

AN ECONOMIC ANALYSIS OF LAND TITLING IN HONDURAS

Janelle B. Montaner Larson

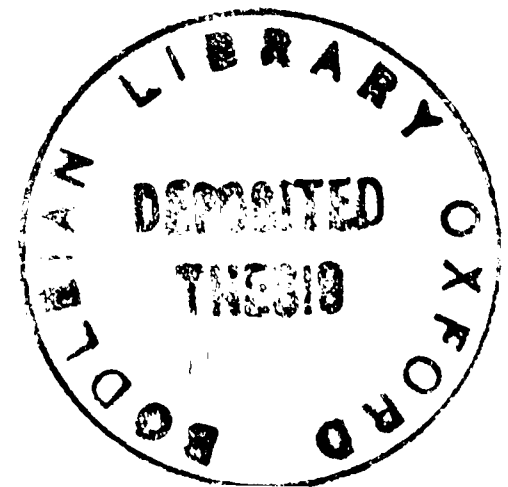
Submitted for the degree of Doctorate of Philosophy

University of Oxford

Agricultural Economics
Queen Elizabeth House
International Development Centre

Worcester College

Hilary Term, 1995



ABSTRACT

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In 1982 the governments of Honduras and the United States signed a contract that established the *Proyecto de Titulación de Tierras*, or land titling project. This project was initiated primarily to provide titles to small coffee farmers on State-owned land. Among the expected consequences of the project were increased access to resources, especially credit, for small farmers and increased on-farm investment due to this access to credit and increased security. It was hoped that a greater use of credit and investment would increase farm production and therefore the income and well-being of the farmers involved. In this dissertation, the land titling project is placed within the context of the history of agrarian reform in Honduras.

The titling project called for a baseline study and final evaluation. These were carried out in 1983 and 1988, respectively. The author was able to obtain these data and re-interview the same farmers in 1993. These farmers are from two regions, one of which was titled and another which was not. The interviews gathered data on production, credit, use of inputs, investments, income and general socio-economic indicators. These data are used to determine the extent to which the goals of the titling project have been met.

A stochastic frontier production function is used to estimate farm-level technical efficiency. Following this, these technical efficiency scores are regressed on various factors such as education, credit and technical assistance to estimate their possible effects on technical efficiency. Finally, simultaneous equations are used to estimate the relationships among these variables. In general, ten years after the start of the project, the original goals have not been achieved. This analysis found that titling does not affect technical efficiency, access to credit, or the use of inputs. Education and technical assistance are the two factors that are consistently the most significant in meeting the project's stated goals. This analysis suggests that basic education and technical assistance, rather than expensive land titling projects, should be promoted to enhance access to credit, the use of inputs and increased technical efficiency.

ACKNOWLEDGEMENTS

I would like to gratefully acknowledge the assistance of many people, without whom the completion of this dissertation would have been difficult. My supervisors, Dr. Godfrey J. Tyler and Dr. Theodosios Palaskas, have been very supportive and have given invaluable advice. Guisepe Mazzarino helped guide me through the computer applications of the statistical models.

While in Honduras I received a great deal of assistance from Guillermo Alvarado, Vincent Cusumano, and Emil Falk at USAID and from Ramon Lopez at INA. Hugo Noé Pino and Andy Thorpe from the University of Honduras were also quite helpful, as was Jolyne Melmed-Sanjak, of the State University of New York.

I of course must acknowledge those who helped me interview the farmers and especially the interviewees themselves. Without their cooperation, this study would have been impossible. I would also like to thank the Mendoza family, with whom I lived in Tegucigalpa. They graciously welcomed me into their home and made me a part of their family.

From the Land Tenure Center at the University of Wisconsin, I would like to thank David Stanfield, Malcolm Childress and Mitch Seligson for sharing the previous data with me.

Finally, I would like to thank the Rhodes Trust for funding my studies in Oxford and supporting my fieldwork in Honduras, and the Carlos de Sola Wright Memorial Fund for also supporting my research in Honduras.

DEDICATION

I would like to dedicate this dissertation to three generations of my family: to my parents, Nancy and Delbert Larson, for giving me 'roots and wings'; to my husband, Luis, for being so supportive of me while I was researching and writing; and to my son, Andrés, for patiently (usually) spending the first few months of his life by my side as I finished.

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CHAPTER ONE

INTRODUCTION

Land titling, the formal registration of land that had previously been used without formal title, is a policy that has been implemented throughout the developing world. As insecurity of tenure is seen to be a significant constraint to development, titling is usually intended to facilitate access to formal credit and encourage investment in the land, thereby increasing farm productivity and production, in addition to stimulating and strengthening land markets. As the beneficiaries of titling are often among the poorest in the countries concerned, the achievement of these goals would be important. Land titling is currently a popular policy; it is included among the goals of development agencies such as the United States Agency for International Development and the World Bank as promoting development of the private sector. Although within a different context, state farms in the former Soviet Union and Eastern Europe are also being broken up and titled in the names of individuals.

In spite of the significance and wide-spread use of titling as a means to encourage investment and the use of credit, there has been relatively little research on its effectiveness. Although there have been a number of cross-sectional and retrospective studies of land titling (see chapter two), to my knowledge there has been only one previous 'before and after' study of land titling, that of the land titling project in Honduras. This was carried out only five years after the start of the project, possibly too early for any changes to have been noticed.

Although local cultural, historic and economic factors always have to be taken into consideration when extrapolating results of policies from one country to another, this is especially true when dealing with issues that affect land tenure. As explained in chapters two and three, patterns of land ownership and use have been, and still are, very significant in determining a country's socio-economic structure, and have roots far in the historical past. That said, findings on the effectiveness of land titling in Honduras could serve as a general guide as to what the limitations and possibilities for titling might be in other parts of Central America, and, where conditions are comparable, in the rest of the developing world. With limited resources available, it is essential that development policies set the right priorities in funding projects that are most likely to be effective.

1. Background/overview

Honduras is a poor country, situated in the middle of Central America. The most recent Human Development Report (1994) ranks Honduras 115th out of 173 countries, the second lowest ranking in the Western Hemisphere (see chapter five). It is still greatly dependent on agriculture as a source of employment, GDP and foreign exchange, and coffee is one of the most important agricultural commodities, generating, in 1992, 18 per cent of the value of the country's exports. Unlike in most Central American countries, coffee production in Honduras is concentrated in the hands of small and medium producers, living in remote areas with little access to services. Nearly 90 per cent of all coffee producers have less than seven hectares in coffee production, and only 15 per cent of coffee producers' homes have electricity (see chapter five).

Also unlike its Central American neighbours, Honduras has maintained *ejidal*, or community, and national lands (see chapter three). Although large private land grants have been made since the conquest, because of limited commercial agricultural development, agricultural laws and policies have always attempted to reserve a significant proportion of the land for *campesinos* (small farmers). *Ejidal* land was owned by the community, but plots were granted to individual families for their use. Over time, these 'owners' gradually developed nearly-full ownership rights and a market in *ejidal* land developed. Although legally only the improvements on the land and the rights to the use of the land were sold, this subtle distinction is not usually recognised in the countryside and the holders of these rights are generally considered to be the lands' owners. A similar situation developed on national land (land that had never been granted to individuals or communities) where land that was claimed and cleared essentially came to be considered privately-owned land to those using it and their communities, although these rights were not recognised by the State. This led to a large proportion of farmers operating under insecure tenure. In 1980 it was estimated that 75 per cent of Honduran farmers lacked full, legal title to the land they were working. These farms were still bought and sold through an informal or customary market, rather than through formal market mechanisms. This informal market was sufficient for transfers within the community, but it presented difficulties for transfers to purchasers outside the community and for bank mortgages.

In 1982 the governments of Honduras and the United States signed a contract that established the *Proyecto de Titulación de Tierras* (PTT), or land titling project. This project was initiated primarily to provide titles to small coffee farmers on national or

ejidal land, to enable them to receive credit to combat the then widespread disease of coffee rust. Among the expected consequences of the project were increased access to resources, especially credit, for small farmers; improved opportunities to acquire land in the market place and increased on-farm investment due to access to credit and increased security.

II. Outline of Thesis

The second chapter of the thesis reviews the literature on the importance of land tenure in determining social and economic status as well as in development, and places land titling within the evolution of ideas about the means to enhance the access of the poor to land, from agrarian reform to market-based techniques. The significance of secure property rights in land is also explored. This chapter then reviews evaluations of land titling projects in Africa, Thailand and Latin America.

Chapter three gives a brief history of land ownership and the laws affecting agriculture and the use and ownership of land in Honduras, from colonial times to the present. Throughout these nearly 500 years, community and national lands have been maintained, while large private estates have also been established. However, since the early 1980s, the emphasis of Honduran agricultural policy has been to promote the modernisation of agriculture.

The fourth chapter provides more background to the *Proyecto de Titulación de Tierras* by explaining the categories of land tenancy in Honduras and reviewing the legislation affecting public land. It also sets out the goals and objectives of the

project, both technical and socio-economic, and shows to what extent the technical goals were reached. Finally, it explains how titling is affected by the 1992 Agricultural Modernisation and Development Law.

The fifth chapter discusses current socio-economic conditions in Honduras and the importance of coffee in the national economy. In addition, the historical development, land distribution and types of tenancy of the regions in the study, Santa Bárbara, (which was part of the titling project) and Ocotepeque, (which was not), are explored. These departments are located in the north-western and western parts of the country, respectively.

The survey methodology and descriptive statistics are given in chapter six. The titling project called for a baseline study and final evaluation. These were carried out in 1983 and 1988, respectively. I was able to obtain these data and re-interview the same farmers in 1993. The interviews gathered data on production, credit, use of inputs, investments, income and general socio-economic indicators. Most of the farmers interviewed have small farms, where they produce coffee, often maize and sometimes beans and other crops.

In chapter seven, these data are analyzed to determine to what extent the goals of titling have been met. A stochastic frontier production function is used to estimate farm-level technical efficiency. The score of technical efficiency is regressed on factors expected to affect efficiency, such as the farmer's level of formal education, technical assistance and the use of credit. Finally, relationships between these factors

are taken into consideration with a set of simultaneous equations. In addition, the effect of titling on the use of credit, on-farm investments, use of inputs and land sales is explored.

This analysis, in combination with interviews of government and private sector personnel in Honduras, is discussed in chapter eight. The extent to which the PTT was successful in meeting its goals is evaluated, and policy recommendations and conclusions are drawn.

CHAPTER TWO

LITERATURE REVIEW

1. Definition and Importance of Land Tenure

The issue of land reform and the results of various land reform policies have been debated by agricultural development specialists and researchers for more than 30 years, and it is still widely recognised that the system of landholding continues to be among the most significant factors in determining social, economic and political power relations, especially in developing countries where much of the wealth is based in land and agriculture. As defined by Barraclough (1970), land tenure constitutes the legal and traditional relations between persons, groups and classes which regulate the rights to use of land, the transfer thereof and the enjoyment of its products, as well as the duties that go with these rights.

Mellor pointed out in 1966 that "...the system of land tenure in predominantly agricultural communities determines the social and political status as well as the economic power of a large proportion of the population" (Mellor 1966:248). In 1970 Barraclough concurred that "land tenure relationships...tend to coincide with relationships of economic, social and political power" (Barraclough 1970:217). In the same year Stavenhagen (1970) noted that the distribution of property and usufruct rights to land influence the conditions of economic and social relations between different types of landowners and between owners and labourers. Offer in 1981 stated that "the arrangements which govern the allocation of land to particular people (and people to particular parcels of land) are still among the most potent determinants

of the character of social relations, economic activity and political power" (Offer 1981:1). It seems little has changed, as Christodoulou stated in 1990 (Christodoulou 1990:1):

"Land is at the heart of agrarian conflict and reform and is the pivot of power. More precisely, the problem is one of human or social relations in respect to control and use of land and access to the accruing benefits. The land system is a network of these relations in an institutionalized form."

Dorner emphasised the importance of tenure to political systems (Dorner 1971:xvii):

"In rural areas land ownership or other secure forms of tenure which assure the farmer of some control over the returns from his labour and the land he works is the real and practically the only means of participation in the political and economic life of the country. This is the access route to economic and political citizenship and to a share in the sovereign power of the nation state."

Moore also stated, "The distribution of land and the relation of landholders to the political power structure are critical determinants of both the rate at which a nation modernizes and the political system through which modernization occurs."¹

Griffin (1976) noted that the distribution of income in the agricultural sector and the standard of living of the rural population are affected by the degree of land concentration. Ghose (1983) concurred, stating that the system of land tenure affects both the relative and absolute well-being of the rural population. He stated that the pattern of land ownership determines how land and labour are combined for production, which affects both the quantity produced and its distribution.

¹ Barrington Moore, quoted in Olson (1974:2).

II. Historical Discussion of Land Tenure²

"When the 'sacredness of property' is talked of, it should always be remembered, that any sacredness does not belong in the same degree to landed property. No man made the land. It is the original inheritance of the whole species. Its appropriation is wholly a question of general expediency. When private property in land is not expedient, it is unjust."³

"The first man who, having enclosed a piece of ground, bethought himself of saying 'This is mine,' and found people simple enough to believe him, was the real founder of civil society."⁴

Because it has a basic role in production and the satisfaction of human needs, land has long been considered a gift from nature, God or the State. To appropriate land for private gain at the expense of others is then considered 'wrong' or 'unnatural' (Christodoulou 1990). Rousseau (1913:192) stated, "...the fruits of the earth belong to us all, and the earth itself to nobody." This has been advocated again recently by Liberation Theologians in Latin America. Even Winston Churchill considered land to be unique among forms of property.

"The immemorial custom practically of every moderate State, and the conclusions of the greatest thinkers of the world, have always placed the tenure and transfer of blocks of land on a wholly different category from other property. There has always been an obvious distinction between that class of property, which is a vital interest to every human being, and which is limited in extent, and other kinds of property."⁵

² This section relies much upon the work of Currie (1981).

³ John Stuart Mill Principles of Political Economy (1886), quoted in Currie (1981:1).

⁴ Jean-Jacques Rousseau "A Discourse on the Origins of Inequality" in The Social Contract and Discourses p. 192 translated by Cole (1913).

⁵ Winston Churchill in the House of Commons, 3 May 1909, in Parliamentary Debates, p. 844.

The physiocrats of mid- to late-eighteenth century France believed that agriculture alone was capable of creating wealth. They emphasised the importance of private land ownership; without security of ownership, no one would cultivate or improve the land. The proprietor, rather than the tenant, received the net profit, but it was assumed he earned it through such tasks as clearing and preparing the land and building infrastructure. It was difficult to calculate what this 'just' return should be. Because only agriculture created surplus, physiocrats believed the taxation of rent should meet all a government's fiscal needs. The physiocrats envisioned large farms with hired workers, and they also influenced the ideas of Smith, Ricardo and Marx.

Classical economists saw three socio-economic groups composed of landowners, capitalist tenant farmers and landless labourers with the respective returns of rent, profit and wages. Unlike the physiocrats, they did not believe that agriculture was the only productive economic pursuit. Classical economists determined the nature of rent to be the surplus accruing to landlords after deduction of wages, a return to capital and a 'normal profit' for farmers. Ricardo's theory of rent, developed in 1815, defined rent as "...the difference between the return made to the more productive portions, and that which is made to the least productive portion of capital employed upon the land."⁶ Under this definition, the price of agricultural commodities and inputs determines the rent and not vice versa. Clark (1973) concurred, noting that land has value because it can earn a rent, rather than the opposite assumption that rent must be charged because of the purchase price of land.

⁶ James Mill, quoted in Currie (1981:16).

Ricardo and Smith had different attitudes toward landlords. Smith stated that landlords "reap where they never sowed" by charging rent for unimproved land or increasing rent on improvements financed by the tenants themselves. However, he was not hostile to landlords, as he saw their interests as intertwined with those of society. Ricardo believed that landowners benefit from economic growth, but that they also may have interests that conflict with those of general society, such as on the issue of free trade.

The classical economists generally agreed that large estates with serf or slave labour were detrimental to the progress of agriculture. As is still argued against owners of *haciendas* (large, extensive estates) in Latin America today, they stated that such owners had no inclination, ability or time to invest in their farms, while serfs or slaves had little personal incentive to increase production. Tenancy was an improvement, but was still not efficient because there was no incentive for tenants to invest or to improve their technology. Classical economists considered fixed-rent tenancies to be preferable to sharecropping, and primarily favoured owner-operators and small proprietors.

Neoclassical economists treated land as just another input, and Marx did not distinguish between ownership of land and capital. According to Scitovsky, "There is no logical reason for treating land as a separate factor because, from the economist's point of view, it is similar in all essentials to produced factors."⁷ Neoclassical economists generally shifted from concerns of growth and distribution

⁷ T. Scitovsky, quoted in Currie (1981:26).

to exchanges and allocations of resources. This change in focus was primarily brought about because land ownership in developed countries was of less significance.

III. Review of Current Literature on Land Tenancy Policies

'Land reform' or 'agrarian reform' has been defined to mean everything from colonisation, to land confiscation and redistribution, to improvements in agricultural technology. Lipton (1974) defines land reform as a compulsory take-over of land usually by the State, from the largest landowners with partial compensation, and "the farming of that land in such a way as to spread the benefits of the man-land relationships more widely than before the takeover."⁸ He states,

"Land reform...is by definition an equalizing policy, at least in intention. It may also foment growth, but its primary motivation is to reduce poverty by reducing inequality, though not necessarily through helping the very poorest, or all the poor."⁹

Colonisation schemes and reform of tenure, including titling, do not qualify as reform under his definition because they do not challenge the rural power structure that is based in the unequal distribution of land. Sometimes development planners attempt to reduce the significance of land by injecting capital into agriculture through technical assistance or credit programmes. Lipton does not include this as reform either. Others advocate only considering 'integral reform' that includes supplies of other services such as credit, inputs and marketing to be true reform. This, however, can be used as an excuse to postpone reform indefinitely as the necessary resources are never available (Lipton 1974).

⁸ Lipton, quoted in Lehmann (1974:270).

⁹ *ibid* p. 270.

Raup (1967) cites the definition used by the United Nations:

"Land reform is treated more broadly as equivalent to agrarian reform or agrarian institutional reform. It clearly includes changes in land tenure... But it also includes the establishment or strengthening of essential governmental, cooperative or commercial agencies or services relating to agricultural credit, supply, marketing, extension, and research. So conceived, the ideal land reform programme is an integrated programme of measures designed to eliminate obstacles to economic and social development arising out of defects in the agrarian structure."¹⁰

It is generally agreed (Raup 1967; Lipton 1974) that the goals of equity cannot be met without changes in the basic redistribution of resources and political power, which will not be the result without changes in the skewed landownership patterns of Latin America. This author prefers to use land reform and agrarian reform interchangeably and defines it as a redistribution of land with the primary object of greater equity, noting that supporting services should be concomitant to the reform for it to be viable. Land titling, the creation of land banks and other market interventions intended to increase the ability of poor people to buy land will not be included as 'land reform.'

Dorner (1971) has pointed out that a high concentration of land ownership, increasing rural-urban migration, a high but unrealised productive capacity with an unfulfilled potential to provide employment for rural people, a highly-skewed income distribution and great differences between the masses of rural people and the upper class in income, education and culture are all characteristic of much of Latin America today. Without agrarian reform and a redistribution of economic and political power, it

¹⁰ U.N. (1962) Department of Economic and Social Affairs, "Progress in Land Reform." Third Report. (NY 1963, IV.2) quoted by Raup (1967:268).

would be difficult to modify institutions and reach the goals of reducing mass poverty and creating a more equitable distribution of income-earning opportunities.

Dorner (1972) states that, contrary to what has been commonly practised, increased agricultural production and a more equitable distribution of the fruits of that production must be viewed as parts of the same process. He asserts that because redistribution is needed to increase production, dealing with them separately has not worked. Ghose (1983) supports this by noting that, when considering food availability, limits on production are related to the system of distribution and demand. The problem is rooted in the institutional structure and cannot be solved by simply trying to raise production.

The links between highly unequal land ownership, slowed agricultural development and rural poverty were recognised, at least in principle, by donor organisations and governments in Latin America in the 1960s. Encouraged by the Alliance for Progress, most countries in the region passed some sort of agrarian reform law in the 1960s or 1970s, although much of this reform was never carried out. Political will and ability to enact far-reaching reform were limited, and in the late 1970s and early 1980s, governments and international agencies turned to modifying market forces as a means to increase the access of the poor to land. Among these policies were land titling, land taxation and the creation of land and mortgage banks (Shearer *et al.* 1991).

