum land

plot for successful banana production and marketing is a function of acreage required to make the cost of managerial skills and other inputs economical. In a good banana region where there are many external economies, eight hectares might suffice. This would permit managing plots so as to have rotations of fallow along with top yielding plots. These, of course, could yield several truckloads of fruit, perhaps as much as 10 or 12 for the year with two or three ready at any one harvesting time. Though San Andres is feasible for banana production, it must compete with areas better suited for bananas and, therefore, attracts few commercial growers. Bananas sold by small subsistence farmers sell for less in the central market than commercially grown bananas which usually come from other areas.

Oranges: Nearly all the oranges sold by dealers with regular stalls in the San Andres Tuxtla central market are brought in by truck from distant areas, for example north or west of Vera Cruz. Much the same set of conditions that apply to bananas are present for oranges, with the added problem that citrus trees require a longer waiting period. Good control of some of the citrus tree diseases that recently have ravaged the area is lacking. The authors have seen as many as five hectares of citrus abandoned by commercial producers as being too small for economical production practices.

Truck Crops: It is doubtful if there is a more intensive use for agricultural land than growing "truck crops". In fact, one hectare of rich soil with irrigation and proper seed cultivation practices and insect and fungus prevention in a tropical climate could occupy the time of an average farm family and return a farm income better than average for the area if the principal limitation were the technology of production. However, the market restriction on the truck crop enterprise is perhaps the most severe of all farm enterprises. With few exceptions these crops are extremely perishable, with only milk in the raw state being more so. Demand is low, the products cannot be held for any length of time and low quality prevents shipping to distant areas.

Though fresh truck crops include a wide variety of fresh produce, nearly all of which is sold in the central market, there are only a few for which there is a mass demand, and this is not great enough to support much acreage. These are tomatoes, onions, garlic and chillies, and cabbage. A few others with fair demand are strawberries, cantaloupes, watermelons, green beans and peas, corn on the cob, radishes, cucumbers, and carrots. Except for the so-called hardware items (onions, garlic and chillies, cabbage and carrots) nearly all these must be harvested and sold within two or three days of the time they are ready on the vine. Except for corn, watermelons and cantaloupes, probably 200 hectares would supply

the entire market of San Andres Tuxtla, a city of 25,000 or more population. Fresh corn, watermelons and cantaloupes are somewhat more extensive in land use, but commercial sales for the city could probably be supplied with an additional 100 hectares.

Thus, perhaps 300 hectares of land in truck crops may be what can be sold at reasonable market prices in San Andres Tuxtla. Any above this amount will not clear the market and will spoil or waste, unless it could compete in distant markets such as Mexico City.

A local buyer would probably seek out a farmer with a hectare or so of exceptionally good truck crops. However, a trucker who aimed for the Mexico City market would seek out those farmers who could furnish a truckload of closely related items in which he tends to specialize. For example, he would seek a truckload of tomatoes, a truckload of watermelons and cantaloupes, one of peas and beans, one of onions and garlic, and so on. For this type of market outlet, the one hectare truck farmer might have no appeal unless he specialized to one product and were unusually successful.

It is important that there are no processing alternatives. The canners in Mexico are supplied by growers under contract, and always those with fairly substantial acreage, with farms near their processing plants.

Miscellaneous: Though tobacco, sugar cane and pineapples are grown in this state and the former two in this municipality, production is only on large plantations for technological and marketing reasons. Sugar and pineapple typically call for large scale processing, branding and sales, the requirements for which usually demand plantation conditions. Tobacco in this area is a fine cigar tobacco used in blending, requiring quality control of a sort achievable only under plantation conditions.

It is, of course, true that places may be found in some countries where one or more of these three is grown in very small quantities but there is a complex set of reasons which do not presently apply here. If the area has soil and other ecological conditions which favor tobacco of a certain type, then buyers may establish themselves who work with farmers in some sort of contractual relationship to develop uniform quality. Gradually, volume gets built up and thus the marketing system evolves along with production. There is evidence that in earlier history this was true in the San Andres Tuxtla area, but the last sugar mill has closed and the last tobacco buyer has left the area probably because of competition from some more favored production area. Only a little production for subsistence remains except for plantations.