IV. Rural Land Markets and Access of Poor People to Land

Binswanger and Elgin (1990) suggest that even under perfect market conditions, the market will not shift land to the landless or land poor. The market price of land should reflect the present value of its agricultural production, capitalised at the opportunity cost of capital. If the purchaser borrows money to buy the parcel at market rates, the income from the parcel will just pay the interest, so consumption and repayment of the principal would have to be financed by labour, meaning the level of consumption would be lower than if the land had not been purchased and the individual had simply worked in the labour market. In addition, the expected future appreciation of land is capitalised into the market price, driving it above the value of the flow of agricultural income. These capital gains cannot be realised without selling the land, which is infeasible for a small producer. Therefore, "the larger the expected capital gains components of land income and land price, the higher the equity required to buy land, or the higher the non-farm income required to finance consumption and mortgage payments" (Shearer *et al.* 1991:35).

The Binswanger model applies to perfect markets, but markets for land are never perfect, especially not in developing countries. The conditions required for a perfect market are (Stringer 1989):

1. a substantial number of buyers and sellers so that one individual's demand or supply will not affect prices and no single purchase will influence the price;
2. homogeneous units so that participants in the market are indifferent as to from whom they buy or to whom they sell;
3. open and equal access for buyers and sellers to information about current

transactions, including prices and bids;

4. no influence of traditional or institutional rules on the distribution of resources among the prospective buyers or on the land being sold to the highest bidder;

5. freedom of entry and exit from the market for both sellers and buyers; free movement of resources to their most efficient use, replacing inefficient resource users with efficient ones.

However, in land markets, particularly those in the developing world, one person can influence the price, the units are always heterogeneous, customary and institutional factors do influence transactions of land, and barriers to entry and exit exist. In addition, unlike capital and labour, land is fixed in location and is not reproducible.

In bimodal land ownership systems, as are found in Latin America, the market for land is divided into two sub-markets, one for large and another for small units. Generally small farmers sell land to other small farmers and large farmers sell to other large farmers, although the large-unit market controls the majority of the land and is less active than the small. Large units are usually not subdivided, reducing the amount of land within the price range of small producers. Social factors also limit the movement of land from one sub-market to the other (Dorner and Saliba 1981).

There are two competing hypotheses for the effect of an active land market on the structure of landholdings under imperfect market conditions. The first is that the market will promote a more efficient allocation of resources between small and large producers and will gradually transform the agrarian structure by transferring land to

the land poor. Due to higher utilisation of labour and lower labour costs on small farms, smaller producers will be able to outbid larger producers because of the widely-documented inverse relationship between size and land productivity (Dovring 1970; Barraclough 1970; Griffin 1976; Berry and Cline 1979; De Janvry and Sadoulet 1989; Thiesenhusen 1989). The second hypothesis is that, with multiple imperfect markets, market activation will shift resources to farms of the scale of production which are best positioned to expand because of advantages in other markets, *i.e.* capital markets.

Carter and Mesbah (1990) explain the Carter-Kalfayan model which suggests that the second hypothesis is more likely to be true. Although imperfect labour markets favour small farmers, these advantages may be outweighed by imperfect capital markets. The advantage of large farms in capital markets is brought about by several factors. First, this advantage is created by government subsidies for credit which generally flow to large producers because they have the access to information required to take advantage of these subsidies. Secondly, within the credit market, the perceived risk and relatively higher transaction costs of lending to small farms make lenders reluctant to offer credit to small producers. When the advantages of the credit market to large producers are greater than those of the labour market to small producers, increased activity in land markets could lead to increased concentration of land holdings. In addition, fixed transaction costs favour purchasers of large units of land because they increase the per unit price of land in small units, thereby providing an additional force toward increased concentration of land ownership.

V. Advantages of Property Rights in Land

One does not own property, *i.e.* land, *per se*, but rather rights to and over that property (Alchian and Demsetz 1973; Barlowe 1986; Bell 1990; Simpson 1976). This bundle of rights usually includes (within the limits of the law) the right to its use, the right to exclude others from its use and the right to offer its use to others. Barlowe notes that although these rights are exclusive, they are not absolute. When dealing with land, the bundle of rights is generally split between the public and private individuals and varies across time and countries and between various systems of land tenure. Generally, owners have the right to use, sell, trade, lease, mortgage or subdivide their land, while the rights of taxation, regulation and eminent domain¹¹ are reserved by the State. Tenure insecurity is likely to result when these rights are not clearly defined and supported by legal institutions. Government-issued land titles are meant to protect holders' rights to the land against competing claims. Titles also facilitate transfer as they show the possessor of the titled land is truly the owner and has the right to transfer this ownership to others.

Stanfield (1990:4-5) explains the two main justifications for spending public money to improve private security of ownership through granting titles. These are, first, that "private, long-term investment, and thereby overall economic development, requires secure ownership of land," and second, that "secure ownership is necessary for a fluid market in land," enabling land to move to the most efficient, productive users. Thome (1971) also notes that titling secures access to water and other resources and

¹¹ Eminent domain is the right of the state to claim land, usually with compensation, for the larger public good, such as building roads.

makes an effective land tax possible.

Titles are intended to give their holders the tenure security and access to credit required to make on-farm investments. Land has long been used as valuable collateral as it is immobile and relatively immune to damage. Because titles establish clear ownership, banks value them as collateral, as long as there are no social or political restrictions on foreclosure. The lack of a title lessens the value of land as collateral because the owner may not have the uncontested ability to transfer the land to the bank in case of default on a loan. Although most developing countries have informal credit markets open to untitled farmers, the interest rates are generally much higher due to greater risk.

However, Barrows and Roth (1990) are especially critical of the theory that titling increases agricultural investment through access to credit. They note (Barrows and Roth 1990:276):

"The hypothesis that registration will increase credit supply assumes an elastic supply of funds to lenders. Empirical evidence suggests that title increases the access of certain borrowers to credit, but in situations of credit rationing, title simply allows some farmers to increase use of credit while others have an exactly offsetting decrease."

Atwood (1990) also suggests that credit is limited by aggregate agricultural lending. Agriculture is often considered more risky than industry, making banks hesitant to make agricultural loans. This, combined with the fact that the costs of loans to small farmers are also disproportionately great as compared to those of large farmers, further discourages loans to small producers. Structural adjustment measures widely introduced in the late 1980s also limit the amount of agricultural credit available.

Evidence on access to credit from countries with titling projects will be discussed later in this chapter.

In addition to facilitating access to credit, titles are intended to increase landholders' sense of tenure security and therefore make them more likely to make long-term investments in the farm. If farmers are not certain that they will be able to reap the future rewards of present investment, they will be disinclined to make such investment. Investments in technology and long-term improvements are considered to be necessary for increases in agricultural productivity which benefit all of the economy, not just the producers.

Secure ownership is also required for a functioning market in land. Without clear and definite claims to the land, farmers will have difficulty transferring secure ownership rights to others, limiting land markets. Insecurity similarly reduces the market value of land because the buyer cannot be sure that a third party does not have claim to the land. In this sense, security of ownership refers not only to the present owner but also to any future owners. Atwood (1990) explains Johnson's (1972) view of how customary tenure can restrict sales. Under a system of secure property rights in land, more productive farmers buy land from less productive farmers resulting in a net gain to both. This can happen because 'farmer B,' the more productive farmer, expects to gain more production from the land than 'farmer A,' the less productive farmer, and is therefore willing to pay more for it than 'farmer A' thinks it is worth. The risk and transaction costs of customary transfers reduce the return expected by 'farmer B' who naturally reduces his or her offer price, possibly to the point that the

sale does not take place. The results are a production loss and a backward shift in the demand curve for land with lower prices and fewer sales.

Carter *et al.* (1994) investigate the possibility that titles would interact with other factors, such as farm size, access to markets (capital and other commercial markets) and farmer characteristics, in affecting resource allocation and productivity, and therefore that titling would affect some farmers more than others. They develop a hypothetical relationship between market access and the expected present value of an investment on that farm which shows the present value of the investment to be higher on farms with greater market access. For example, an irrigation system would have a higher value for a farmer who could obtain the capital needed to buy additional seeds and fertilizer and who could sell the additional produce generated at favourable prices than it would for a farmer who was less favourably placed. Assuming titling enhances tenure security and or credit supply, returns to land titles are likely to be greater for farms better situated in terms of market access or other productivity-enhancing characteristics (Carter *et al.* 1994).

VI. Various Land Titling Projects

Most of the published research in land titling or land registration projects comes from Africa (Atwood 1990; Barrows and Roth 1990; Coldham 1979; Haugerud 1983; Hunter and Mabbs-Zeno 1986; Migot-Adholla *et al.* 1991). Feder and others (Feder 1987; Feder and Onchan 1987 and 1989; Feder *et al.* 1988; Feder and Feeny 1991) contribute work on Thailand, Friedman *et al.* (1988) on the Philippines, Seligson (1982), and Saenz and Knight (1971) on Costa Rica, and Stanfield (1990) on Latin

America and the Caribbean. Previous research on Honduras includes that of Stanfield *et al.* (1990), Nesman and Seligson (1988) and Seligson and Nesman (1989).

Feder's work, alone and with others, has found the most positive results of titling. The research involved a comparison of Thai farmers squatting on public forest reserve land with farmers producing on their privately owned land. They found that titled farmers had greater investment, more improvements on the land, more intensive use of variable inputs, and higher output per unit of land than farmers on similar untitled plots. However, these effects were not found in the region with active informal credit markets. The most important benefit of the titles was in providing access to formal credit, rather than reducing the risk of eviction, which was also negligible for untitled farmers. There is, however, no indication that total lending and therefore total investment has increased. It is possible, if not likely, that titling has diverted rather than increased flows of credit (Roth *et al.* 1989). Friedman *et al.* (1988), when evaluating housing values in Manila, found that formal titles increase the rental value of property by 15 per cent and the sale value by 25 per cent. These increases in value are due to a decreased risk of eviction.

In 1971 Saenz and Knight carried out a cross-sectional study of titling in Costa Rica for the U.S. Agency for International Development (USAID), looking at varying degrees of tenure security and the impact of titles in areas with few services. They found that to the occupants, the value of having a title does not consist in extending their 'ownership' but rather in obtaining better legal protection for their existing ownership. However, they did find an association between production and security

of tenure, with the relationship strongest in areas with good roads, credit and technical assistance. They state (Saenz and Knight 1971:34-35, part IV): "the provision of these services is important, as we have already shown that the provision of tenure security in a situation where these other factors are absent does not necessarily result in an increase in farm production."

From his research in Costa Rica after the implementation of a titling project, Seligson (1982) determined that titling projects alone were ineffective if not coordinated with credit and technical assistance programmes. Although 32 per cent of the beneficiaries he interviewed had received credit after titling compared with only 18 per cent before, total lending to small farmers over the same period declined, meaning there was less total investment. Large farms also benefited more, as the average size of a farm that had received credit was 19.0 hectares, while the average size of the farms without credit was 7.3 hectares. Farmers did receive more technical assistance from the government after titling, although rates were still low with only 9 per cent of producers benefiting. As with loans, farmers with larger parcels or those who had owned their land for a longer period of time had an advantage. Interestingly, 66.3 per cent of farmers stated their income had improved since titling. For some producers, titling has resulted in greater access to credit and technical assistance, but for the majority of farmers it has made little difference.

In a review of land titling projects in Honduras, St. Lucia, El Salvador and Ecuador, Stanfield, (1990) made several findings that contradicted assumptions about titling. He found that the effectiveness of customary means of protecting ownership rights has

been underestimated while the advantage of formal means has been overestimated. Customary systems are inexpensive, close to the people and socially acceptable; the opposite is often true of formal means. The risk of peasants losing land has also probably been exaggerated. Stanfield also notes several caveats when designing a land titling project. First, the factors influencing investment and production are multiple and inter-related. Input and output markets, basic infrastructure, and the availability of credit and technical assistance are critically important to investment and improvement of long-term productivity. Second, the issuance of titles may have unintended effects within a bimodal social structure where patronage systems are strong and land and labour markets are weak. Legal titles will not alter the social standing or incentives of a weak and dependent segment of the population.

The evaluation of the titling project in Honduras (Stanfield *et al.* 1990; Nesman and Seligson 1988; Seligson and Nesman 1989), is the only longitudinal study of titling to date. A baseline study was carried out in 1983, at the start of the titling project, and final interviews were conducted in 1988 and 1989. The two experimental (titled) regions (Santa Bárbara and Comayagua) were matched with two control (untitled) regions (Ocotepeque and Yoro). It was found that titling did seem to enhance access to credit, as use of credit increased from 17.8 per cent to 24.6 per cent of farms in the experimental area, while it increased only slightly in the control area from 21.9 to 22.3 per cent (Stanfield *et al.* 1990). It was also found that the changes in investment and productivity in the two regions were similar, indicating no advantage to titling. Farmers on titled lands did, however, believe that the value of their land had increased more than did farmers with untitled land, showing that titles may be

influencing land values. The rate of sales from 1983 to 1988 was similar in both regions (16.6 per cent and 22.3 per cent for the experimental and control regions of Santa Bárbara and Ocoatepeque, respectively), but it should be noted that only 17 per cent of the transfers in the titled region of Santa Bárbara were legally registered. This means that with an annual sale rate of roughly three percent, 30 per cent of the farms would have been sold within ten years. If 83 per cent of these were not registered, it would mean that ten years after the project started nearly 25 per cent of the titles could be invalid.

The research on land registration programmes in Africa concentrates on the ability of customary land tenure systems to adapt to changing economic and demographic conditions. It has been believed that traditional systems do not provide the producer with enough security to ensure investment and productive use of the land, but most recent studies (Hunter and Mabbs-Zeno 1986; Migot-Adholla *et al.* 1991) indicate that tenure arrangements evolve to provide stronger exclusion and transfer rights as the population increases and agriculture becomes commercialised. Atwood (1990) points out that titling is an expensive process that often does not produce the intended results. A serious problem with titling in the African context is that secondary tenure rights are usually eliminated. Secondary rights enable a member of the community to use the land for other purposes, *i.e.* grazing or wood gathering, when it is fallow. This results in a concentration of rights and resources in fewer hands. Atwood also concurs with Stanfield that informal practices are often cheaper and more reliable.

Kenya provides a good example of titling and has been researched the most because

it had the earliest land registration and consolidation project, starting in the 1950s. The goals of the titling programme there were to end boundary disputes, to make titles secure, to develop a safe, simple and cheap system of conveyancing, to encourage investment of labour and profits and to increase access to credit (Coldham 1979). To this list Haugerud (1983) adds the political goal of creating a stable middle class and the economic goal of expanding cash crop production. It was also assumed that more efficient farmers would buy out small, uneconomic farms and that the newly landless would work for other farmers or in industry. In Kenya no relationship between titling and long-term investment has been found (Barrows and Roth 1990), and much of the land registry is out of date. Coldham (1979) observed that 30 per cent of land sold in Kadianga from 1966 to 1973 and 15 per cent of land sold in Gathinja (two regions of Kenya) were not registered. The inheritance of land was registered at an even lower rate. In the same two regions and time periods Coldham found that only 3.4 per cent and 21.4 per cent, respectively, of successions were registered. In Embu 20 years after the start of land registration, Haugerud (1983) found that approximately 20 per cent of the households lived on land registered in the name of no one living in the household. In three-fifths of these cases, the registered owner was deceased. These data show that any benefits from registration are quickly disappearing through unregistered sales and transfers of land.

Migot-Adholla and others (1991) conducted a study of 10 regions in three African countries (Ghana, Rwanda and Kenya), looking at the effect of titling on access to credit, land improvement and productivity. They found that in nine of the ten

regions, only 13 per cent of the farmers received formal credit in 1987 or 1988¹². In Ghana and Rwanda, all formal loans were short term, none for more than one year. It is therefore not surprising that they found a weak relationship between land rights and the use of formal credit. The low rate of loans in Kenya also makes it seem unlikely that land titles alone will create active rural credit markets. The data for the relationship between titles and land improvements were mixed, making it impossible for them to make any general statements about the effect of secure land rights on investment in the land. Looking at farm-level production of selected crops, they found no relationship between land rights and productivity. Migot-Adholla and others concluded that titling is worthwhile in Sub Saharan Africa only if three conditions are met: first, if indigenous tenure systems are absent or weak, such as in settlement areas or in times of political upheaval; second, if there is a high incidence of land and border disputes, as may be common if there is a great deal of migration, and third, if major project interventions, such as irrigation or tree projects, that require privatisation or may weaken the rights of vulnerable groups are planned. They note that all the study regions are characterised by poor physical infrastructure, and a lack of effective credit and market institutions. They also have poorly developed factor markets for land, labour and capital, and the farmers use basic agricultural techniques. These conditions are not uncommon in the developing world, and titling projects carried out in these conditions are ill-fated from the start.

¹² In the tenth region, a region in Ghana, 37.4 per cent of households received formal loans.

VII. Conclusion

As this chapter has shown, tenancy of agricultural land has long been recognised as a central factor in development as well as in socio-economic relations within the country. As theories of development have evolved, theories regarding land tenancy have changed as well. With the focus on market mechanisms and the private ownership of property in the 1980s came an emphasis on similar means, including titling, to handle problems in land ownership. Because of this emphasis, land titling projects have been encouraged throughout the developing world and in Eastern Europe and the former Soviet Union. However, except for the evaluation of the land titling project in Honduras, there have been no 'before and after' studies of the effects of titling, and that study was carried out only five years after the first titles were issued -- most likely too early to detect any significant changes. The cross-sectional and retrospective studies to date have found mixed results on the effects of titling on investment, access to credit and farm productivity. Many studies concluded that titling, in the absence of complementary services such as technical assistance, credit and marketing, has little effect.

CHAPTER THREE

HISTORY OF LAND TENURE AND AGRARIAN LEGISLATION IN HONDURAS

1. From Colonisation to the Liberal Reforms (1502 to 1870)

Christopher Columbus came to Honduras on his fourth voyage, 14 August 1502. He named it 'Honduras' meaning 'depths' because of the deep waters on the Caribbean shore. Because it had no significant mineral deposits and only scattered populations of Indians to enslave, the Spanish made no attempts to settle Honduras until the 1520s, when four expeditions were competing for its control. Hernán Cortés, the Spanish *conquistador*, came from Mexico to settle the dispute.

Honduras has a long history of legislation affecting the ownership of land, starting in the colonial period. According to Stokes (1947) colonial land legislation had three main purposes: first, to grant land to the conquistadors; second, to control and regulate use of the land, and third, to protect indigenous communities and their access to land. The first law was passed 20 September 1513, by Hernán Cortés, through the Council of the Indies. This law was restated in 1523, 1525 and 1596 and regulated the division of crown land until Independence in 1821 (Stokes 1947; Zeldon 1985). There were no restrictions on the amount of land Spaniards could acquire, but the first three versions of this law required a four-year period of residence before a full title was issued. In addition, the 1525 law prohibited Spaniards from acquiring titles in a second site unless they relinquished rights to the first site or re-established residence (Stokes 1947).

As the indigenous peoples had no large empires or federations, initially they could offer little resistance to the Spaniards. However, from 1537 to 1539, there was an Indian uprising in the western highlands led by a man named Lempira or 'Lord of the Mountain.' He was slain by the Spanish during a truce, and the movement died with him. Today the national currency bears his name. According to Becerra (1987), prior to the conquest Indians lived in egalitarian communities with no private ownership of land and divided the produce of the land equally. The Spaniards in Honduras used the Indians as slave labour and claimed their land under two systems, *repartimiento* and *encomienda*. *Repartimiento* entailed apportioning land and the Indians on or near it to Spaniards. Its use declined after 1530 because of opposition of the Spanish crown and local officials (though it was not illegal until 1720), but starting in the mid 1500s, African slaves were substituted for indigenous slaves and would not receive their freedom until 1824 (Becerra 1987). After 1536 all lands granted in *repartimiento* had to be cultivated or planted to trees within three months of acquisition or the owners were threatened with losing their property rights (Stokes 1947). Under *encomienda*, individual Spaniards were given land and had the right to some labour or tribute from the Indians living on that land. Theoretically the Spaniards were also responsible for their spiritual and physical well-being, but this was often neglected. Because of a lack of manual labour, a law was passed in 1593 that required Indians to work eight hours a day, usually in the mines. It is estimated that there were 500,000 Indians in Honduras when Columbus arrived. Through hardship and disease, this number was reduced to approximately 36,000 by 1547. This loss of life is even more remarkable in the light of how few Spanish were involved -- the Spanish population in 1542 was estimated at less than 250 (Blutstein

et al. 1971).

Because of the low population, land was widely available throughout the colonial era, and land grants to *conquistadors* were made from 1513 through the early 1620s (Stokes 1947). There was little commercial agriculture, as Spaniards held land and cattle primarily for status. In addition, early *conquistadors* had little attachment to the New World, as most of them planned to return to Spain. They were therefore more interested in accumulating wealth through minerals, export crops or cheap labour rather than in contributing to the development of Honduras (MacLeod 1973).

According to Villanueva (1968:5),

"Labor exploitation and the concentration of wealth and economic and political power into a few hands was one of the most important consequences of the colonial period."

Land concentration accelerated in the late 1500s as the prospect of wealth through indigo production encouraged the Spanish to claim more land for themselves. MacLeod (1973:381) referred to the period of 1590 to 1630 as the "first great era of land occupation and title acquisition by Spaniards in Central America." This land concentration continued, as from the early 1600s to 1950, more than 85 per cent of land titles authorised were for private individuals (Durham 1979).

Nevertheless, land legislation did attempt to protect the rights of indigenous groups to land. Hernán Cortés, in a letter to the Council of the Indians in 1538, suggested that the Indians of Honduras should be allowed to retain their lands and institutions "if this did not conflict with Spanish needs" (Stokes 1947:150). A 1588 law stipulated that the allocation of lands should cause no harm or injury to the Indians.

A law passed in 1594 even called for some land to be returned to the Indians, while a 1550 law required grazing lands to be distant from Indians' fields to protect the crops (Stokes 1947). All these laws were in effect until Independence.

In 1578 the first order to examine titles was emitted from Spain. Stokes writes, "Viceroys and presidents of the *audiencias* (high courts) were empowered to check the validity of land titles in their jurisdiction and seize land held illegally" (Stokes 1947:150). This order was repeated and reinforced in 1631. The residency requirement was raised to ten years in 1646.

Honduras had little national unity during the colonial period. In fact, from 1570 to 1880 it had two administrative centres, one in Tegucigalpa and one in Comayagua. This rivalry between the cities continued until Tegucigalpa was made the permanent capital in 1880. From 1570, Honduras, with the rest of Central America, was under the authority of the Captaincy General of Guatemala. The disunity of Honduras made colonial rule more difficult -- with most of the population concentrated in Tegucigalpa and Comayagua, many villages were outside effective Spanish control (Rosenberg 1986). According to the Diocese of Comayagua, the population of Honduras in 1778 was 88,143 and in 1791 was 93,500 (Squier 1855).

Because there was no significant independence movement, Honduras's independence from Spain, gained 15 September 1821, was essentially a side effect of Mexico's independence. In 1822, the Central American countries were annexed, willingly, to Mexico. In 1823, they broke away to establish the United Province of Central

America, a federation with a weak central government and strong local autonomy. Honduras, as all of Central America, was split between the Liberal and Conservative factions. Liberals advocated greater local authority and a reduced power for the Church, while Conservatives supported a strong central government, a powerful Church and closer relations with Spain. This split eventually led to the Central American Civil War of 1826 to 1829. Francisco Morazán, a Honduran Liberal who helped found the union, was President of the Federation from 1829 to 1838. His anti-clerical laws encouraged more uprisings, and the federation broke down. Honduras was finally fully independent 26 October 1838 (Blutstein *et al.* 1971). Independence did not mean an end to instability, as between 1824 and 1876 the country had probably 82 presidents and an estimated 170 civil wars (Rosenberg 1986).

From Independence through the early 1900s, the purpose of agrarian legislation was primarily fiscal (Stokes 1947; UNAH 1961). Laws were passed which allotted parcels to individuals, converting public to private land. The funds from the sale of public lands and their titling, measuring and taxation was used to repay public debt. Although most of the land titles granted were for private holdings, land was widely available throughout the 19th century and the government continued to protect smallholders' right to land.

The first of these laws, the 'Law Over Sales of Royal Lands,' was passed 19 March 1829 by the government of Diego Vigil (Stokes 1947; Zeldon 1985) and established prices and procedures for the sale of former royal lands which then belonged to the

State. This law considered agriculture to be "one of the elemental riches of the nation" and sought to overturn colonial law by giving labourers on royal land the opportunity to buy this land. The law was met by opposition from the Church and conservatives, who were the largest landowners in this period (Zeldon 1985). Agrarian laws following this time encouraged agriculture through the stimulus of private property rights, which were granted freely or at a low cost (UNAH 1961).

Ejidors were created by the 'Regulatory Law of Lands,' passed by the government of Francisco Ferrera on 3 July 1835. *Ejidors* are community-owned lands that are farmed in individual plots, the allocation of which is handled by municipal governments. The law established *ejidos* by granting usufruct rights over land to communities; communities with fewer than 1,000 people were given one square league (or 1,743.1 hectares) and those with more than 1,500 people were given two square leagues (Zeldon 1985). For the first time, this law expressed concern for the poor who could not afford to buy land (Stokes 1947). Significantly, this law also certified the spread of *latifundia*, (large, extensive land holdings) alongside tracts of community-controlled land. It allowed illegal occupants of land to buy or rent this land and had no upper limit to the amount of land that could be purchased. In addition, foreigners were given naturalisation cards and could also benefit. The following year, the same government promoted the sale of land by *caballería*, (one *caballería* equals 45.0 hectares) with a minimum price of Lps.10 per *caballería*. It also prohibited renting of agricultural land. In 1844 the population was estimated by the Diocese of Comayagua to be 290,868, while Baily estimated it to be closer to 236,000 (Baily 1850). Squier's estimate for 1855 was 350,000 exclusive of Indians.

At this time, land was considered to have no commercial value, and was sold for the value of its improvements or less (Dunlop 1847).

A more complete statement of means of acquisition, rights, obligations and administrative procedures for *ejidal* land was issued in 1846. From 1854 to 1870 communities had to pay for *ejidal* land (Stokes 1947). The government of Santos Guardiola passed the 'Law of Support of Land' on 23 February 1856. The basic proposition of this law was to provide state support to the proprietors of land titled in the "quiet and pacific possession" of the land.

The right of prescription (claiming land) was recognized in 1872. Stokes (1947:152) notes, "Farm laborers who went into unoccupied territory and established farms and lived and worked there for three years were to be *ipso facto* owners in the eyes of the law." This guaranteed ownership, but farmers still had to apply for formal title (Stokes 1947).

II. Liberal Reforms and Family Settlements (1870 to 1961)

In the 1870s, Liberals came to power throughout Central America and brought with them sweeping reforms, promoting State involvement in the development of their economies. In Honduras they established commercial, penal and civil codes and obligatory public education. Church lands were taken over and a law was implemented to allow the expropriation of communal land to encourage the planting of commercial crops including coffee, sugar cane and cocoa (Rosenberg 1986). Elsewhere in Central America, the coffee boom led to land concentration, but this did

not carry over into Honduras. Honduras lacked the rich volcanic soils and the credit and transportation systems to facilitate coffee development, and the government was more concerned with intra-elite conflicts and the promotion of foreign silver mining interests (Ruhl 1984). In addition, Baumeister (1990a) mentions the existence of *ejidal* lands and the lack of manual labour, large tracts of high quality land and roads to transport the coffee as restrictions on the expansion of coffee in the late 19th century in Honduras. Del Cid (1977) also notes that there were few opportunities for capital accumulation to counter the lack of 'natural bounty' in Honduras.

On 29 April 1877, the government of Dr. Marco Aurelio Soto, the first Liberal reform president elected in Honduras, passed the 'Law of Agriculture.' The goal of this law was to increase agricultural production, especially export agriculture, by giving privileges to those involved in agriculture. The Liberals, influenced by the ideas of Auguste Comte, wanted to place Honduras in the world market by reforming the structure of the State, society and social relations (Instituto Nacional Agrario 1989). Large tracts of land were granted to those willing to raise coffee, sugar cane, indigo and cacao, and foreign banana companies were allowed to establish themselves on the north coast. Agriculturalists were exempt from military service, and imports of agricultural inputs were exempt from duties. The law also stated that those who, with their own money, funded an agricultural bank, would receive "better privileges" from the state. All these privileges were provided equally to foreigners (Zeldon 1985). By 1887, the population of Honduras had grown to 381,938 (Herr 1988).

These generous concessions led to the establishment of three foreign-owned banana

companies on the northern coastal lowlands. Because of poor infrastructure, malaria and the lack of urban settlements, these lands had previously been unoccupied, so the banana enclave, while increasing the degree of concentration, did not disrupt existing land ownership patterns. By 1910, 80 per cent of all banana holding were under the control of U.S. firms, and by 1914, the five largest concessionaries held a total of 416,500 hectares of land, much of it the best land in Honduras (Durham 1979). The banana industry was a catalyst to the development of urban areas and other industries within the region, enticing migrants from other parts of Honduras and El Salvador to move to the area. Eventually, bananas constituted more than 80 per cent of Honduran exports, and Honduras was briefly the largest banana producer in the world (Herr 1988).

The 'Regulation of Land,' which called for the delineation and marking of all titles authorised to date, was passed 15 May 1888 by the Liberal government of Luis Bográn. It also reinstated the authorizations of *ejidal* lands; two square leagues of land to large communities and one league to small villages. Idle lands were also sold to individuals and communities in public auctions. This regulation called for the employment of modern surveying methods and a fairer system to grant titles.

This law was modified when the government of Policarpo Bonilla, also a Liberal, passed the 'Agrarian Law' 12 March 1898. This law reduced the allocation of *ejidal* land to large and small communities to one league and one-half league, respectively. It also allowed individuals to purchase the part of *ejidal* land occupied by their home and crops (Stokes 1947). National lands with strategic importance, such as those

within eight kilometres of the sea coast, could not be purchased. The law also called for the registration of land sales in the Registro Conservador. The Civil Code of 1906 stated that all land not registered in the name of an individual belonged to the state, reclaiming the land that had been occupied without legal registration.

Agriculture was seen to be so essential to the nation's interests that the 'Agrarian Law' of 30 November 1924, passed by the government of General Vicente Tosta, was made part of the constitution. With the intent of a more just distribution of land, it gave families land in 20 hectare plots. It also included the right to acquire national land through purchase, prescription, renting and *ejidos* (UNAH 1961). Article Two stated that the State had the right to impose on private property the necessary means to reflect the general interest, public necessity and public utility. The family plots were granted free of charge and were exempt from municipal taxes (Stokes 1947). In addition, this land could not be sold and could be transferred only through inheritance. In order to claim a full title, the settlers had to build a house, have at least half of the land cultivated and had to reside on the land for ten years (Stokes 1947). Every village with at least 100 people and two schools was guaranteed *ejido* land, even if private property had to be expropriated to provide this land.

The 1926 'Code of Agricultural Procedures' established the steps required to buy or rent national land (Mejia 1944). Created by the Office of Colonisation and Immigration (foreign nationals were eligible), the object was to populate and develop national land. It also prohibited the sale of land within 40 kilometres of national borders.

Article One of the Code of Agricultural Procedures stated that anyone had the right to claim national land in full dominion or to solicit it for renting. Title two dealt with the reservation of lands for future family lots. Article 30 outlined the criteria to be used if a plot of land had more than one claimant. Priority was given to occupants, followed by those with the least resources, then those with the greatest number of dependents and finally those who solicited the land first (Mejia 1944). This again revealed a measure of social concern in the agrarian legislation and recognised a degree of property rights for occupants.

President Carías's executive decree of 1935 inaugurated his rural immigration and colonisation plan to improve agriculture (Stokes 1947). This provided immigrant families with lots of 50 acres as well as tools, animals, seeds and other supplies from the government (Stokes 1947).

The 'Agrarian Law' of 3 April 1936, passed by the government of General Tiburcio Carías Andino, slightly modified the 1924 law (Zeldon 1985). It maintained access to national land through purchase, prescription, allocation of family lots, renting and *ejidos*. It also liberalised the sale of national lands (Stokes 1947). Several colonisation projects were developed in various regions of the country. Article Two of Title One reclaimed land that had not been titled, stating that those lands situated within the national boundaries that had not been legally titled were State lands. Title Two, Chapter One, Article Three stated, "National lands may be acquired in full dominion by purchase or donation for family lots. The State may also concede lands to towns and villages for *ejidos*, and rent it to individuals." Chapter Two, Article Six

set the price of land at Lps.20 per hectare for first class land, Lps.15 per hectare for second class land, Lps.10 per hectare for third class land and Lps.5 per hectare for fourth class land. The buyer also had to pay a titling tax of two Lempiras per hectare for first and second class land and one Lempira per hectare of other lands (Mejia 1944).

To establish colonisation programmes, Chapter Three, Article Ten stated, "In order to create the agricultural patrimony, the State will give ownership of lots of land to Honduran families, in conformity with the procedures determined by the Code of Agricultural Procedures." This chapter enabled heads of Honduran families to receive twenty hectares free of charge. Significantly, neither the land nor its improvements could be sold or transferred except for inheritance. If the owner died without heirs, ownership of the land reverted to the State. Article 14 defined the head of a family as a married man, with or without legitimate children; a widow or widower with children and a single person with dependents. Article 15 outlined the requirements for the land to be converted to full dominion. As under the 1924 law, the land had to be held for ten years; at least half of the parcel had to be cultivated or one-fourth planted in permanent crops, and a home had to be constructed. Article 17 stated "The costs of measuring the family lot will be paid by the State and titling will be free..." (Mejia 1944:74).

Chapter Four of the same law regulated the distribution and use of *ejidal* lands. Article 19 stated that each town had the right to 35 kilometres square in national land close to the town. Article 23 limited the concession of land to 25 hectares per

member of the community, while Article 26 stated that Hondurans had the right to purchase the *ejidal* land on which their homes stood, to a limit of 10 hectares in rural areas.

Chapter Six dealt with the renting of State land. The cost of renting State land was 25 cents per cultivated hectare and one Lempira per hectare of idle land. Renting was limited to 100 hectares for cultivation and 400 hectares for cattle production.

In spite of the large private land holdings and concentrated land ownership, as late as 1930 *campesinos* could still find 35 to 70 contiguous hectares of unoccupied national land to clear and cultivate (Parsons, quoted in Ruhl 1984), and land legislation protected small farmers. Honduras outside of the banana enclave still had a low population density with 854,000 people in 1930 (Herr 1988). The low person to land ratio, however, overstates the availability of land when it is realized that much of the land is mountainous or of low fertility and that a high proportion of the population was involved in agriculture. By 1950, nearly half of the farmland was in private hands. The large domestic landowners, while able to exert a great deal of influence over the local *campesinos*, were the "economically poorest and politically weakest rural oligarchy in Central America" (Ruhl 1984).

Between 1951 and 1960 the Honduran government started eight major land settlement projects, the majority of them on land donated by the banana companies. By 1961 they had distributed 26,580 hectares to 1,474 farm families (Posas 1979).

In the 1950s, roughly one-quarter of farm land in Honduras was *ejidal*. Although owned by the community, the land was assigned to and cultivated by individuals. Renting of *ejidal* land was common, but the 'owner' first had to receive permission from the community. In 1955 the standard rate was Lps.0.50 per *manzana* (one *manzana* is 0.697 hectares) (Adams 1957:541). There was also a great deal of national land. National land was simply defined as land that was neither private nor *ejidal*. This land was usually more mountainous and therefore less appropriate for cultivation. As explained before, those using the land could claim it freely, but this was rarely done (Adams 1957) because *campesino* illiteracy and poverty made the process difficult (UNAH 1961). Private or *ejidal* lands could be rented or assigned to *colonos* (labourers who were allowed to use a piece of land in exchange for labour), although this was more common on private lands as most *ejidal* parcels were too small to share. The term *colono* also referred to occupiers of untitled lands. Usually the payment was fixed, in cash or kind, rather than being a share of the output. In Quimistán, Santa Bárbara the rent was Lps.6 or Lps.7 per *manzana* or two *fanegas* per *manzana* (one *fanega* is 800 ears of maize). In Nueva Ocotepeque, rent averaged Lps.25 per *manzana* per year. It was usually paid in cash, though some was paid in kind (Adams 1957). In 1957 Adams (1957:546) stated "...there has generally been ample land available. The writer could see no 'agrarian' problem in the country except in a few specific regions where large tracts of land have been taken over into single holdings for grazing or lumbering. Even in these regions, such as Zambrano, there are nearby regions, such as Comayagua, where there is land available for cultivation." In the report 'Agricultural Possibilities in Honduras', Wise stated that one of the most important obstacles to agricultural development in

Honduras was the precariousness of land rights. He noted that most tenancy agreements were handled verbally and through custom (UNAH 1961).

In spite of legislation designed to protect and promote small farms, data from the 1952 agricultural census¹ show that land ownership even at that time was highly concentrated; the Gini coefficient for 1952 was 0.76 (Peek 1984). Fifty-seven per cent of farmers, those with less than five hectares of land, owned just 8.1 per cent of the agricultural land while at the other end of the scale, the largest 1.8 per cent of farmers, those with 100 hectares or more, owned 46.3 per cent of the land (Table 3.1).

Table 3.1 Size distribution of farms in Honduras, 1952

Farm Size	Farms:		Area:		Mean size, Hectares
	Number	Percent	Hectares	Percent	
<= 1 ha.	15,394	9.9	9,991	0.4	0.6
1-4 ha.	73,617	47.1	192,241	7.7	2.6
5-9 ha.	28,092	18.0	201,554	8.0	7.2
10-19 ha.	18,620	11.9	259,213	10.3	13.9
20-49 ha.	13,752	8.8	417,317	16.6	30.3
50-99 ha.	3,865	2.5	265,929	10.6	68.8
100 ha. +	2,795	1.8	1,161,159	46.3	415.4
Total	156,135	100.0	2,507,404	100.0	16.1

Source: Ministerio de Economía, (195?) 1952 Agricultural Census²

Of land held in a single form of tenancy, privately owned farms had the largest mean

¹ Data from this and other national agrarian censuses are likely to have errors and therefore should be interpreted as showing general patterns rather than the exact situation.

² The year that this census was published could not be found.

size with 34.8 hectares, followed by *ejidal* farms with 11.6 hectares. However, the largest farms were a mixture of private and *ejidal* lands and had a mean of 46.6 hectares, though these only constituted 2.9 per cent of all farms (Table 3.2). Land classified as 'used' refers primarily to occupied national land.

Table 3.2 Distribution of farms, by form of tenancy, 1952

Form of Tenancy	Farms		Area		Mean size, Hectares
	Number	Percent	Hectares	Percent	
Private	33,289	21.3	1,158,764	46.2	34.8
Ejidal	52,947	33.9	616,729	24.6	11.6
Rented	13,473	8.6	77,544	3.1	5.8
Shared	6,192	4.0	12,301	0.5	2.0
Colonato	6,423	4.1	13,596	0.5	2.1
Used	17,143	11.0	133,561	5.3	7.8
Own/ejidal	4,588	2.9	213,808	8.5	46.6
Own/other	7,117	4.6	128,304	5.1	18.0
Ejidl/other	12,001	7.7	100,421	4.0	8.4
Other/mixt	2,962	1.9	52,376	2.1	17.7
Total	156,135	100.0	2,507,404	100.0	16.1

Source: Ministerio de Economía, (195?) 1952 Agricultural Census

Land use and ownership was most concentrated on privately owned land, where the largest one per cent of farmers controlled 30 per cent of all agricultural land (Tables 3.3 and 3.4). It is also apparent that *ejidal* land was not being used solely for small family plots as intended, as one-third of *ejidal* land was in plots larger than 50 hectares (Table 3.4). Although most of the land illegally occupied (used) was in small plots, a significant amount of land had been occupied by large farms.