There is some milk production in this area, but only a few are engaged in it and these are above average size. The

enterprise does not appear to be open to small farmers. Demand for dairy products is very low; there is not enough volume to attract cheese manufacturers or condensaries. Lard and tallow from hogs and cattle supply the animal fat requirements of consumers at a small fraction of butter cost. A few consumers in the municipality of San Andres Tuxtla buy fresh milk. There is no bottling plant in the area, nor is any packaged milk delivered from another source. Instead the unpasteurized milk is peddled from house to house, being dipped from 20 or 40 liter cans packed in from farms on horseback. Four or five farms supply the city of San Andres Tuxtla and a proportionate number supply the other villages in the municipality. Milk on these farms comes from dual purpose cattle, and is a byproduct of the beef industry. About three liters per cow when she is fresh is a good yield. Therefore, a farmer delivering two 20-liter cans by horse would be milking perhaps 15 cows from a herd of 30 to 50. Since milk is used almost exclusively for coffee or for babies, there is very little effective demand, and this little is supplied by a few cattlemen with landholdings in excess of 30 hectares.

A few very large-scale integrated broiler enterprises and large scale integrated laying flocks have developed in Mexico in recent years, similar to those in the United States. With the opening of fast roads, broilers and eggs from these

large enterprises are trucked in to the central market and supply the customers who have a taste for broilers fast-fed under controlled conditions, and for eggs that are graded and cartoned. Since the scale economics are so great for this type of commercial enterprise, it appears doubtful whether there is a place for a non-integrated commercial family enterprise, other than as a small supplement to some other principal activity. A strong preference still remains for poultry raised as scavengers and for "yard eggs". Nearly every farmer has a few. These may be taken into town and traded for other products. Within a very few years, there may be no demand for any but the commercially-produced products, and then farmers who sell poultry or eggs must compete with the quality and prices of the very large scale enterprise.

Small Enterprises with No Market Alternatives: From the above it becomes apparent that most enterprises which offer good commercial market opportunities are either closed or relatively unfavorable for farmers with small land plots. There remains corn, beans, wheat and rice. Even for these most feasible alternatives the small farmer is disadvantaged as will be explained later.

However, the fact that specialized production and marketing of most products is relatively unfavorable compared to three or four staple non-perishable items does not keep the farmer from some supplemental production. As a matter of fact, official

statistics show that 40 percent of the value of agricultural production on the ejidos of Vera Cruz and 31 percent of value on private farms of five hectares or less comes from livestock (Table 9). Also, a substantial part of value comes from fruits. Although these data are probably misleading because of peculiarities or actual errors in census methods, the data seem adequate to show that the proportions are more than negligible.

Since about half the acreage on ejidos is upland, its chief productive use may be to graze a few cattle. Four hectares of unimproved, partially wooded pasture would carry only two or at most three cattle, of which one might be sold per year or every other year. This animal would be driven to the local municipal slaughter house and sold, for likely the bottom price because the quality would be low and the seller would have poor market information and few, if any, alternative buyers.

Table 9. Proportions of farm income from each major source, State of Vera Cruz, Mexico.

	<u>Private More than 5 Hectares</u>	<u>Private Less than 5 Hectares Percent</u>	<u>Ejidos</u>
Crops	17	23	36
Fruits	14	46	20
Livestock and Poultry	68.5	31	40
Forest	0.5	0	4
	<u>100.0</u>	<u>100</u>	<u>100</u>

Source: Census of Agriculture, Republic of Mexico, 1960.

The ejidal farmer might also have a pig and a few chickens raised as scavengers which he might sell under similar market conditions. He might sell a few eggs, perhaps half dozen to a dozen per week. In fact, livestock and poultry might be a major part of his marketable surplus above family requirements.

This ejidal farmer might grow a half dozen or so banana stalks from which a few stems of bananas might be available for sale per year--say one or two each three months. These probably would be headloaded to the central market in San Andres Tuxtla and retailed in the patio by some member of the family. If there were some family member available for selling bananas in the patio, that member might also headload and market some tomatoes or other "truck" items.

The foregoing suggests that the chief enterprise open to a farmer with six hectares or less is corn, beans, rice or wheat for cash sale.

Even on cash grain sales the very small farmer does not receive the government support price for reasons which may be summarized as follows:

- (A) On staples (corn, beans, rice, wheat) the government buying agencies (which usually pay highest prices) demand a moisture minimum that is lower than can be met by a small farmer. This is 14 to 18 percent on corn (most corn runs 20 percent or more). The government has no effective facilities for drying.

(B) End buyers prefer to buy from government warehouse or from middlemen because of customary trade arrangements and lot requirements.

(C) The small farmers need production and consumption credit, which are quickly furnished by private middlemen with the crop as collateral.

1. Government credit sources are relatively slow, cumbersome, and circumscribed by policies, procedures and collateral requirements. Presently the government does not pretend to have a credit program aimed at small farmers, except the Ejidal Banks.
2. The private banks (through which government loans are administered) also have policies, procedures and collateral requirements; e.g., no loans of less than 5,000 pesos; collateral of real property must be worth twice the loan.
3. Ejiditarios cannot mortgage their land because they have only rights to work it, and these rights are not alienable. They are supposed to own no non-farm property (though occasionally they do).
4. Ejiditarios as such can borrow only through the ejidal associations which borrow from

ejidal banks. Since these are mutuals, they tend to be exclusive.

(D) Once in debt to the private middleman the small farmer cannot accumulate enough to pay up and turn to another source of credit.

1. The middleman takes the crop up to amount of loan at considerably less than government price floors (he charges no specified interest.

2. Other problems of accumulation.

(E) The small farmer has only animal power at most for transport and cannot haul products to distant alternative outlets.

(F) Ejidos perform no production nor marketing functions collectively (such as pooling shipments, drying, cleaning, threshing, shelling, or others) which if performed could qualify products for alternative buyers. One reason is capital and collateral limitations.

Because of these limitations the ejidal or other small farmer receives about the following in relation to the support price:

	<u>Support Price</u> (pesos per metric ton)	<u>Price Received</u> from Middlemen (pesos per metric ton)
Corn	940	690 - 840
Beans	1470	1170 - 1270
Rice	1000	850 - 900
Wheat	913	790 - 800

Summary of Market Alternatives: The various complexities may be summed up in two tables, which are largely qualitative. They are:

1. Table 10 is divided into sections grouping farm enterprises roughly into three size categories, small, medium and large. Minimum acreage for the medium-sized farmer is an estimate of what is needed at a minimum to produce lots of one or more truckloads so as to attract commercial buyers. The acreage in this size category would range up to the minimums estimated for the "large farmer". The large farmer is a size estimated at what would produce a volume that would render him independent of the buyers which smaller farmers must use. The method of transportation open to the so-called small farmer is listed on the table, together with the type of buyer or method of selling he must use. The types of buyer open to the medium-size farmer is shown. The types of buyer open to the "large" farmer are described at a later point because they could not be conveniently shown on the table.

2. Table 11 shows the severity of market restrictions and technical restrictions for output on the above sized land plots. It also shows qualitatively the relative intensity of labor and capital requirements for producing on this size of plot under conditions in that area.

The first two of these are categorized as severe, moderate or low. For example, the entire municipio could consume only

Table 10. Estimated minimum hectarages for medium-sized and large farmers, types of buyer or method of selling of smaller categories of farmer, by type of farm enterprise, San Andres Tuxtla region, Mexico.

Enterprise	Small Farmer		Medium Sized Farmer		Large Farmer
	Type transportation	Type buyer	Hectares min.	Type buyer	Hectares min.
Beef	Drives on foot to local	Local butcher (municipio)	25 hectares	May ship to city packers or sell to itinerate buyers f.o.b. farm	500
Corn-hog	Enterprise not open		12 hectares	same	100
Milk	Enterprise not open		30 hectares	Regular delivery route in San Andres Tuxtla	300
Bananas	Headload, cart or horseback to	Family retails in patio	8 hectares	May ship to city wholesalers or sell to itinerate buyers f.o.b. farm	50
Oranges	same	same	10 hectares	same	50
Truck crops	same	same	2 hectares	Itinerant truckers or regular stalls at San Andres Tuxtla	20
Cash grain	Buyer will haul	Local grain buyer	4 hectares bottom land	Government, local grain buyers, or ship to city wholesalers	50
Tobacco	Enterprise not open		Enterprise not open		1000
Sugar	Enterprise not open		Enterprise not open		5000
Pineapple	Enterprise not open		Enterprise not open		2000

about 300 hectares of truck crops, which must be of a quality to compete with such items from distant areas. The labor requirement would be high even to produce the crop and would be especially great if the farm family must do its own marketing.