Table 3.3 Number of farms, by size and form of tenancy, 1952 (per cent in ())

	Private	Ejidal	Rented	Shared	Colonato	Used	Mixed	Total
<=1 ha.	2,342 (1.5)	3,415 (2.2)	3,572 (2.3)	1,701 (1.1)	2,015 (1.3)	2,009 (1.3)	340 (0.2)	15,394 (9.9)
1-4 ha.	11,880 (7.6)	22,883 (14.7)	8,219 (5.3)	4,233 (2.7)	4,059 (2.6)	9,002 (5.8)	13,341 (8.5)	73,617 (47.1)
5-9 ha.	6,191 (4.0)	11,906 (7.6)	885 (0.5)	191 (0.1)	255 (0.2)	2,960 (1.9)	5,704 (3.7)	28,092 (18.0)
10-19ha.	4,952 (3.2)	8,069 (5.2)	384 (0.2)	47 (-)	94 (-)	1,682 (1.1)	3,392 (2.2)	18,620 (11.9)
20-49ha.	4,650 (3.0)	5,152 (3.3)	270 (0.2)	17 (-)	--	1,188 (0.8)	2,475 (1.6)	13,752 (8.8)
50-99ha.	1,662 (1.1)	1,107 (0.7)	73 (-)	2 (-)	--	226 (0.1)	795 (0.5)	3,865 (2.5)
100 ha. +	1,612 (1.0)	415 (0.3)	70 (-)	1 (-)	--	76 (-)	621 (0.4)	2,795 (1.8)
Total	33,289 (21.3)	52,947 (33.9)	13,473 (8.6)	6,192 (4.0)	6,423 (4.1)	17,143 (11.0)	26,668 (17.1)	156,135 (100.0)

Source: Ministerio de Economía, (195?) 1952 Agricultural Census

Table 3.4 Hectares in farms, by size and form of tenancy, 1952 (per cent in ())

	Private	Ejidal	Rented	Shared	Colonato	Used	Mixed	Total
<=1 ha.	1,475 (--)	2,178 (0.1)	2,334 (0.1)	1,126 (--)	1,338 (--)	1,209 (--)	331 (--)	9,991 (0.4)
1-4 ha.	32,963 (1.3)	64,109 (2.6)	17,299 (0.7)	8,237 (0.3)	8,248 (0.3)	23,493 (0.9)	37,892 (1.5)	192,241 (7.7)
5-9 ha.	44,769 (1.8)	85,562 (3.4)	5,936 (0.2)	1,489 (--)	1,714 (0.1)	20,878 (0.8)	41,206 (1.6)	201,554 (8.0)
10-19ha.	70,268 (2.8)	111,338 (4.4)	5,297 (0.2)	645 (--)	1,250 (--)	23,066 (0.9)	47,349 (1.9)	259,213 (10.3)
20-49ha.	144,586 (5.8)	152,881 (6.1)	7,924 (0.3)	503 (--)	--	35,097 (1.4)	76,326 (3.0)	417,317 (16.6)
50-99ha.	114,321 (4.6)	74,627 (3.0)	5,805 (0.2)	161 (--)	--	15,392 (0.6)	55,623 (2.2)	265,929 (10.6)
100 ha. +	751,286 (30.0)	126,176 (5.0)	32,949 (1.3)	140 (--)	--	14,426 (0.5)	236,182 (9.4)	1,161,159 (46.3)
Total	1,159,668 (46.2)	616,871 (24.6)	77,544 (3.1)	12,301 (0.5)	12,550 (0.5)	133,561 (5.3)	494,909 (19.7)	2,507,404 (100.0)

Source: Ministerio de Economía, (195?) 1952 Agricultural Census³

In 1957 Adams wrote that there was little large scale agriculture in Honduras and that most farmers were independent agriculturalists. Although this is valid in comparison with other Central American countries, even in the 1950s land ownership in Honduras was skewed, as can be seen from the tables above. Commercial agriculture, especially coffee, beef and cotton, expanded after World War II. This expansion was encouraged by the government, which invested in transport, communications infrastructure, agricultural credit and technical assistance (Ruhl 1984). These new export products reduced the near monopoly of bananas in Honduras's international

³ It is not clear why the number of hectares in private, *ejidal* and *colonato* farms are different in tables 3.2 and 3.4.

trade. From 1925 to 1939, bananas constituted 88 per cent of the country's exports; from 1954 to 1960 this average was reduced to 62 per cent (Posas 1979). Large beef and cotton producers expanded their holdings, often incorporating national and *ejidal* lands and displacing smaller producers simply by fencing (Ruhl 1984; Durham 1979; UNAH 1961). This expansion of commercial agricultural use of farmland combined with an increasing population led to land scarcity in the countryside.

Coffee production in Honduras has always been in the hands of small and medium producers. According to the 1952 census, 62.9% of coffee farms had less than ten hectares of coffee land, and these produced 37.3% of the nation's coffee. Coffee production was concentrated in the departments of Santa Bárbara, Lempira, Copán, northern Comayagua, near El Paraíso and near El Corpus in Choluteca. Coffee producers used traditional methods, with little use of irrigation or fertilizer.

The 1954 strike of workers on banana plantations led to a transformation of rural Honduras. The strike started 1 May 1954, lasted 70 days and involved 25,000 workers. Although the strike was successful in improving workers' pay and benefits, companies responded with increased mechanisation to reduce their dependence on labour. During the 1950s, roughly 50 per cent of plantation workers lost their jobs. Most of the agricultural workers who had been sacked invaded idle parcels of foreign-owned land, most of which belonged to United Fruit Company and Standard Fruit Company.

III. Agrarian Reform Period (1961 to 1981)

On 29 September 1962 the government of Dr. Ramón Villeda Morales passed the 'Agrarian Reform Law,' Decree No. 2. This was in accord with the Alliance for Progress which called for a transformation of agricultural structures in Latin America. As stated in Article One, its goal was to "transform the agrarian structure and incorporate the population into the economic and social development of the country." The Instituto Nacional Agrario (INA) had been created in March 1961 by Decree No. 69 to carry out this reform by distributing national and *ejidal* land and providing technical support. Beneficiaries were given 10 to 20 hectares of land, primarily idle national or *ejidal* land, so it was essentially a colonisation project rather than a redistributive reform. The beneficiaries had 10 to 20 years to pay for the land, at low interest rates, and the parcels were indivisible. The requirements to be a beneficiary were: 1. to be Honduran by birth; if male, be more than 16 years old, or any age if married; if female, have dependents (widow or single mother); 2. to have agricultural work as one's occupation; 3. not to own land; and 4. not to have private capital in excess of Lps.1,000 or agricultural capital of more than Lps.2,000.

INA was to reclaim all lands 'possessed in irregular form' or illegally held lands, for redistribution. Other lands to be affected were those that were national, *ejidal*, idle, cultivated indirectly or eroded. Lands not to be appropriated included 'economically efficient agricultural enterprises'; farms with less than 40 hectares of first-class land, or 100 hectares of pasture land; industrial establishments; pasture land used 'rationally'; land within five kilometres of a city, and national parks and forests (UNAH 1961). Expropriated lands were to be paid for by agrarian bonds

(International Labour Review 1963). A progressive land tax was introduced to encourage efficient use of the land (UNAH 1961).

INA was plagued by a lack of funds, a bureaucratic structure and indifference to *campesino* demands, and except while Rigoberto Sandoval Corea was director (1967 to 1971), activity under this law was quite limited. A significant aspect of the law was the legalisation of *campesino* organisations. The two primary groups created were the Asociación Nacional de Campesinos Hondureños (ANACH) and the Unión Nacional de Campesinos (UNC) (Garcia *et al.* 1991). These two groups led land invasions, and in 1972, a march on the capital. This pressure from *campesinos*, who were (and are) well organised⁴, contributed to the military coup of December 1972 that overthrew Dr. Ramón Ernesto Cruz and installed Colonel Oswaldo López Arellano (Brockett 1987).

Data from the 1974 agricultural census (Table 3.5) show how little the agrarian structure in Honduras had changed since the 1952 census, in spite of the 1962 law. In 1974, the distribution of land occupancy in Honduras still had a Gini coefficient of 0.78 (Peek 1984) and the largest 1.8 per cent of the farmers controlled 44.1 per cent of the land while 63.9 per cent of farmers had only 9.1 per cent of the land.

⁴ Honduran *campesinos* are among the best-organised in Latin America. In 1975, 130,000 of the 400,000 agricultural families belonged to one of the three largest national organisations (Santos de Morais 1975).

Table 3.5 Size distribution of farms in Honduras, 1974

Farm Size	Farms:		Area:		Mean size, Hectares
	Number	Percent	Hectares	Percent	
< 5 ha.	124,781	63.9	238,993	9.1	1.9
5-9 ha.	28,264	14.5	201,274	7.7	7.1
10-19 ha.	19,220	9.8	268,145	10.2	14.0
20-49 ha.	15,170	7.8	461,216	17.5	30.4
50-99 ha.	4,433	2.3	301,228	11.4	68.0
100-499 ha.	3,028	1.6	580,904	22.1	191.8
500 ha +	445	0.2	579,009	22.0	1,301.1
Total	195,341	100.0	2,630,859	100.0	13.5

Source: Peek, (1984). Data originated from 1974 Agricultural Census and A. Frassinetti (1973).

Law Decree number eight, passed as an emergency measure 26 December 1972 (La Gaceta 1973), requested that all idle land be given to the state for redistribution and gave *campesinos* the right, temporarily, to use available national and *ejidal* lands. Article Three stated that INA would "adopt the necessary means so that the *campesinos* could have the land necessary to realise their agricultural labours during the next years." Article Four clarified this by stating that INA could "a) temporarily concede the use of available national and *ejidal* land to the *campesinos*...; b) solicit proprietors or possessors of agricultural land to voluntarily, temporarily and freely put their land to the disposition of INA; c) rent the land necessary to fulfil the requirements of this Decree..." Although it was allowed under certain conditions, this did not lead to many more land invasions, rather it legalised earlier invasions. Though it was not guaranteed, this decree created the environment to title this land in the name of those authorised to use it. In 1973, 224 *campesino* groups, composed

of 8,674 families were settled on 32,454 hectares, more than double the number of families and three times the area of land as was distributed the year before (Ruhl 1985). Of the land distributed under this decree, 72.6 per cent was national, 8.5 per cent *ejidal* and only 18.9 per cent was private land (Posas 1979).

Decree number 170, the 'Agrarian Reform Law,' was passed on 30 December 1974 (La Gaceta 1975). This law differed from the 1962 law primarily in that it placed ceilings on the size of land holdings and defined more clearly the 'social function of property.' Article One of the decree stated the goal of the elimination of *latifundia* and *minifundia* (sub-family farms, defined as less than five hectares), while Article 25 set ceilings for individual ownership of land, and Articles 27 through 30 established the conditions under which land could be expropriated. The ceilings ranged from 100 hectares to 2,000 hectares depending on the geographic location, quality and estimated productive potential of the land. Land was considered not to meet its social function when it was larger than the size limits, idle, exploited indirectly or so small as to be economically inefficient.

This law claimed all available national and *ejidal* land for the State to be used by INA for redistribution (Article 12) and also reclaimed public land that had been illegally occupied (Article 15). Occupants were allowed to keep the land (from a minimum of five to a maximum of 200 hectares) and were granted title if they could prove they had worked the land for at least 10 years prior to the law and if they fitted the requirements for beneficiaries of the law, which were the same as the requirements of the 1962 law, except that they could own up to five hectares of land and there was

no limitation on capital ownership (Article 79).

The objectives of the reform were to: 1. redistribute the factors of production to develop an internal market; 2. avoid conflict between large landowners and landless people; 3. incorporate *campesinos* in the development process; 4. contribute to the transfer of capital from agriculture to industrial development; 5. improve growth in agricultural income and change distribution to improve the standard of living for the rural population; 6. use factors of production efficiently, especially labour, to assure greater opportunity for employment and higher wages, and 7. increase agricultural productivity. A goal was to eliminate 'traditional' forms of land ownership meaning *minifundia* and *latifundia*. There was little expropriation of private land, however, and modern farms were encouraged, as commercial plantations with export crops were exempt from expropriation. Renting and other forms of indirect tenure were made illegal.

There were three types of land adjudication; agricultural family units, *campesino* cooperatives and *campesino* associative enterprises. Land was given to individual families in parcels of five to ten irrigated hectares, or its equivalent. *Campesino* cooperatives received the land as a group but were allowed to farm small plots individually, while associative enterprises had to work the land in common and share the produce among the members proportionally. Most land was given to the second and third categories, and there was a minimum of five hectares per family. The Agrarian Reform Law enabled the titling of national and *ejidal* lands, but those occupying the land had to take the initiative, and the process was slow and difficult,

with the result that little land was titled.

At the peak of the reform, 1972 to 1977, an average of 6,373 families were given land each year, which did not keep up with the estimated increase of 7,000 rural families each year. Because of opposition from landed groups, the rate of land distribution slowed, and in 1978, only 1,745 farm families benefited from the reform (Ruhl 1985). In the late 1970s distribution essentially halted, as nearly all the land distributed was the result of land invasions. A total of 45,003 families benefited from the reform from 1972 to 1980, probably just over ten per cent of the rural population (Posas 1979). In addition, little or nothing was done for the *minifundistas* (owners of *minifundia*) not included in the group reform sector, and more than 70 per cent of farmers were operating without legal title to their land. The Agrarian Reform Law of 1974 had basically not been carried out. Nearly all of the land distributed was national land and most of it was remote (Brockett 1987). In many settlements more than a third of the original beneficiaries have left the cooperative to return to their home region or look for work in urban areas (Barham and Childress 1992). The group reform sector received most of the credit and technical support and became very dependent on the state. Also because the group farms produced mostly export crops, this sector was dependent on multinationals for contracts.

IV. Liberalisation and Modernisation (1981 to 1993)

A. LEGISLATION

In September 1981, the Constituent Assembly of Honduras passed Decree number 78, the 'Coffee Enterprise Protection Law,' which called for the titling of coffee farms

on national and *ejidal* land (La Gaceta 1982a). This law exempted land used for the production of coffee from the threat of expropriation (Article Three) and allowed the titling of plots smaller than five hectares (Article Three). Also for coffee farms, it eliminated the requirement that the land must have been held since 1963 by allowing for the titling of recently-acquired land. The coffee grower was expected to pay for the parcel within five years (Article Seven). The passage of this bill was influenced strongly by the lobbying of the coffee producers' association, AHPROCAFE. Coffee rust was a serious threat and could only be combated by an expensive process that was thought to require credit and tenure security. The land titling decree of 1981 signalled a shift in the emphasis of the Honduran agrarian reform from cooperatives to individual, private land. The implementation of this decree was carried out by the *Proyecto de Titulación de Tierras*, (PTT), a land titling project financed primarily by the United States and carried out by INA. This project will be covered in greater detail in the following chapter.

In Honduras, structural adjustment was carried out in two steps (Noé Pino *et al.* 1992), first general economic stabilisation and second, sectoral structural adjustment. In March 1990, the Callejas (Nationalist) government passed the 'Law of Structural Organisation of the Economy,' a general economic stabilisation law, and in March of 1992 it passed the 'Agricultural Modernisation and Development Law' (AMDAL) (La Gaceta 1992).

The 'Law of Structural Organisation of the Economy' was primarily fiscal and was meant to reduce the fiscal deficit, inflation and the external debt. It reduced import

taxes and tariffs while increasing taxes on the production and consumption of petrol products. It also involved privatisation, modernisation of public administration, price liberalisation, promotion of exports and financial liberalisation.

The first law for structural adjustment in agriculture was introduced in July 1991, but because of widespread opposition, the government had to withdraw the proposed law and hold consultative conferences with interested groups to develop a new law. These conferences included *campesino* organisations as well as organisations of large landholders and cattle producers. The law was also influenced by USAID through Dr. Roger Norton, an agricultural policy consultant. This group noted a long list of factors limiting development in Honduran agriculture: the lack of tenure security (both the threat of expropriation and the lack of title); unsolved questions of redistribution; inefficient use of land; lack of coordination between government agricultural institutions (National Agrarian Institute, Ministry of Natural Resources, etc.); state intervention in agricultural inputs and products; inter-sectoral distortions in prices that discriminate against agriculture; a federal budget deficit and current account deficit; falling agricultural prices in the 1980s; different exchange rates for different products; low levels of investment in agriculture; industrial protection; and limited credit for small producers.

The AMDL basically removes the State from the domestic and international market. It establishes a free market for inputs and products and replaces price guarantees with wide price bands (Article 20). The National Bank for Development is now the only State agency allowed to make agricultural loans (Article 39). Before both INA and

the Honduran Institute for Coffee Producers were able to make loans. It also establishes rural credit offices (Articles 43 and 44).

The AMDL affects land tenancy and ownership in several ways. First, it makes the expropriation of idle land more difficult as land may now be idle for up to 18 months (Article 51). The classification of a *minifundia* has been reduced from five to one hectare (Article 50), so titles to public land will be granted to farmers with as little as one hectare. The law also extends land titling beyond the departments in which it was started. One must now occupy national land for only three years to claim title to it, while previously this required ten years (Article 50). The ceiling for land adjudicated in this form is still 200 hectares (Article 50). The requirements to benefit from these programmes now include women on an equal status with men, and no longer require that one has worked in agriculture, but simply that he or she has lived in a rural area (Article 64). In addition, restrictions on selling titled land of less than 17 hectares have been lifted (Article 65). The AMDL is meant to increase access to land through the land bank and by eliminating restrictions on renting and co-investment (Articles 54 through 58). A seed fund for new beneficiaries will provide Lps.2,000 (about £230) a year for the first three years for inputs, tools and technical assistance (Article 63). It also calls for the State to promote "the creation of the necessary mechanisms to facilitate the acquisition of productive rural land through market transactions, with the purpose of increasing the access to land and develop a stable and ordered land market" (Article 69). To this end, a fund will be created to give loans to beneficiaries of the reform to buy up to ten hectares of land. To the present time, few of these changes have been implemented.

The AMDL affects the *campesino* enterprises established through the Agrarian Reform Law by allowing each member to have a 'certificate of participation' that has economic value and may be sold if the member wishes to leave (Article 60). It also stresses that future land adjudication could be in individual, cooperative or mixed ownership (Article 59). Although this was allowed before, most land went to groups. Research and agricultural extension services will be privatised and decentralised, and government involvement in forestry eliminated (Articles 34, 71 and 72). The Ministry of Natural Resources has been placed in charge of Honduran agricultural policy and now oversees the other agricultural agencies (Articles 6 and 7).

Noé Pino (1992) notes that there are essentially two dimensions to the AMDL, first, to increase production and second, to reduce the role of the State in agriculture. The means to eliminate State participation and regulation of agriculture is clear in the law, while the law is vague on how to increase production, especially among small producers. It is likely that deregulation will be immediate while assistance to *minifundistas* will be slow.

B. LAND MARKETS

Land markets in present day Honduras have multiple imperfections -- land, information and financing are all limited. Stringer (1989) notes that because most land is in large holdings, the availability of small plots is restricted. In addition, the market for these large tracts of land is limited because few buyers have the finances required to purchase them. Although these plots could be subdivided and sold, there is little tradition of this in Honduras. In a study of land markets in Santa Bárbara and

Colón, Salgado *et al.* (1994) discovered higher prices per *manzana* for smaller plots, even when land quality was held constant, and noted that small farmers buy land from other small farmers and large farmers from other large farmers, further indicating a fragmented land market.

There is also little exchange of information about the sale of these large farms. Estate agents are rarely used in rural areas, so prospective buyers and sellers of land have to rely on informal means such as word of mouth to exchange information about land sales (Instituto Nacional Agrario and Centro de Tenencia de la Tierra 1990). In addition, the cost and complexity of legal procedures surrounding the sale of land further depress the market for land.

Limited financing is a fundamental problem in the land market of Honduras. Most rural banks have a policy of not making loans for the purchase of agricultural land because it is considered to be too risky (personal interview)⁵. This lack of long-term financing means that *campesinos* have to save for years before buying land. Sometimes the seller finances the purchase, allowing the purchaser to make a down-payment on the land and then pay off the debt to the previous owner with each crop. Most loans are short term, as will be confirmed by the data in chapter six (Table 6.40, p.155). This study found that most loans were granted for about three years. Salgado *et al.* (1994) found that 74 per cent of land purchases were financed by the buyer's own resources, 19 per cent were financed through informal loans, often from

⁵ Personal interview with Edgardo Puerto O., Loan Officer and BANCAFE, Santa Bárbara, 29 January 1992.

the seller, and the remaining 7 per cent were financed by loans from banks.