The second two of these, labor and capital requirements, likewise are categorized as severe, moderate and low, and includes what probably would be required for marketing. The capital requirement makes allowance for waiting time before the product becomes marketable as well as the costs for the necessary technology. For example, oranges require three years after planting before returns begin as well as 'sprays, spray equipment, soil analysis, fertilizers, fast harvesting, rapid sale and so on.

The large farmer has many alternatives which are not open to small and medium-sized farmers. In general, he is independent of the buyers which the smaller farmers must use. For temperate zone crops, it probably could be said that a farmer of the size of a good commercial family operation (sometimes called a viable operation) in the U.S. Midwest could be classified as a larger farmer in the region of Mexico discussed here. This concept would not apply for all crops.

Some rough guidelines for what might be described as a large farmer varying by type of farm enterprise are the following: For beef, about 500 hectares. This land area, if managed fairly well, would enable the stocking of about 500-600 cattle with an

Table II. Levels of market and technical restrictions, and of labor and capital requirements for various types of farm enterprise at the size of the 'medium sized' farmer, San Andres Tuxtla Region, Mexico.

<u>Enterprise</u>	<u>Market restrictions^{a/}</u>	<u>Technical restrictions^{a/}</u>	<u>Labor re- quirements for pro- duction & marketing^{b/}</u>	<u>Capital requirements^{b/}</u>
Beef	low	moderate	low	high
Corn-hog	low	moderate	moderate	moderate
Milk	severe	moderate	high	high
Bananas	moderate	moderate	moderate	moderate
Oranges	moderate	high	moderate	high
Truck crops	severe	high	high	moderate
Cash grain	low	moderate	moderate	low

a/ Severe, moderate or low

b/ High, moderate or low

annual takeoff of perhaps 250 cattle; for a corn-hog operation, about 100 hectares would be required; for a milking operation, probably about 200 milking cows would be required for an operation classifiable as a large farm. It is doubtful if these could be maintained on less than 300 hectares. Even so a farm that small would require considerable degree of specialization to dairy, although the cattle probably would be a dual-purpose type; for truck crops, something like 20 hectares; for cash grain, perhaps 50 hectares would be required; for bananas and oranges, probably 50 hectares each would be required.

It was stated above that some enterprises, owing to market limitations, would not be open at all for practical purposes except to large farmers. In the San Andres Tuxtla region, tobacco, sugar and pineapple can be grown only under plantation conditions if the farmer is to find a market for his production. Thus, something on the order of 1000 hectares for tobacco, 5000 for sugar, and perhaps 2000 for pineapple would be required.

Some description of the alternatives that would be open to the large farmer in each of the above enterprises can not be given. With 500 hectares specialized to beef production, the rancher can differentiate the quality of the animal, carry on some scientific breeding programs, and finish some of his cattle by grass. He probably will have animals in large lots of various qualities to market and he can ship a truckload or even a carload by train to any point he desires. He can integrate with the packer by ownership or by contract. Much the same could be said for the large corn-hog farmer, except that less acreage would be required.

With 20 hectares of truck crops he could have a truckload of tomatoes, for example, available at any one time, or any other specialty. These, again, could be taken directly to the big wholesale merchants around the large cities and he might even own his own wholesale stall at such a place. With 50 hectares of bananas or oranges, a farmer certainly would attract truckers from other regions of Mexico. He probably could afford some sort

of small country packing operation. Certainly he would have enough to haul to the Mexico City market and sell directly into wholesale channels there. With some items that are in demand at certain seasons in the United States, he might belong to an export association. For cash grain, a large operator can sell directly to the government or to large industrial users; he probably could integrate by owning stock in a feed mill, a flour mill, or a rice mill. It is important to restate that the farmer--to produce good quality of product and market it-- must be much more nearly self-sufficient than he would have to be in a more highly-developed country where the external economies are more widely available both in production and transportation and among marketing agencies. A farmer with 200 milking cows with fairly good herd management practices probably could ship a tank truckload of milk to a large city bottling plant or to a condensary. He also would have the alternative of integrating into a manufacturing operation either by ownership or by contract.

It would be desirable to quantify sales returns to farmers based on size of enterprise. However, to express sales returns only in terms of per unit of product fails to include the most important economic principle, which is total returns. A large producer per unit of product frequently will receive, say 20 percent to 40 percent more than smaller producers. Much of this higher price is for superior quality. The rest of the

higher price comes from selling through more efficient channels, which perform necessary marketing functions at lower cost in addition to exploiting consumer outlets which have most of the purchasing power. These more efficient channels can afford to pay higher farm prices and would bid for the largest lots and best quality, thus tending to pass their cost savings back to farmers.

As to the principle of total returns, it is most important to consider that nearly all marketing functions require many times the scale for efficiency as is required for farm production. Nearly all marketing operations are more capital intensive than farming if done efficiently. An example will help clarify the total returns principle. A Mexican dairy farmer might produce and peddle from house-to-house the milk from four cows (if they were heavy producers), thus receiving the full consumer price. On the other hand, if he sold his milk at the farm gate he might produce milk from 40 cows, receiving perhaps 50 percent of the consumer price. His total returns would be five times as great in the latter instance as in the former. Therefore, even in those rare instances where the farmer gets as great a consumer price as an efficient marketing agent might get, his total returns are only a small fraction of what he might get if he had the alternative of an efficient marketing agent.

Policy Alternatives

One product of this research is that it suggests how and why the small farmer is disadvantaged in marketing and so for this and other reasons is not drawn into the mainstream of economic growth and development. These are some dimensions of the barriers keeping him there that must be breached before he can make much change. Now, what can be done to draw the small scale farmer more into the mainstream?

The Mexican land reform program established the ejidal system after breaking up most of the great feudal estates. A major proportion of the small holdings are now the ejidos. One development problem in Mexican agriculture is making the ejidos into viable units which will not forever be on a subsistence level, producing, consuming or selling chiefly a little grain or beans. Not only must they be able to organize so as to sell their surpluses of these crude basic foodstuffs to better advantage, but more importantly they must be able to obtain more land and capital resources to produce and market perishable crops and animal products that are in increasing demand and/or enable them to use family labor more productively. This means there must be a path or "ladder" to more land and capital resources, in amounts ranging up to 25 or 30 hectares as a minimum depending on the enterprise (see Table II). Then they will be small commercial farmers (called medium size farmers in this report) that will attract buyers and thus have alternative market outlets.

Meanwhile, policy steps could be taken to aid them in the process of growth including more efficient marketing of such products as they have. These various policy steps to help small farmers might include the following:

- I. Strengthened government activity. Examples are: (a) Assist farmers to acquire more land proportionate to the kinds of enterprise they can undertake; (b) Further develop supervised credit for small farmers, with low equity loans; (c) Buy corn and beans of any moisture content at support prices and then dry it in government owned facilities; a small moisture and other quality discount may be in order. This is what is done by the private buyers. (d) Consider the terms of private traders that serve to attract small farmers to them in preference to government buyers; This could mean a variety of improved services by government buyers. (e) Develop extension programs with small country mercantile stores to teach them how to stock things needed by small farmers and how to advise small farmers on use of fertilizers, pesticides, and herbicides; These country stores could also advise farmers on how best to prepare their products for market. (f) Link government grades and standards and market information together with administrative machinery so that buying does not have to be done by personal inspection. This would further expand trade areas. (g) Since incomes are extremely low in rural Mexico, there is little effective demand in such places to give incentive for commercial

development. This suggests that Mexico should consider some sort of minimum income plan. An effective program of this sort would help free the small farmer from what is sometimes called the "bondage" of the middleman since he often has depended on his buyers for consumption credit.

II. Development of cooperatives and their use in performing marketing functions for small farmers. This is not a government activity though some public assistance is needed in form of enabling legislation, credit and advisory services. Numerous opportunities to improve marketing by small farmers may be observed, since almost nothing is done cooperatively. For example, in the ejidal communities, small gasoline powered machines cooperatively owned could shell corn and thresh beans or rice. Trucks cooperatively owned could assemble products and haul to market outlets. Small community canning plants for home consumption have been observed in other parts of the world and should be a practical cooperative activity. It is possible that some types of primary agricultural processing plants could be operated cooperatively in this part of Mexico.

Such plants by furnishing outlets, supplies and advice could encourage the further growth and development of the small farmer. For example, small butter and cheese factories could help develop dairying. Small feed mills, fresh fruit and vegetable packing plants and such can be envisioned to help develop animal and perishable crop production. Cooperation has not

solved all problems expected of it in developing countries, partly because the principles of cooperation and methods of accumulating capital that have worked well in West Europe and the U.S. are not necessarily the best ones for developing countries. Further work in applying cooperation could be fruitful, perhaps coupled with a system of government grants as used in some countries to encourage industries needed for regional or national economic development.