Honduras is now relying on market mechanisms to distribute land. Salgado *et al.* (1994) found that some farmers are able to accumulate land, but those who start with the least amount of land (less than five hectares) are generally unable to do so. When considering the effects of the land market on the distribution of land in Paraguay, Carter *et al.* (1992) found that small farmers are no less, or more, commercially competitive than large farmers. However, without mortgage financing and the elimination of transaction cost barriers, they are less competitive in the market for land than are farmers with larger units of land.

V. Conclusion

Uniquely within Central America, Honduras has maintained its *ejidal* land, and much of its national land was never allocated. This was due primarily to the lack of commercial agriculture. In addition, governments from the Colonial era to the present have sought a balance between promoting modern agriculture and protecting access to land for *campesinos*. Although there were many laws passed regarding land tenure, the State did not actively enforce its rights to these lands, and there was a great deal of informal settlement. Nevertheless, the existence of *latifundia* and the rising population eventually led to a shortage of land. Land reform laws passed in 1962 and 1974 did not significantly alter land holding patterns in Honduras, and reform was essentially abandoned by the end of the 1970s. With the Coffee Enterprise Protection Law, the PTT and the Agricultural Modernisation and Development Law, Honduran agricultural policy is now relying on market

mechanisms to encourage agricultural development and to promote a more equitable distribution of land. This study will attempt to determine how effective the primary tool of current Honduran agricultural policy, land titling, has been in meeting these objectives.

CHAPTER FOUR

BACKGROUND AND EVOLUTION OF THE PROYECTO DE TITULACIÓN DE TIERRAS

As noted in the previous chapter, land legislation in Honduras, including laws regulating the individual titling of national or *ejidal* lands, has a long history. In addition, Honduras has had a historical distinction between the use and ownership of land. While most countries in Central America nearly eliminated all forms of small or community-based agricultural holdings, because Honduras had little commercial agricultural development, it maintained its *ejidal* lands and reserved some national lands for future generations. Because of this, a great deal of land remains untitled. It was estimated in 1980 that 75 per cent of Honduran farmers operated under insecure tenure and only one per cent had a fee simple title for their land, although this one per cent owned nearly half of the agricultural land (USAID 1982).

Stringer (1989) defines five categories of land tenancy in Honduras: private, private/municipal, municipal, *ejidal* and national. Private land is any land that has been transferred from the State to an individual. This land at some time had a publicly registered document, usually known as a title in *dominio pleno*, or full dominion, frequently from the Colonial era. Many of these have 'deteriorated' as the registered owner has died and the land has been informally subdivided. Private/municipal land is land acquired by municipalities (counties) through purchase or donation, and is different from land under municipal tenure. Municipal land is

land administered by the municipality but owned by the State. Control over this land reverted to the State under the 1974 Agrarian Reform Law but has since been returned to municipalities with the 1990 Municipalities Law, except for agricultural land, which is still subject to INA's authority. As mentioned before, *ejidal* land is land that was ceded to communities for the use of their members. Generally, usufruct rights to these lands have been granted to individuals and are documented by a document known as a title of *dominio util*. This document also serves to transfer usufruct right and the ownership of the improvements on the land. In the eyes of most *campesinos*, this is equivalent to full ownership. Nearly all *ejidal* land had been allocated by the early 1950s. Since then, rights to this land could be acquired only through purchase or inheritance. National land is essentially the remaining land, any land that has never be granted to an individual, community or group.

In addition to farmers holding title in *dominio pleno* and *dominio util* are many farmers using land without any formal legal basis. These may be on any of the above categories of land and have been divided into three types of informal tenure: squatting, possession and occupation. Squatting refers only to the extra-legal use of private land and is not recognised by Honduran State law, however, in the case of 'deteriorated' private deeds, it is often unclear in the countryside which land is private and which is national. Possession rights, though informal, are acquired with a formally documented transaction. Occupation rights arise simply through the physical occupation of the land. These two types of tenure apply only to national and *ejidal* land and have evolved to the point that they are broadly considered to contain the rights of full ownership.

Although most farmers do not have full ownership rights to their land, conflicts over land are rare and 'owners' of State land feel quite secure. The feelings of tenure security tend to increase with time and are greater on *ejidal* than on national land. The borders are accepted by the community and transfers of land commonly take place.¹ As the land is not titled, these transfers take place by traditional or customary means. Technically, only the improvements are sold, but the value usually reflects that of the land in addition to the improvements. The sale is witnessed, often by community leaders, but the transfer is not usually registered in the Property Registry. Coles (1988) found that most transactions have two or more witnesses and are often certified by the Municipal Justice of the Peace. Occasionally there are oral agreements between family members or friends, but these too are usually witnessed. The limitations of these transfers are that it is difficult to sell the land to someone from outside the community and some banks require a legal land document for loans. It should also be noted that many 'owners' of State land believe the land to be theirs because it has been under individual use for so many years. Often only a visit to the INA offices where the parcel can be located on a map can determine its true status as State rather than private land. In addition, most farmers have some type of documentation for their land. Many farmers have private bills of sale, as described above, and some have documents of inheritance. *Escrituras publicas* (public documents) may be either registered in the municipal offices or not. These are technically for the improvements on the land and for the right to use the land, though this subtlety is not usually understood. They usually list the improvements on the

¹ Fandino *et al.* (1986) found in interviews in Colinas, Santa Bárbara, that all borders are recognised and there were no conflicts over land.

land and their value, the price paid for the land, the history of transfers, neighbouring lands and are signed by witnesses. Municipal documents certify that a farmer occupies a certain piece of land. Land titling is intended to replace these documents and incorporate these farmers into the formal system of land holdings and transfers.

1. Legislative Precedents

Ejidors were legally established in 1835, giving communities the right to grant the use of these lands to community members, but retaining actual ownership rights for the State. From 1872, farm labourers were able to claim national land simply by working it and living on it for three years. However, in order to legitimise these claims, the occupants had to file for formal title. This was confirmed by the Civil Code of 1906, which stated that all land not registered in the name of an individual belonged to the State, and reconfirmed by the Agrarian Law of 1936. The rights of occupants were recognised under the 1926 Code of Agricultural Procedures, which gave occupants priority when there was a conflict in a claim of national land. Although these previous laws gave occupants of national land the right to claim this land, because most *campesinos* were illiterate and unfamiliar with the formal procedures, few actually obtained legal title to their land. These early titles defined parcels in relation to landmarks and neighbouring lands. An example of a grant of *ejidal* land is given in appendix A.

Both the Agrarian Reform Laws of 1962 and 1974 reclaimed all untitled national land and idle *ejidal* land for the State, to be used in redistribution. However, little action was taken under the 1962 law, and the 1974 law allowed farmers with five to 200

hectares to keep the land and receive title to it provided that they could prove they had worked the land for at least ten years and that they fitted the requirements to be a beneficiary of the reform. Although under the 1974 law control of *ejidal* land was transferred from the municipal governments to INA, there was still little change in ownership as most farmers did not take the initiative to title their land, and INA focused on the agrarian reform groups rather than farmers on public land. In addition, the emergency agrarian decree passed in 1972 gave *campesinos* the right to use, temporarily, idle national or *ejidal* land. Although it was not guaranteed, this created the expectations that this land could be titled in the names of those authorised to use it.

The distribution of land under the Agrarian Reform Law nearly came to a halt in the late 1970s. In the 1981 presidential campaign (the first democratic election in Honduras) Roberto Suazo Córdova of the Liberal party pledged to make agrarian reform a priority, while the Nationalist (conservative) candidate, Ricardo Zúñiga Augustinius, opposed the continuation of land redistribution. When Suazo Córdova won the election, hopes were raised that redistributive land reform would be carried out once again. However, this was not to be the case.

After two decades of economic growth, Honduras in the early 1980s faced economic stagnation, increased foreign debt and decreased international trade. This called for fiscal austerity and greatly limited the policy options of the new government. It is also possible that Suazo never really intended to re-initiate agrarian reform, as he belonged to the more conservative wing of the Liberal party (Ruhl 1985). Instead of

encouraging land reform, Suazo relied on market policies, such as land titling, that are not redistributive, but that rely on market mechanisms to encourage the efficient allocation of resources in the long term.

The 1981 Coffee Enterprise Protection Law essentially removed coffee producers from the restrictions of the 1974 law. For coffee producers it eliminated the five hectare minimum for farms and the requirement that the land must have been held since 1963 by allowing for the titling of recently-acquired land. It also set time limits for the adjudication process and allowed for the granting of titles before the completion of payments. As mentioned in the previous chapter, this law was passed with the encouragement of the Honduran coffee producers' association (AHPROCAFE) because coffee rust was a serious problem, affecting 11 per cent of all coffee land, and it was believed that the many small, untitled coffee farmers needed titles to their land in order to have access to formal credit to finance the chemical inputs and new trees necessary to combat the coffee rust.

II. The Proyecto de Titulación de Tierras

The land titling decree signalled a shift in the emphasis of the Honduran agrarian reform from cooperatives to individual, private land. This fitted well with then current U.S. Agency for International Development (USAID) policy as stated in a 1982 Policy Paper (USAID 1982:9).

"Clarity of ownership and title is critical to stimulating increased capital investment (and therefore production) at the level of the individual farmer. Consequently, A.I.D. will give favorable consideration to requests for assistance in the form of feasible projects and programs that establish wider access to agricultural assets, including land, and in providing more secure tenure arrangements."

The pilot land titling project started 6 May 1982, with the goal of delineating the *municipios* (similar to counties) of San Luis, San José de Colinas, Azacualpa and Quimistán in the department of Santa Bárbara. USAID donated Lps.320,000 to the government of Honduras, through the National Agrarian Institute, (INA) with the government of Honduras giving Lps.67,000, for the pilot project.

At the end of the pilot project, 30 August 1982, the two governments (the United States through AID) signed the contract for the *Proyecto de Titulación de Tierras* (PTT), registered as project number 522-0173. The United States granted \$2.5 million (Lps.5 million) and loaned \$10 million (Lps.20 million) (loan number 522-T-045) with the government of Honduras contributing \$4.2 million (Lps.8 million). This contract was approved by the Honduran National Congress in Decree Number 89, passed on 20 September of the same year.

The objective of the project for USAID was to "assist ... INA to provide clear titles to small scale farmers in seven departments (Santa Bárbara, Comayagua, Copán, Cortés, La Paz, Yoro and El Paraíso) of Honduras by financing land delineation, technical assistance and logistical costs required to accelerate the title process" (USAID 1982). While the 1981 Coffee Enterprise Protection Law just included coffee farms, the titling project was extended to all farms on national or *ejidal* land in the seven departments. The covenant: 1. required the government of Honduras to continue the process of titling all remaining land held by the government but farmed by individuals or groups at a rate essentially equal to that achieved under the project, financed by the sale of national lands and the fees of those farms over 50 hectares;

2. established INA as the implementing authority, responsible for granting the titles;
3. required that the titles issued be legally mortgageable to any private or public bank or other financial institution;
4. established prices at 'fair and reasonable amounts' in keeping with the beneficiaries' repayment capabilities.

The social and economic objectives of the project were to:

1. benefit small and medium farmers with the authorization of definitive property titles, so as to convert them to legitimate property owners;
2. give security and tranquillity to rural people so they could invest in their parcels and participate more fully in the development process of the country; and
3. through titles, assist small and medium farmers to obtain credit and technical assistance, and to increase the production of food, work and income of their families.

The technical goals of the project were to:

1. delineate an estimated 3,238,000 hectares of land, in the geographic area of the project;
2. title national and *ejidal* land in farms up to 50 hectares in size in the seven departments; and
3. authorise an estimated 70,000 titles during the life of the project (1982 to 30 August 1987). This was later changed to 40,000 titles and extended to March 1991 (Instituto Nacional Agrario 1991).

For farms of less than 50 hectares, the costs of delineation and titling were paid by

the project, whereas larger farms had to pay for legal fees, delineation and processing costs. All farmers were required to pay the 'nominal' fee for registering the land; for farms of less than 50 hectares, INA registered the title for the owner and collected the fee on issuance of the title. Coffee producers had five years to pay for the land, while others had 20 years. Coffee land was 'sold' at approximately \$30 to \$35 per hectare and for land with other crops the price varied from \$25 to \$65 per hectare. With no interest, this meant that coffee producers paid \$6 to \$7 dollars per hectare a year for five years and other farmers \$1.25 to \$3.25 per hectare per year for 20 years. Farms of five hectares (or 0.1 for coffee producers) to 17 hectares (the equivalent of 10 irrigated hectares) were granted a 'Family Agricultural Unit' title which meant that the land could not be sold or subdivided without INA approval. Larger farms were granted title in full dominion.

The Project Paper foresaw many consequences of titling. Among these were:

1. increased on-farm investment due to access to credit and increased security;
2. increased access to resources (especially credit) for small farmers and to opportunities, including that of acquiring land in the market place;
3. an uncertain effect on migration -- the ability to liquidate the value of the land would facilitate migration, but increased investment in the land would be an incentive to stay; and
4. an increase in total wealth. Titling would convert land from an insecure production factor to a marketable asset. The increase in the value of land, facilitated by increased security, should thereby increase the total wealth of the nation.

The AID project paper foresaw opportunities for investment by noting that technification (planting of improved varieties and using chemicals) against coffee rust had a return of 14 to 27 per cent, even with low coffee prices. The paper also states that bankers said credit would be available and they would "welcome the opportunity to serve additional customers of the size and nature being benefited by the project" (USAID 1982:43).

Requirements of beneficiaries were similar to those of the 1974 Agrarian Reform Law. They must:

1. be Honduran by birth;
2. be more than 16 years old (either male or female);
3. occupy national or *ejidal* land (No land that has ever been granted title is included) of at least five hectares or one hectare if it is planted in coffee;
4. have agriculture as their regular occupation;
5. have no existing disputes over the parcel(s) to be titled;
6. pay the total price of the land or sign a promissory note to pay.

III. Procedure

In each of the seven departments of the project, a 'clean sweep' was to have been made for promotion, delineation and titling. That meant the project tried to identify all lands and potential beneficiaries, regardless of the crop produced. It delineated the perimeter of private land, and all parcels on public (national or *ejidal*) land were delineated, with titles processed for the latter. In this manner, the three steps for the PTT were: 1. promotion activities to identify potential project beneficiaries; 2.

delineation and mapping of the land, and 3. processing, issuing and registry of titles.

Step one, Promotion and identification

Dissemination of information about the titling project had three purposes; first, to enable producer and *campesino* organisations to more easily identify potential beneficiaries; second, to encourage potential beneficiaries to take advantage of the project, and third, to announce the arrival of the delineation teams. The third aspect was found to be extremely important in the pilot project as rumours of the delineation team's activities aroused suspicion. A full-time publicity advisor was hired to coordinate the promotion activities of the institutions involved. INA and the producer organisations produced radio announcements and brochures for the targeted areas. These brochures described the titling process and the responsibilities of the land holder, INA and the participating organisation. Meetings were also held in each municipality to address questions, explain the advantages of titles and identify variations in land tenancy patterns in the different municipios. Field representatives of the cooperating organisations received basic training to enable them to assist the farmers with filling in the applications for titles.

Step two, Delineation and mapping

Identifying areas by their legal status and delineating the parcels to be titled were the backbone of the titling project. Honduras was fortunate to have had a national cadaster² that had produced the basic material necessary to undertake large scale delineation in a cost efficient manner. Working from existing aerial photography and

² See Appendix B for details of the Cadaster Programme.

maps, teams were able to identify property boundaries without having to go through the expensive and time consuming task of land surveying. This method of delineation had been officially recognised for the establishment of legal boundaries through the existing National Cadaster Law. This work produced delineated property ground plans, identification of the owner/occupier, identification of the use of the land, and the legal tenure status of each parcel delineated.

As this process was going on, a check was made into the property's legal status. Title searches were undertaken in Tegucigalpa before work in the field. The results of these searches were verified in the *municipio* by examining the *municipio's* property registry. As properties were delineated, individual ownership papers were examined to discover discrepancies or omissions in the registry.

All land not titled in full dominion was the property of the State, and was identified as such on the property plans and maps submitted to INA. As lands were identified and delineated, a cadastral card was completed. In addition to the description of the location and boundaries of the property, this registry card also identified the occupant, his or her claim to ownership and a detailed description of the use of the land. The information on the card was computerised and assigned a number.

Step three, Titling and registry

The national offices of INA verified the individual landholdings submitted by the Cadaster and processed the applications submitted by the titling teams. These legal and administrative procedures had been modified from those of the Agrarian Reform

Law and had been reduced from 14 to seven steps, primarily by concentrating the responsibility for issuing titles in one division, the *División de Afectación y Adjudicación*. The process had also been made more simple by introducing a standardised, fill-in-the-blank form. The titles had also been standardised and were formatted on INA's computer system. These improvements were expected to enable INA to issue titles within the 20-day limit of Decree No. 78.

IV. Achievement of the PTT's Technical Goals

As of December 1989, the PTT had delineated and mapped 3,615,750 hectares, of which 2,306,144 hectares were national or *ejidal* lands (excluding the pilot project areas in Santa Bárbara), which was still well short of the goal of 3,238,000. These 2.3 million hectares of public land comprised 174,175 parcels. There has been no delineation work since this time³. By 15 October 1993 the PTT had issued 38,656 titles for 383,639.13 hectares, which, six years after the original finishing date of the project, is still slightly short of the 40,000 title goal. Titling 40,000 farms in five years would have required the titling of 8,000 parcels a year. As can be seen in Table 4.1, in only one year, 1984, was this goal reached. The mean farm size was 9.9 hectares, and more than 90 per cent of the titled parcels received titles for a 'family agricultural unit' meaning the parcel had less than 17 hectares and could not be sold or subdivided without INA approval. About 9.0 per cent of the titles were granted in *dominio pleno* or with full ownership rights (Table 4.2).

³ Personal interview with Roger Lopez, Director of Titling, Instituto Nacional Agrario, October 1993.

Table 4.1 Hectares titled and number of beneficiaries per year (up to 15 October 1993)

Year	Hectares	Beneficiaries
1983	22,603.45	3,201
1984	61,378.03	8,638
1985	14,732.37	2,459
1986	24,531.19	3,684
1987	46,293.03	5,631
1988	57,263.35	5,159
1989	12,787.97	1,872
1990	40,126.67	3,498
1991	39,595.07	3,032
1992	13,095.36	728
1993	51,232.64	754
Total	383,639.13	38,656

Source: INA 15 October 1993

Table 4.2 Size distribution of titled farms

Size	Hectares	% of Land	Beneficiaries	% of Beneficiaries
< 17 ha	163,771.62	73.84	27,709	91.04
17.1-50 ha	55,989.50	25.25	2,711	8.91
> 50 ha	2,018.73	0.91	15	0.05

Source: INA 24 September 1993 (note: It is not clear why these totals are less than those above)

The proportion of national and *ejidal* land titled by the PTT is low -- just under 20 per cent in the seven departments (Table 4.3). This is in part due to the large

number of farms that were ineligible for titling because they were smaller than five hectares and did not have coffee. Stanfield *et al.* (1990) found that roughly 116,000 delineated parcels, or about two-thirds of the total number of delineated parcels, were smaller than the five hectare minimum. Others are parcels on public land, such as forest reserves or watersheds, that cannot be granted to private individuals. Nevertheless, there are still many eligible plots that have not been included. In 1990 only 34 per cent of the eligible parcels had been titled (Stanfield *et al.* 1990). It is not clear why participation has been so low. Stanfield *et al.* (1990) note it may reflect a lack of awareness about the project or possibly resistance to the idea of the State as the owner of the land.

Table 4.3 Titled land as a per cent of all national and *ejidal* land

Department	Hectares titled*	Total public land**	Per cent
Comayagua	81,546	359,758	22.7
Copán	78,226	175,171	44.7
Cortés	25,684	214,785	12.0
El Paraíso	58,687	326,131	18.0
La Paz	14,755	162,597	9.0
Santa Bárbara***	90,822	205,571	44.0
Yoro	21,098	457,867	4.6
Total	370,818	1,901,880	19.5

* From INA 15 October 1993

** From Stanfield *et al.* 1990

*** Does not include the *municipios* from the pilot project

V. Titling Under the Agricultural Modernisation and Development Law

The 'Law for the Modernisation and Development of the Agricultural Sector,' published in the Gazette 6 April 1992, attempts to improve the economic efficiency of Honduras' agriculture. Its specific objectives are to:

1. improve the efficiency of all farm types while still conserving the land;
2. consolidate and rationalise the public agricultural sector (the reform sector);
3. stimulate investment in the countryside, redistribute factors of production, and generate rural employment to improve nutritional security and the standard of living of the rural population;
4. promote agro-industrial development and the export of agricultural products;
5. stimulate the commercialisation of agricultural products;
6. facilitate the economic expansion of agriculture by improving channels to financial resources to producers through state and private credit institutions;
7. strengthen the services of generation and transfer of technology and promote the development of private institutions for this purpose;
8. procure an adequate frame of tenure security so entrepreneurs who are not landowners can invest productively in the countryside through renting or co-investment, and
9. orientate the expansion of agricultural activities through modes of exploitation that are compatible with conservation and the management of natural resources.

The titling aspects of the Agricultural Modernisation and Development Law differ

from the Agrarian Reform Law of 1974 in several ways, bringing it more in line with titling under the PTT. Titles may be issued without a down-payment, and payment for the land is due in 20 years. Occupants who claim title for their land will pay INA the market value of the land, reflecting soil quality and infrastructure on the farm. In addition, ethnic communities that have been on the land for at least three years can receive title to the land free of charge. Beneficiaries of titling are meant to receive their title within six months of the adjudication. In addition, the land can be sold as long as the buyer fits the requirements to be a beneficiary⁴ and the buyer will be responsible for the payment. The title can be used to guarantee a loan, and once the payment is complete, the owner can dispose of the land as he or she chooses, *i.e.* the restrictions on sales of farms with less than 17 hectares have been lifted. Registration taxes and the need to have the sale witnessed by a notary public have been eliminated.

Article 66 states "INA, through the PTT, will title in favour of its occupants the national or *ejidal* land found in production, as long as it does not exceed the limits established...in the Agrarian Reform Law" (which vary, depending on the soil quality, access to infrastructure and region). This extends the PTT beyond the departments in which it was started. Article 67 allows for giving those in cooperatives individual title to their land or their share of the cooperative. This enables those who wish to leave the cooperative to recoup their investments, but it may also facilitate the breaking up of cooperatives or their purchase by larger land owners. Article 68 continues the National Cadaster Programme's rural cadaster, including evaluating the potential productivity of soils. Article 69 calls for the State

⁴ These are the same as before except that women are eligible on the same terms as men.

to "promote the creation of the necessary mechanisms to facilitate the acquisition of productive rural land through market transactions, with the purpose of increasing the access to land and develop a stable and ordered land market." To this end, a fund will be created to give loans to beneficiaries of the reform to buy up to 10 hectares of land. To date, these land banks have not been created.

CHAPTER FIVE

BACKGROUND OF THE STUDY REGIONS

By most social and economic indicators, Honduras is a poor, developing country. The 1994 Human Development Report (UN 1994) ranks it 115th out of 173 countries for human development, making Honduras the second poorest country in the Western hemisphere, second only to Haiti. On average, Hondurans receive only 91 per cent of their daily calorie requirements, and 37 per cent of the population (55 per cent of the rural population) lives in absolute poverty (UN 1994). The population, estimated at 5.5 million people in 1992, grew at an average annual rate of 3.3 per cent from 1980 to 1992 and from 1992 to 2000 is expected to increase at an annual rate of 2.8 per cent (World Bank 1994). As in many Latin American countries, the distribution of wealth is highly skewed. In 1989 it was estimated that the poorest 20 per cent of the population received just 2.7 per cent of the income while the wealthiest 20 per cent received 63.5 per cent (World Bank 1994).

Honduras is still highly dependent on agriculture, as it employs 38 per cent of the population and provides 22 per cent of the GDP (UN 1994; World Bank 1994). Agriculture also generates most of Honduras's foreign exchange. In 1992 84 per cent of its exports were of primary commodities other than minerals (World Bank 1994). Although Honduras has 112,088 km² of land, only 14.3 per cent of this is arable, and only five per cent of all arable land is under irrigation (UN 1994). Much of the land is mountainous and covered with forest.

Coffee is still of great importance in Honduras. In 1992 it accounted for 18.3 per cent of Honduras's exports, by value (Banco Central 1993). It is grown in 14 of the 18 departments, primarily in the centre and west, by some 59,000 producers on roughly 175,000 hectares (IHCAFE 1990). This constitutes 20.4 per cent of cultivated land in Honduras¹. Most coffee farms are in remote, mountainous areas with limited access to services. Unlike in much of Central America, most of these coffee producers have small farms. Roughly 90 per cent of all producers have fewer than 7 hectares in coffee (IHCAFE 1990). In 1989, only 15.2 per cent of coffee producers had electricity in their homes and 39 per cent of the household heads had no primary education (IHCAFE 1989).

Baumeister (1990a and 1990b) notes three ways in which coffee production in Honduras is different from that in other Central American countries. First, most production comes from small coffee farms; second, coffee producers in Honduras use low levels of technology; and third, coffee production is still expanding, both in area and number of cultivators. As noted above, most coffee producers have small farms. The average coffee farmer has 2.8 hectares of coffee on a farm of 10.2 hectares. In Honduras, only 15 per cent of the coffee production comes from farms producing 1,000 quintals (one quintal equals 100 pounds) per year or more, compared to 66 per cent in El Salvador and 75 per cent in Guatemala (Baumeister 1990b). As most producers have small or medium sized farms, technology use is limited in Honduras. Although Honduras did not experience the coffee boom of other Central American

¹ According to the 1989-1990 Agricultural Survey (SECPLAN 1989), there are 839,711 hectares under agricultural cultivation in Honduras.

countries in the late 19th century, its coffee production expanded greatly in the 1970s and 1980s. In 1965, Honduras produced 909,900 quintals of coffee; in 1972 it produced 984,000 quintals and in 1987 it produced 1,933,500 quintals (Baumeister 1990b). This expansion was due in part to the expansion of cattle ranches in the 1950s and 1960s which pushed *campesinos* from the valleys to the highlands, which were most suitable for growing coffee. International coffee prices increased dramatically in the late 1970s, but this incentive effect was limited as from 1970 to 1987 Honduran coffee producers received, on average, only 62.8 per cent of the export price, while the remainder went to intermediaries (Baumeister 1990a). Reports from the IMF and the National Bank of Development from the 1950s report labour shortages (Baumeister 1990a), which, as in the late 1800s, could have slowed the expansion of large-scale coffee production in the middle of the twentieth century. These shortages were blamed on the widespread accessibility to land for *campesinos*.

As shown in tables 5.1 and 5.2 below, most coffee producers in Honduras had small or medium sized farms even in the 1950s. The 1952 agricultural census showed that nearly 40 per cent of coffee producers had less than five hectares of land, and by 1974 this number had risen slightly to 43 percent (Table 5.1). It is not possible to compare this directly with the 1989 coffee census data because the categories used are different, but in 1989 more than 70 per cent of coffee farmers had less than 3.5 hectares of coffee. In 1952 the ownership of coffee land was less skewed than for that of all agricultural lands. Of all farms types in 1952 (Table 3.1; p.43), farmers with less than five hectares constituted 57.0 per cent of all farmers and held 8.1 per cent of the land. Only 39.9 per cent of coffee producers had less than 5 hectares, but

they controlled 19.1 per cent of all coffee producers' land. Overall, those with more than 50 hectares were 4.3 per cent of all farmers and held 56.9 per cent of the land, and while 5.6 per cent of coffee producers had more than 50 hectares, they controlled only 21.2 per cent of the land. The data for all farms from Table 3.5 (p.50) show similar patterns to those of coffee farms in 1974 meaning that the distribution of land owned by coffee producers was comparable to that of other farms.

Tables 5.1, 5.2 and 5.3 also show the expansion of coffee, both in the number of producers and in the area planted over the last 40 years. In 1952, 39,157 farmers were producing coffee on 68,118 hectares; by 1974 this had risen to 48,715 farmers with 115,808 hectares of coffee, and in 1989 59,179 farmers were producing coffee on 245,633 hectares. This shows a 51 per cent increase in the number of producers and a 261 per cent increase in the area under coffee cultivation from 1952 to 1989. The greatest increase, both in numbers of farms and in area under cultivation, has come from farms with less than 10 hectares of coffee. The earliest reliable estimates of area planted to coffee come from 1925, when it was estimated that there were 22,100 hectares planted to coffee in Honduras (Baumeister 1990a).

In 1925, average productivity was 3.08 quintals/*manzana*; by 1965 it reached 6.13 q/mz and by 1989 it had doubled again to 12.44 q/mz (Baumeister 1990a). However, Honduran coffee yields are still the lowest in Central America (Baumeister 1990a and 1990b; Childress 1991). Childress attributes this to the low level of investment in the farms (primarily replanting trees), the use of few inputs and poor farm infrastructure. Traditionally, coffee producers in Honduras planted 1,600 to 1,700 trees per *manzana*

with shade trees interspersed. With new strains, 3,300 trees per *manzana* can be planted. The new varieties do not need shade, grow rapidly and are more productive than the traditional strains. However, they also require fertiliser and pesticide and deplete the nutrients in the soils more quickly (Childress 1991).

Table 5.1 Number of farms producing coffee in Honduras, by farm size, 1952 and 1974

Total farm size	1952		1974	
	No. Farms	Percentage	No. Farms	Percentage
< 1 ha.	1,396	3.6	2,651	5.4
1-4.9 ha.	14,126	36.1	18,290	37.5
5-9.9 ha.	9,111	23.3	9,888	20.3
10-19.9 ha.	6,848	17.5	7,864	16.1
20-49.9 ha.	5,324	13.6	6,743	13.8
50 ha. +	2,342	5.6	3,279	6.7
Total	39,157	100.0	48,715	100.0

Source: Ministerio de Economía (195? and 1978) 1952 and 1974 Agricultural Censuses

Table 5.2 Area in coffee production in Honduras, by farm size, 1952 and 1974

Total farm size	1952		1974	
	Hectares	Percentage	Hectares	Percentage
< 1 ha.	681	1.0	1,139	1.0
1-4.9 ha.	12,300	18.1	18,379	15.9
5-9.9 ha.	12,950	19.0	17,736	15.3
10-19.9 ha.	13,279	19.5	20,089	17.3
20-49.9 ha.	14,464	21.2	26,069	22.5
50 ha. +	14,444	21.2	32,396	28.0
Total	68,118	100.0	115,808	100.0

Source: Ministerio de Economía (1952 and 1978) 1952 and 1974 Agricultural Censuses

Table 5.3 Number of farms producing coffee and area in coffee in Honduras, 1989

Area in coffee	No. of farms	Percentage	Hectares	Percentage
< 0.7 ha.	9,209	15.6	4,240	1.7
0.7 - 3.4 ha.	33,506	56.6	73,132	29.8
3.5 - 6.8 ha.	10,443	17.6	67,045	27.3
6.9 - 10.4 ha.	3,109	5.2	33,737	13.7
10.5 - 13.9ha.	1,201	2.0	19,631	8.0
13.9 ha. +	1,711	2.9	47,848	19.5
Total	59,179	100.0	245,633	100.0

Source: I.H.C.A.F.E. (1990) 1989 Coffee Census

As table 5.4 shows, in 1952, fewer than 20 per cent of coffee producers held full title to all their land. Nearly half were farming *ejidal* land, ten per cent were using

previously idle land, two per cent rented their land, just less than one per cent share-cropped or farmed under *colonato*, and the remainder, 21 per cent, held land under several forms of tenancy. This shows that some 30 years before the start of the titling project, most coffee farmers lacked full legal rights to their land. Farmers on *ejidal* land produced 44.7 per cent of all coffee in 1952, while farmers on private land produced 26.3 per cent (Ministerio de Economía 195?).

Table 5.4 Percent of coffee farms and area in Honduras, by tenancy, 1952

Form of tenancy	Percentage of farms	Percentage of area
Private	19.4	23.5
Ejidal	46.1	44.8
Rented	2.4	3.1
Aparcería	0.3	0.2
Colonato	0.6	0.3
Used	10.2	8.3
Mixed form	21.0	19.8

Source: Ministerio de Economía (195?) 1952 Agricultural Census

Coffee diseases hit Honduras in the early 1980s. In 1981, USAID and IHCAFE (the government department for coffee producers) initiated the 'Small Farm Coffee Project'², which ran for 10 years and helped roughly 9,816 farmers renovate some 13,000 *manzanas* (9,140 has.) of coffee. The project encompassed nine departments, including Santa Bárbara (the titled region of this study) but not Ocotepeque (the

² The source for all information regarding the Small Farm Coffee Project is Tinnermeier and Nesman (1990).

control region). Farmers with 1.5 to 21 *manzanas* (1 to 15 hectares), "adequate resources for coffee production," and access to infrastructure to allow for technical assistance and marketing were eligible for the project. This clearly eliminated some of the smallest and poorest farmers in remote regions from participation. Through the project, financing (usually through private loans guaranteed by the project) was available for up to five *manzanas* (3.5 ha.) of coffee. The majority of the beneficiaries (62.7 per cent) said that coffee rust³ had been a problem. Although the project helped reduce its incidence, it remained a problem because many of the beneficiaries' neighbours' farms had the disease and were not treated. A survey of non-beneficiaries (Nuñez and Canales 1988) found that while 68 per cent of coffee fields had coffee rust, only one-third of these fields were treated, and while 39 per cent were infested with *la broca*, a coffee pest, only 40 per cent of these fields were treated.

Many of these infected plantings were abandoned, as the producers could not afford to combat the disease. In addition, structural adjustment measures introduced in 1990 devalued the exchange rate,⁴ making imported fertiliser more expensive and thereby decreasing its use. Although devaluation should lead to increased domestic prices for agricultural commodities, international coffee prices were falling at the same time,

³ Coffee rust is a fungus which causes "premature defoliation, loss of yield and eventual death of the coffee plants" (Tinnermeier and Nesman 1990). It causes a 15 per cent reduction in yield in two years and a 50 per cent reduction within five years.

⁴ The Lempira was devalued in March of 1990 from Lps.2/U.S.\$1 to Lps.4/U.S.\$1, devalued again in November 1990 to Lps.5.5/\$1, then freed completely in 1992.

resulting in a net reduction of the price paid to producers.⁵ Consequently, coffee production in Honduras has declined in recent years. In 1989 Honduras exported 849,621 metric tons of coffee, while by 1992 this figure had dropped to 799,643 metric tons (FAO 1992 and 1993). The fall in value terms was even more drastic as the price of coffee dropped in 1989 and only just recovered in the spring of 1994. Because coffee is vital to the health of the Honduran economy, the Congress passed the 'Ley de Emergencia Nacional' which eliminated the 15 per cent export tax on coffee, as long as the price remains below U.S.\$70/quintal. The government has also provided a subsidy of Lps. 50/quintal of coffee and assistance in purchasing fertiliser of Lps.20/quintal of fertiliser, up to Lps.4,000 for 200 quintals (F.O. Licht 1994). This assistance, in combination with good rains in 1994 and more trees coming into production, is expected to bring an increase in the 1994-1995 coffee crop.

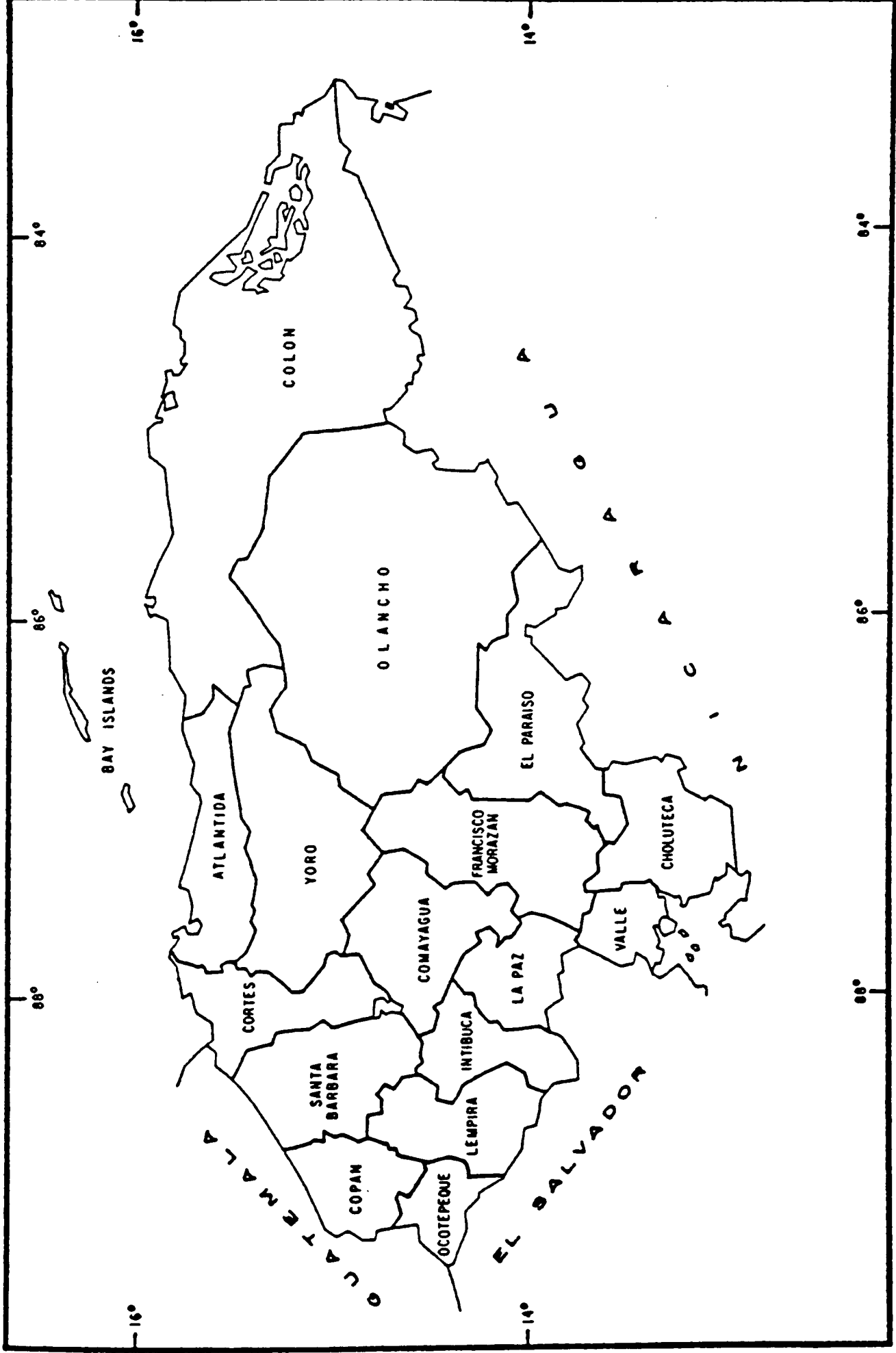
I. Santa Bárbara

The study department of Santa Bárbara is in the northwest region of Honduras and borders on Guatemala (see map p.89). Pineda (1984) categorises most of Santa Bárbara (including the *municipios* in this study of Colinas and San Luis) as rainy and temperate, meaning that it hardly has a dry season and average annual temperatures range from 18 to 30 degrees Celsius. The northern band of Santa Bárbara (including the *municipios* of Azacualpa and Quimistán) is classified as tropical forest, and the temperature rarely drops below 18 degrees. The department of Santa Bárbara

⁵ Interviews with farmers in Honduras found that from the 1990/1991 harvest to the 1991/1992 harvest, coffee prices fell an average of 21.2 per cent (from Lps. 245/quintal to Lps. 193/ quintal) in all of Honduras and 22.2 per cent in Santa Bárbara (from Lps. 204.5/quintal to Lps 159/quintal), while from 1989 to 1990 fertilizer prices rose an average of 49.3 per cent and pesticides an average of 56.3 per cent (Thorpe 1992).

encompasses 5,115 km², or roughly five per cent of the country. Of this area, 63 per cent is mountainous (Salgado *et al.* 1994). Using data from INA, Funez (1993) estimates that 46.6 per cent of the land in Santa Bárbara is national or *ejidal*. The 1988 population of Santa Bárbara was 277,995 people, with a population density of 54.35 persons per square kilometre and an average of 5.54 people per household (SECPLAN 1988).

HONDURAS



A search of the land titles in the National Archives of Land Titles for the four Santa Bárbara *municipios* covered in this study revealed that most of the land titles for Santa Bárbara date from the 19th century.⁶ Five, however, are from the 1700s. Two of these are for Colinas and three for Quimistán. Of the 60 titles found for Colinas, eight were for more than 1,000 hectares (one for 5,310 ha.) and 11 were for *ejidal* grants. These *ejidos* had an average size of 590 hectares, and two of them were granted in 1838, just three years after the establishment of *ejidos*. Of the 14 titles found for San Luis, one was from 1894 and the remaining were from the early 20th century. Five of these grants were for more than 1,000 hectares and had a mean size of 2,404.2 ha. Two were for *ejidos* and totalled 5,138 hectares. Only three titles were found for Azacualpa, and all of these were from the 20th century. One was *ejidal* and had 1,581.6 hectares. Quimistán was the *municipio* with the greatest proportion of large land grants. Of the 46 titles, 12 were for more than 1,000 hectares, and these had an average of 3,277.7 ha. One of these, however, was a grant of 12,825 hectares to a group of people. Without this farm, the average size of the large grants was 2,409.8 ha. Several people had more than one grant. For example, Inocente Rodriguez had seven titles for a total of 4,286.5 hectares, and Dr. Miguel Paz had four titles totalling 4,368 ha. Manuel Recante had only one title listed, but it was for 6,660 ha. Luis Bográn, the president of Honduras in the late 19th century, had a title for 5,310 ha. in Colinas, another for 1,260 ha. in Quimistán, and with Desderio de Paz, owned two more parcels in Quimistán with a total of 2,475 ha. Four grants for *ejidal* land in Quimistán were found, and these had an average of 2,180.8 ha.

⁶ For a listing of all land titles found, see Appendix C.

Santa Bárbara was created as a department in 1825 (but did not have its present form until 1893) and had a small population until the early 1900s (Kaimowitz 1985). Baily (1850: 98) stated:

"In that (the department) of Santa Bárbara the river Chamelicon traverses a tract of land exceeding 110 miles in length by half as much in breadth, say more than 600 square leagues, chiefly covered by thick forests abounding in fine timber, such as mahogany, cedar, mora, (a species of fustic) with many other sorts that would prove valuable should it be got out with facility; but at present it can be turned to little account, because the whole of this extensive range is almost destitute of inhabitants".

In 1855, Squier estimated that Santa Bárbara had a population of 50,000 people on 3,250 square miles, giving it a population density of 13.5 people per square mile -- about average for Honduras at that time. The 1881 census, however, found that Santa Bárbara had only 29,474 inhabitants in 5,735 houses (Kaimowitz 1985). The earlier higher figure may be fairly accurate as people were known to avoid the census personnel. Squier named the principal towns of the department to be Santa Bárbara, Yojoa and Quimistán. He stated that the plain of Sula contained fertile soil and navigable rivers, with land suited to cotton, rice, sugar, cacao and other "great staples of the tropics" (Squier 1855:149). He said that near Yojoa, the savannas had good soil and provided for cattle grazing and cultivation and that gold had been found near Quimistán. He stated (Squier 1855: 151):

"The inhabitants of this department are chiefly devoted to the raising of cattle, of which large numbers are exported to Belize and Yucatán, and driven into Guatemala, where they command prices ranging from five to ten dollars per head. A large part of the people in the towns in the plains of Sula or bordering upon it, are employed in the mahogany cuttings, while a few, chiefly Indians, collect sarsaparilla, or occupy themselves, at intervals, in washing gold. Altogether, the department is healthy and possessed of vast resources, the value of which is enhanced by the natural facilities which it possesses, both in

respect of geological position and the means of interior communication."

The 19th century economy in Santa Bárbara was based on minerals, cattle, maize (produced using slash and burn techniques), sugar cane, some cacao and probably coffee. In 1870, there may have been seven gold mines and five silver mines (Kaimowitz 1985). Many large cattle farms in the department were titled between 1848 and 1892. Upon reviewing the land title archives, Kaimowitz found nine large grants from this period ranging from 693 hectares to 12,768 hectares. Santa Bárbara was probably a politically important region in the late 19th and early 20th century as four of Honduras's presidents in this period came from the department.

Adams (1957) noted that the 1950 census found that 93.9 per cent of the Honduran residents in Santa Bárbara were born in the department. He also states that Santa Bárbara had isolated groups of Indians and some immigrants, from both El Salvador and other parts of Honduras.

Tables 5.5 and 5.6 show that the number of farms in the smallest category nearly doubled from 1952 to 1974, but the other size categories remained roughly the same. The percentage of land in each category also remained nearly the same over this 22 year period. These tables also show that the number of farmers increased by 17 per cent, while the area under cultivation increased by 15 per cent. These data show that the distribution of farms in 1952 in Santa Bárbara was very similar to that of the whole country (see Table 3.1, p.43), while in 1974, farms with more than 100 hectares comprised a slightly larger proportion of farms in Santa Bárbara than they

did in the country as a whole (2.6 per cent compared to 1.8 per cent; see Table 3.5, p.50). Correspondingly, farmers with less than five hectares in Santa Bárbara in 1974 (62.2 per cent of all farmers) had 6.7 per cent of the land, while in the country as a whole they (63.9 per cent of farmers) had 9.1 per cent of the farm land.

The three *municipios* from the study region for which data are available for 1952 (Colinas, San Luis and Quimistán) show land distribution patterns broadly similar to those of the country as a whole, except that the largest category, farms with 100 hectares or more, held 55.8 per cent of the land. This is primarily due to Quimistán where this category held 73.0 per cent of the land.

Table 5.5 Size distribution, number of farms in Santa Bárbara, 1952 and 1974

Size	1952		1974	
	No. of farms	Percentage	No. of farms	Percentage
< 1 ha.	1,405	10.2	3,223	20.0
1-4.9 ha.	6,395	46.4	6,815	42.2
5-9.9 ha.	2,087	15.1	2,031	12.6
10-19.9 ha.	1,679	12.2	1,686	10.4
20-49.9 ha.	1,452	10.5	1,479	9.2
50-99.9 ha.	451	3.3	474	2.9
100 ha. +	325	2.4	424	2.6
Total	13,794	100.0	16,132	100.0

Source: Ministerio de Economía (195? and 1978) 1952 and 1974 Agricultural Censuses

Table 5.6 Size distribution, area of farms in Santa Bárbara, 1952 and 1974

Size	1952		1974	
	Hectares	Percentage	Hectares	Percentage
< = 1 ha.	921	0.4	2,037	0.8
1-4.9 ha.	15,883	6.9	15,724	5.9
5-9.9 ha.	14,975	6.5	14,616	5.5
10-19.9 ha.	23,475	10.1	23,676	8.9
20-49.9 ha.	44,278	19.1	45,064	16.9
50-99.9 ha.	31,155	13.5	32,616	12.3
100 ha. +	100,868	43.4	132,204	49.7
Total	231,555	100.0	265,937	100.0

Source: Ministerio de Economía (1952 and 1978) 1952 and 1974 Agricultural Censuses

Table 5.7 shows that compared to the country as a whole, Santa Bárbara had a high rate of sharecropping (*apacería*) in 1952 (12.9 per cent compared to 4.0 per cent). It also had a slightly higher percentage of farms on *ejidal* land, although the percentage of land in *ejidos* was nearly exactly the same as in the rest of the country. The amount of land held privately increased between 1952 and 1974 from 101,764 hectares to 114,240 hectares (Tables 5.7 and 5.8). However as a percentage of farm land in the department, there was essentially no change. The percentage of farmers renting land nearly quadrupled between 1952 and 1974, from 7.1 per cent to 28.3 per cent, while the percentage of farmers sharecropping or operating under *colonato* ('other' in 1974) dropped from 13.6 per cent to 2.3 per cent. The definitions of land tenancy in the 1974 census are different from those of the 1952 census. 'National'

land (1974) includes 'ejidal' land and probably 'used' land from the 1952 definitions.⁷ Coles (1988) found that in the *municipio* of Colinas, much of the *ejidal* land was granted to large farmers, while the poor were left with marginal land. Unlike other regions, there was no municipal rent for *ejidal* land in Santa Bárbara.

Table 5.7 Number and area of farms in Santa Bárbara by tenancy, 1952

Tenancy	No. of farms	Percentage	Hectares	Percentage
Private	2,491	18.1	101,764	43.9
Ejidal	3,919	28.4	57,117	24.7
Rented	980	7.1	7,102	3.1
Aparcería	1,774	12.9	2,922	1.3
Colonato	441	3.2	1,213	0.5
Used	1,435	10.4	6,970	3.0
Mixed	2,754	20.0	54,467	23.5
Total	13,794	100.0	231,555	100.0

Source: Ministerio de Economía (195?) 1952 Agricultural Census

⁷ Some of the 'used' land may have been private.

Table 5.8 Number and area in farms in Santa Bárbara, by form of tenancy, 1974

Tenancy	No. of farms	Percentage	Hectares	Percentage
Private	3,439	21.3	114,240	43.0
National	5,388	33.4	70,163	26.4
Rented	4,573	28.3	11,855	4.5
Other	363	2.3	4,430	1.7
Mixed	2,369	14.7	65,249	24.5
Total	16,132	100.0	265,937	100.0

Source: Ministerio de Economía (1978) 1974 Agricultural Census

National land in Quimistán and Colinas was claimed by *campesinos* wielding machetes -- in Colinas from 1900 to the early 1950s, in the north of Quimistán from the 1950s to the late 1980s (Coles 1988; Brown and Coles 1986). Ninety per cent of claimants in Quimistán were migrants from the departments of Lempira, Intibuca and Copán; nearly 100 per cent of those in Colinas were local landless *campesinos* (Coles 1988).

Table 5.9 shows the percentage of land allocated to various uses in Santa Bárbara in 1952 and 1974. While the percentage of land allocated to annual crops decreased slightly, the area in permanent crops increased greatly. A higher percentage of land was in pasture in 1974, while a lower percentage was in forest. The primary annual crop produced in both years was maize, with beans a distant second. Sorghum, rice and wheat were also grown. In 1952 75.8 per cent of the land in permanent crops was dedicated to coffee, while in 1974 the figure was 77.4 per cent. The remainder

of the area in permanent crops was in bananas.

Table 5.9 Land use in Santa Bárbara, 1952 and 1974 (Per cent of area in each category)

	1952	1974
Annual crops	11.1	9.5
Permanent crops	3.7	12.9
Idle	13.8	6.2
Pasture	44.2	56.7
Forest	15.6	6.3
Other	11.6	8.3
Total	100.0	100.0

Source: Ministerio de Economía (1952 and 1978) 1952 and 1974 Agricultural Censuses

Maize is the most important subsistence crop in the department, but even some small farms specialise to the point of raising only coffee (Kaimowitz 1985). Beans are grown in all of Santa Bárbara, but are more important in the north. Bananas and plantains are grown primarily to provide shade for coffee, and some rice is grown for home consumption. Vegetables and tobacco are more common in the fertile northern valleys of Quimistán and are produced with irrigation, tractors, pumps and other inputs (Kaimowitz 1985).

Santa Bárbara is one of the most important coffee producing departments in Honduras. In 1992 it contributed 20.2 per cent of the value of exported coffee (IHCAFE 1993 in Salgado *et al.* 1994). In 1952 Santa Bárbara had 13.0 per cent of

all coffee farms, 23.4 per cent of all land planted to coffee and 24.3 of national coffee production (Ministerio de Economía 195?). In 1974 there was essentially no change, *i.e.*, it had 13.6 per cent of all coffee producers, 22.9 per cent of land planted to coffee and 25.4 per cent of national coffee production (Ministerio de Economía 1978).

Kaimowitz (1985) notes that coffee is widely grown in the department above 3,000 feet, on hillsides with steep slopes, often greater than 60 per cent slope. Rain often continues through the harvest (December to February), contributing to a disease known as '*la helada*' that was especially serious in the 1950s. The first significant coffee establishment was built by a Dr. Pineda between 1933 and 1938. In the 1950s, Pineda bought nearly ten per cent of all coffee produced in the department (8,000 quintals) and himself produced 1,000 quintals. Dr. Pineda used to loan money to large producers, who in turn loaned it to small producers before the harvest. The small producers then sold their coffee to the large producers to repay the loan. The small coffee producers were not self-sufficient in maize, so they used the loans to buy maize from the large producers/merchants at inflated prices. This problem may continue today, as many small coffee farmers do not have sufficient land for both coffee and subsistence needs (Kaimowitz 1985).

There were labour shortages during the harvest in the 1950s, and most of the migrant workers came from the departments of Gracias and Intibuca. The area in coffee expanded greatly from the 1930s to mid 1960s, then remained nearly constant between 1965 and 1974 (Kaimowitz 1985). In 1952, 53.9 per cent of the coffee in

Santa Bárbara was grown on *ejidal* land and 20.2 per cent on private land (Ministerio de Economía 195?).

In spite of the importance of coffee, beef has always been the primary income source for the department, especially after exports to the United States increased in the late 1950s (Kaimowitz 1985). Salgado *et al.* (1994) estimate that 71.4 per cent of the agricultural land in Santa Bárbara is currently in pasture. By the 1960s, Santa Bárbara was one of the major cattle-producing departments. The industry there was relatively modern, as purebred stock and modern management techniques were used. As it rains year round, the region has good pasture. Cattle ownership in Santa Bárbara was also concentrated among large landowners. In 1974, 78 per cent of the cattle were on farms with 100 hectares or more (Kaimowitz 1985). Cattle production was also extensive, with an average of 0.9 head per hectare. Kaimowitz quotes a 1963 Organization of American States paper that states, "Lots of fertile lands in Quimistán are used for extensive livestock production."

Quimistán is the oldest *municipio* in the Santa Bárbara study region. In the mid 1950s, rents in Quimistán were generally Lps.6 or 7 per *manzana* or two *fanegas* per *manzana* (1 *fanega* equals 800 ears of maize) (Adams 1957). Most land was in large holdings, much of this 'communal,' meaning that it was owned by a family or group of families, while some was *ejidal*. This communal land had been given as a colonial grant and was used like a hacienda, generally rented out while the owners lived in town. The grant of 12,825 hectares to a group of individuals found in the National Archives was probably a 'communal' grant.

II. Ocotepeque

The control department of Ocotepeque is at the western point of Honduras and shares borders with Guatemala and El Salvador (see map p.89). Pineda (1984) classifies its climate as sub-tropical, with a rainy and dry season. Ocotepeque includes 1,680.2 km², or 1.5 per cent of the area of the country. The 1988 population was 74,286 people, with a population density of 44.2 people/km² and with 5.37 people per household (SECPLAN 1988).

Land titles for Ocotepeque were also found in the National Archives of Land Titles⁸. Of the 63 titles found for the *municipio* of Sensenti, 22 were from the 18th century and seven were for more than 1,000 hectares. These had an average of 1,778.9 ha. There were also titles for five *ejidos* which had a mean size of 887.7 ha. Eleven titles were found for La Labor. One was from 1917 and the remaining were from the 19th century. The four *ejidal* grants had an average size of 1,156.0 ha, and one was from 1838. There were no private grants of more than 1,000 hectares. Only six titles were found for San Francisco del Valle, and half of these were for *ejidos*. The size of the grant was mentioned for only two of these, and they had a total of 8,426 hectares. Of the nine titles found for San Marcos, one was for *ejidal* land that had 2,790 ha. There was only one grant of more than 1,000 hectares (1,873 ha.) and this land was titled in the names of three people.

Adams (1957) states that Ocotepeque in the mid 1950s had few Indians and a relatively high population density. Referring to the 1950 census, he notes that 99.5

⁸ For a listing of all land titles found, see Appendix C.

per cent of the Hondurans in Ocotepeque were born in that department, although this figure does not include foreign immigrants.

In Nueva Ocotepeque, the capital of the department, land rent was paid mostly in cash, about Lps.25 per *manzana*, although occasionally payment was made in kind (Adams 1957). In 1950, Nueva Ocotepeque had a population of 4,170 people in the 'urban' area and 4,300 people in rural areas. The town was moved to its present site in 1935 after the old town was destroyed by an avalanche. In the 1950s, no roads connected Nueva Ocotepeque to the rest of Honduras, but there was a highway to El Salvador and a horse track to Guatemala (Adams 1957).

Tables 5.10 and 5.11 show that the percentage of farms in each size category remained fairly constant from 1952 to 1974, except that the proportion of farms in the largest size category increased. The distribution of land, however, became more skewed as farmers with less than 10 hectares occupied 18.0 per cent of the land in 1952 and only 12.6 per cent in 1974, while those with 100 hectares or more increased their holdings from 20.9 per cent of the land to 37.0 per cent. Comparison with data for Honduras as a whole shows that in 1952 land holdings in Ocotepeque were more evenly distributed than in the rest of the country. While the percentage of farms in each category was fairly similar, the percentage of land held by large farmers was much less in Ocotepeque. Nation-wide farms of 100 hectares or more contained nearly half of all farm land. By 1974, Ocotepeque was more similar to the rest of the country when in the country as a whole, farms of 100 hectares or more (1.8 per cent of all farms) contained 44.1 per cent of all farm land.

It is also interesting to note than both the number of farms and the area in farmland decreased from 1952 to 1974. It is not clear why this land was taken out of agricultural production or what is use in 1974 was.

In 1952, the four *municipios* included in the study, La Labor, San Francisco del Valle, San Marcos and Sensenti, had a more skewed land distribution than the department as a whole. The 63.8 per cent of farms with less than five hectares contained 11.6 per cent of the land, while at the other end of the scale, the 4.1 per cent of farms with 100 hectares or more held 42.9 per cent of the land.

Table 5.10 Size distribution, number of farms in Ocoatepeque 1952 and 1974

Size	1952		1974	
	No. of farms	Percentage	No. of farms	Percentage
< 1 ha.	823	12.4	758	15.5
1-4.9 ha.	2,761	41.6	1,896	38.7
5-9.9 ha.	1,068	16.1	706	14.4
10-19.9 ha.	874	13.2	633	12.9
20-49.9 ha.	811	12.2	567	11.6
50-99.9 ha.	200	3.0	198	4.0
100 ha. +	95	1.4	138	2.8
Total	6,632	100.0	4,896	100.0

Source: Ministerio de Economía (195? and 1978) 1952 and 1974 Agricultural Censuses

Table 5.11 Size distribution, area of farms in Ocotepaque, 1952 and 1974

Size	1952		1974	
	Hectares	Percentage	Hectares	Percentage
< = 1 ha.	524	0.6	485	0.6
1-4 ha.	6,734	8.1	4,560	5.7
5-9 ha.	7,724	9.3	5,066	6.3
10-19 ha.	12,222	14.7	8,923	11.2
20-49 ha.	24,890	30.0	17,981	22.5
50-99 ha.	13,639	16.4	13,429	16.8
100 ha. +	17,368	20.9	29,573	37.0
Total	83,101	100.0	80,017	100.0

Source: Ministerio de Economía (1952 and 1978) 1952 and 1974 Agricultural Censuses

Compared with the rest of the country in 1952, Ocotepaque had a large proportion of farms on private land (Table 5.12). While in Ocotepaque 41.3 per cent of farmers held full title to their land, in the country as a whole 21.3 per cent of farmers did so. They also controlled a larger percentage of the land, 56.3 per cent for Ocotepaque, compared to 46.2 per cent for the country as a whole. There was also a lower percentage of farms on *ejidal* land in Ocotepaque (20.3 per cent compared to 33.9 per cent) but these farms covered a relatively greater proportion of the land (17.6 per cent compared to 24.6 per cent). Ocotepaque also had lower rates of sharecropping (0.6 per cent compared to 4.0 per cent) and 'used' land (0.3 per cent compared to 11.0 per cent). Between 1952 and 1974, both the number and area of farms on national land (*ejidal* and 'used' land in 1952) decreased. As in Colinas, Coles (1988) found that much of the highest quality land in the *municipios* of La Labor, San Marcos and

Sensenti had been granted to large farmers, leaving only marginal land for poorer farmers. However, those in Ocoatepeque using *ejidal* land are required to pay rent to the municipality.

Table 5.12 Number and area of farms in Ocoatepeque by tenancy, 1952

Tenancy	No. of farms	Percentage	Hectares	Percentage
Private	2,740	41.3	46,754	56.3
Ejidal	1,344	20.3	14,637	17.6
Rented	562	8.5	1,509	1.8
Aparcería	41	0.6	55	--
Colonato	523	7.9	711	0.9
Used	19	0.3	186	0.2
Own/ejidal	416	6.3	11,363	13.7
Own/other	543	8.2	4,721	5.7
Ejidl/other	290	4.4	1,740	2.1
Other/mixt	154	2.3	1,425	1.7
Total	6,632	100.0	83,101	100.0

Source: Ministerio de Economía (195?) 1952 Agricultural Census

Table 5.13 Number and area of farms in Ocotepaque by tenancy, 1974

Tenancy	No. of farms	Percentage	Hectares	Percentage
Private	1,953	39.9	46,855	58.6
National	789	16.1	8,084	10.1
Rented	950	19.4	1,741	2.2
Other	15	0.3	220	0.3
Mixed	1,189	24.3	23,117	28.9
Total	4,896	100.0	80,017	100.0

Source: Ministerio de Economía (1978) 1974 Agricultural Census

Table 5.14 shows how agricultural land was used in Ocotepaque in 1952 and 1974. The most significant changes between these two years were that the percentage of land in pastures increased from 25.0 per cent to 65.6 per cent and that idle land was nearly eliminated. In both time periods, maize was the most important annual crop, followed by beans. As in Santa Bárbara, sorghum, rice and wheat were also grown. In 1952 54.7 per cent of the area in permanent crops was allocated to coffee; by 1974 that number had grown to 73.4 per cent (Ministerio de Economía 195? and 1978).

Table 5.14 Land use in Ocotepeque, 1952 and 1974 (Per cent of area in each category)

	1952	1974
Annual crops	11.4	9.1
Permanent crops	9.1	4.5
Idle	30.3	3.3
Pasture	25.0	65.6
Forest	18.1	10.5
Other	6.2	6.9
Total	100.0	100.0

Source: Ministerio de Economía (195? and 1978) 1952 and 1974 Agricultural Censuses

Coffee was less important in Ocotepeque than in Santa Bárbara. In 1952 only 35.5 per cent of farms in Ocotepeque had coffee on 2.0 per cent of farm land in the department (Ministerio de Economía 195?). That year, coffee producers in Ocotepeque produced 3.4 per cent of the coffee produced nation-wide. In 1974, 47 per cent of farmers were producing coffee on 3.3 per cent of the agricultural land. They produced 2.6 per cent of the national coffee crop that year.

III. Conclusion

Most farmers in the study departments of Santa Bárbara and Ocotepeque, like farmers throughout Honduras, are poor and use their farms both to generate cash, usually through coffee, and to subsist, primarily through the production of maize, supplemented by beans and rice. Again like most Honduran farmers, most have traditional rather than State-backed legal rights to the land they are cultivating. This

follows settlement patterns started in the 1700s with the granting of large (and medium) plots of land, along with the reservations of national lands, and after 1835, the granting of *ejidal* land to communities. The following chapter will provide a more detailed description of the farmers surveyed in the eight *municipios*.

CHAPTER SIX

SURVEY METHODOLOGY AND DESCRIPTIVE STATISTICS

I. Survey Methodology

The proposal for the land titling project called for a baseline study and final evaluation of the project. These were conducted by Development Associates, (a consulting firm) and the Land Tenure Center at the University of Wisconsin respectively. Although there have been cross-sectional and retrospective studies of the effects of titling, the evaluations of the *Proyecto de Titulación de Tierras*, (PTT), in Honduras are the first before and after studies of titling.

The goal of the project's study was "to allow for before-and-after comparisons such that the impact of titling upon the individual farm unit (and by extension, upon the nation) could be measured" (Development Associates 1983:10). This required collecting data on a group of farms to be titled at the beginning and end of the project, as well as collecting data from a group of farms that would not be titled as a control for extraneous factors. Wanting to take advantage of this substantial data base, I acquired the data collected in 1983 and 1988 (which covered 1982 and 1987) and conducted my interviews with the owners of the same farms.

The study uses the parcel rather than the owner as the unit of analysis. This decision was based on two factors: the available sample frame and the longitudinal design of the survey. The National Agrarian Institute, INA, planned to start the titling in four

municipios of the department of Santa Bárbara. Development Associates had a list from INA that had what they believed to be all the parcels delineated in these four *municipios* in Santa Bárbara along with their owners: a complete sample frame. In addition, using the parcel as the unit of study should limit the loss of participants due to attrition. Although owners will die, move away or sell the land, the parcel will always be there (Development Associates 1983).

The first of the baseline surveys (1983) and the 1988 evaluations were conducted in these four municipalities in Santa Bárbara. These municipalities (Colinas, San Luis, Azacualpa and Quimistán) include the main geographic and soils types of the department, and when compared with the agricultural census, the sample farms were similar to all those of Santa Barbara except that the smallest category of farms was under-represented (this is probably due to the limitation on titling farms of less than five hectares unless they produce coffee). Disproportional stratified sampling was used to compensate for variation in the size and number of delineated parcels in the four *municipios*. The baseline survey in Santa Barbara was intended to include 600 parcels. This allowed for a ± 4.1 per cent error, with a 95 per cent confidence interval. Because of errors in the list, the final list had 569 farms, which is 18.9 per cent of the total list of delineated farms in the four *municipios* (3,011 farms) (Development Associates 1984). In 1988 researchers from the Land Tenure Center re-interviewed 491 of these farms, of which only 254 had actually received titles (a further 75 were in the process of receiving title). Eight farms were dropped because the year the title had been received was not known and a further three were dropped because they could not be definitely matched with farms from the 1983 sample,

leaving a workable group of 243 farms. Of these, I was able to locate and interview 191 owners.

The baseline survey in Ocotepeque included 200 farms, of which they interviewed 198, allowing for a ± 7.1 per cent error, also with a 95 per cent confidence interval. The *municipios* in Ocotepeque were selected by INA and AID personnel based on their similarities to those of Santa Bárbara. Of the 198 farm owners interviewed in 1983, the 1988 researchers re-interviewed 176. I used systematic sampling to select a sub-group of 75 farms. Of these, 61 were interviewed.

The questionnaire was designed to evaluate the factors titling was expected to affect, namely access to credit, use of technical assistance or improved practices, changes in production and the rate of land sales. In addition, the survey had to gather descriptive and socio-economic data about the farm and farmer to provide a general picture of beneficiaries in Santa Bárbara and to determine the applicability of the data to other regions in Honduras. The beneficiaries were also questioned on their perception of the land titles and on what other services were necessary in their area. A summary of the questionnaire is included in Appendix D.

The interviewers I hired were all fairly well-educated, familiar with agricultural terms and issues and were from Santa Bárbara and Tegucigalpa. Most of them had been employees of INA until the previous summer. I also conducted some interviews myself, but I spent most of my time supervising and reviewing the questionnaires of the other interviewers.

I spent mid-November 1992 to mid-February 1993 in Honduras gathering data from Honduran government agencies and USAID and interviewing nearly 200 Honduran coffee producers in Santa Bárbara. I returned in the autumn of 1993 (September and October) to conduct the control interviews in Ocotepeque. In both regions, I gathered data for 1992.

Most of the interviews, 80.4 per cent, were carried out with the owner of the farm and a further 19.2 per cent with a family member. The remaining 0.4 per cent of interviews were with the farm manager.

When considering these data, it must be kept in mind that the main concern is to evaluate any changes in the titled region, Santa Bárbara, rather than to compare the two regions. I wish to determine what, if any, effect titling has had on several key factors in Santa Bárbara, while the data from Ocotepeque serves as a control for exogenous factors such as the weather and changes in input and commodity prices. Systematic differences between the regions, *e.g.* owner's age, level of education, use of technology, etc., which could bias the impact of titling, are taken into consideration in the multivariate analysis described in the following chapter.¹

II. Descriptive Statistics

A. PERSONAL CHARACTERISTICS

Farmers in Ocotepeque tend to be older than their counterparts in Santa Bárbara

¹ It should also be kept in mind that survey data are subject to errors in recollection and that interviewees may not wish to reveal accurate information about production and income.

(Table 6.1). The mean age of farmers in Ocotepaque in 1992 was 58.13 years while that of farmers in Santa Bárbara was 53.00 years. In Santa Bárbara, farmers with small farms were also younger (the mean age for farms with less than 2.5 hectares was 48.87) suggesting that they accumulate land with age (Table 6.1a). A correlation of age with farm size was statistically significant at one per cent, and the correlation coefficient was 0.2314. The same cannot be said of Ocotepaque as the youngest category was those with more than 20 hectares (Table 6.1b). (The correlation coefficient for Ocotepaque was not statistically significant, even at 10 per cent.) A higher percentage of owners were women in Ocotepaque -- 24.6 per cent compared to 19.9 per cent in Santa Bárbara (Table 6.2).

Education levels in Santa Bárbara are remarkably low. In 1993, more than half the farmers had had no formal education and a further 15 per cent had had only one or two years (Table 6.3c), indicating that literacy could be a problem, and thereby limiting the potential for learning through technical assistance. Among coffee producers nationally, 35.8 per cent have had no formal education (IHCAFE 1989). Farmers in Ocotepaque are better educated (Table 6.3). In 1993, they had a mean of 3.05 years of formal education, while farmers in Santa Bárbara had a mean of 1.77 years. A t-test of the difference between the regions was significant at five per cent. The medians for both regions were 3.0 years and 0.0 years respectively, revealing the large numbers of people with no formal education in Santa Bárbara (Table 6.3c). For both regions, education increased from 1983 to 1993, though at a faster rate in Ocotepaque. A t-test between the two time periods showed the change in Santa Bárbara to be statistically significant at 10 per cent while that of Ocotepaque was

significant at five per cent. Also in Ocoatepeque, the level of education tends to increase with farm size (Table 6.3b); the correlation coefficient was 0.3490 and was significant at one per cent.

Farmers in Ocoatepeque were more likely to have participated in a course -- 68.3 per cent compared to 25.0 per cent in Santa Bárbara (Table 6.4). The topics of these courses include literacy and nutrition. In 1982, the figures were 32.8 per cent and 19.5 per cent respectively, showing that the number attending courses in Ocoatepeque more than doubled in these ten years while it increased only slightly in Santa Bárbara. A t-test showed that the change in Santa Bárbara was not statistically significant while that of Ocoatepeque was significant at one per cent.

There is a higher rate of marriage and lower rate of 'free unions' in Ocoatepeque (Table 6.5), possibly reflecting the influence of Protestant evangelical churches in the region. Most families in both regions have children; 92.5 per cent in Santa Bárbara and 98.3 per cent in Ocoatepeque. The average home in Santa Bárbara in 1993 had 6.12 residents, while it had 4.95 residents in Ocoatepeque (Table 6.6). There was no statistically significant relationship between family size and farm size in either region.

As it is a department of relatively recent colonisation, there is more immigration into Santa Bárbara. On the average, farmers in Santa Bárbara in 1993 had lived in their villages 33.12 years and in the department 44.94 years, compared to 47.02 years and 56.64 years in Ocoatepeque (Tables 6.7 and 6.8). It is not clear why the 1988 figure for Ocoatepeque in Table 6.7 is lower than that of 1983, and there is some doubt about

its accuracy.

B. STANDARD OF LIVING

Although more homes in Santa Bárbara had electricity in 1992 than ten years earlier (15.1 per cent compared to 9.9 per cent), the proportion of homes with electricity in Ocotepèque (34.0 per cent) was more than twice that of Santa Bárbara (Table 6.9). In 1989, the percentage of coffee producers nationally with electricity was 15.2 (IHCAFE 1989). Homes in Santa Bárbara were less likely to have a radio, sewing machine, refrigerator or television than homes in Ocotepèque, and the percentage of homes having these items in both regions remained fairly constant over the ten-year period, except for televisions and refrigerators in Ocotepèque (Table 6.10). The proportion of homes with some sort of sanitation increased dramatically in the same time period, although in 1992 nearly one-fourth of homes in Santa Bárbara still had none and nearly two-thirds had only a latrine (Table 6.11). Again Santa Bárbara was closer to the national average, as in 1989 10.2 per cent of coffee-producer homes had indoor toilets and 48.1 had latrines (IHCAFE 1989). Almost all homes in Ocotepèque had piped water while two-thirds did in Santa Bárbara (Table 6.12).

C. FARM SIZE AND TENANCY

In 1992, the mean farm size in Santa Bárbara was 14.64 *manzanas* (approximately 10.25 hectares) and in Ocotepèque was 17.71 mz (12.40 ha) (Table 6.13). The range in Santa Bárbara was 0.20 mz to 158.70 mz, with a median of 7.15 mz (5 hectares) and m-estimates² of 8.69 (Huber), 8.40 (Hampel), 7.03 (Turkey) and 7.01 (Andrew),

² M-estimates are robust maximum-likelihood estimates of location.

showing the influence of extremely large farms on the mean. The range in Ocotepaque was 0.10 mz to 323.0 mz, while the median was 4.00 mz. M-estimates were again much lower than the mean with 4.77 (Huber), 4.42 (Hampel), 3.53 (Turkey) and 3.52 (Andrew) due to the high proportion of small farms in Ocotepaque. It is interesting to note that mean farm size was larger in Ocotepaque while the median and m-estimates were larger for Santa Bárbara. The mean farm size in Santa Bárbara decreased from 1982 to 1992 while it increased in Ocotepaque. A t-test showed the change to be statistically significant at 10 per cent in Santa Bárbara and insignificant in Ocotepaque. In 1992 farmers in Santa Bárbara owned a mean of 1.48 parcels while those in Ocotepaque owned a mean of 1.80 parcels (Table 6.14).

Roughly half the farms in Ocotepaque had less than 2.5 hectares in 1992, while the corresponding figure for Santa Bárbara was 29.0 per cent. At the other end of the scale, 32.8 per cent of the farms in Santa Bárbara and 20.4 per cent of the farms in Ocotepaque had more than 10 hectares (Table 6.15).

In both regions, the average length of time the farmer had owned the plot was just over 18 years (Table 6.16). In Santa Bárbara the years of plot ownership tended to increase with total farm size (15.19 years for farms with less than 2.5 ha. and 25.39 years for farms with more than 20 ha.) (Table 6.16a). In Ocotepaque there seems to be no pattern (Table 6.16b). The correlation between total farm size and years of owning the parcel was not statistically significant in either region. Using the mean ages from Table 6.1, it can be seen that the mean age to acquire land in Santa Bárbara was 34.5 years and in Ocotepaque it was 40.0 years.

Land is used more intensively in Ocotepaque. There, in 1992, 87.9 per cent of the land was in production compared to 62.8 per cent in Santa Bárbara (Table 6.17). Nearly 20 per cent of the land in Santa Bárbara was still in brush, reflecting that it is an area of relatively recent colonisation. In both regions farm size and intensity of use were negatively correlated. The coefficient for Santa Bárbara was -0.3631 and was statistically significant at one per cent, while that for Ocotepaque was -0.2927 and was significant at five per cent.

In both regions most farmers bought their land (Table 6.18). The land market had been slightly more active in Santa Bárbara where 65.8 per cent of the farmers bought their land on the market and an additional 2.7 per cent bought their land with concessions from their parents. In Ocotepaque the numbers were 53.3 per cent and 8.3 per cent respectively. Farms with more than five hectares in Santa Bárbara or 2.5 hectares in Ocotepaque were most likely to have been purchased rather than inherited (Tables 6.18a).

Although they do not have INA titles, most farms (91.4 per cent) in Ocotepaque have some sort of documentation for their land, and many farms in Santa Bárbara have documentation in addition to the INA title (Table 6.19). This is most commonly a private document such as a bill of sale, followed by a registered public document. The other documents listed in Table 6.19 are: a registered public document, which is notarised and registered at the municipal office and has fairly solid legal rights; an unregistered public document which is the same as the previous document except that it is not registered and is slightly less secure; a private document, usually a bill of

sale; a document of inheritance; and a document from the municipal government.

To determine the total value of the parcel, improvements to the land are meant to be registered in a local registry. In spite of a recent campaign, registration of improvements in Santa Bárbara is still low (11.5 per cent in 1992) (Table 6.20). The most common reason given for not registering improvements was that the farmer did not know how to do it, did not have time, or did not think it is necessary (Table 6.20a).

Roughly one quarter of farmers in both regions rent or borrow land from others (Tables 6.21 and 6.21a). This rate decreased slightly over the ten years. Fewer farmers rent or loan land to others (Tables 6.22 and 6.22a). Renting land out increased over the ten years in Ocotepéque and decreased in Santa Bárbara. As could be expected, small farmers were more likely to rent land in and large farmers were more likely to rent it out (Tables 6.23 and 6.24).

D. LAND SALES/TRANSFERS

Between 1988 and 1993 16.2 per cent of the farms surveyed in Santa Bárbara and 19.7 per cent of those in Ocotepéque changed hands (Table 6.25). In Santa Bárbara, farms of between 2.6 and five hectares had the highest rate of transfer, while in Ocotepéque most transfers were of farms with less than 2.5 hectares or between five and 10 hectares (Table 6.25a). In Santa Bárbara farm size and propensity to sell were negatively correlated (-0.1445) and statistically significant at five per cent. In Santa Bárbara, 61.3 per cent of these transfers were sales (as opposed to inheritances)

while the corresponding figure for Ocoatepeque was 75.0 per cent (Table 6.26). The relatively high proportion of women among the new owners in Santa Bárbara seems to be due to women 'inheriting' the land from their late husbands or partners (Table 6.27).

Of the new owners that knew, the most common reason for the sale in the five years before 1993 was that the previous owner had been ill or had died (Table 6.28). The second most common reason was that the owner needed money. In 1988, emigration was the main reason in both regions. These data indicate that it is unlikely that titling has led to an increase in land sales. This is supported by the findings of Coles (1988) who reviewed the records of land sales in the four *municipios* of Santa Bárbara from 1964 to the late 1980s and found that, although there was great variation among the years and regions, the overall patterns of land sales remained unchanged. Also working from the property registry in Santa Bárbara, Salgado *et al.* (1994) found that from 1987 to 1992, 2,274 transactions of agricultural land were registered, comprising 46,214 mz. Based on data from the 1974 agricultural census (Tables 5.5 and 5.6, pp. 91 and 92), this is 14.1 per cent of the number of farms and 12.1 per cent of the agricultural land in the department. It is surprising that this rate of farm sales is so similar to that found in the survey for Santa Bárbara for the same time period since so few of the sales were reported as registered. It is possible that the number of farms in the department has increased since 1974 (which would mean their data actually represent less than 14 per cent) or that larger farms, not included in this study, had a higher rate of registering land transfers.

Most of the former owners still lived in the same area, or were deceased, but in Ocotepeque 16.7 per cent of former owners had emigrated from the department compared to 7.1 per cent in Santa Bárbara (Table 6.29). The former owners in Ocotepeque were also more likely to live in an urban area than were those from Santa Bárbara -- 22.2 per cent compared to 3.7 per cent (Table 6.30).

Of the sales in Santa Bárbara, only 34.5 per cent were notarised (witnessed by a legal notary) and 20.7 per cent registered at the municipal offices (Table 6.31). The corresponding figures for Ocotepeque were 27.3 per cent and 36.4 per cent. This does not bode well for the long-term validity of titles.

E. ACCESS TO CREDIT

Increased access to credit was intended to be one of the most significant benefits of titling. These preliminary data show that other factors, such as farm size, may be more important for access to credit than having a legal title. In 1993, only 28.0 per cent of the farmers in Santa Bárbara reported having received advice on agricultural credit compared to 55.9 per cent of farmers in Ocotepeque (Table 6.32). Interestingly, both regions started at nearly the same level (13.6 per cent and 11.8 per cent respectively) ten years before; the increase in Ocotepeque was due largely to the activity of NGOs in the department. The most common institution offering this advice in Santa Bárbara was IHCAFE (Instituto Hondureño de Café) the State's organisation for assistance to coffee producers, while in Ocotepeque the most common institutions were NGOs (PRODERE and World Vision) followed by the Ministerio de Recursos Naturales (Ministry of Natural Resources) (Table 6.33). In

Santa Bárbara farmers with more than five hectares were most likely to receive this advice while in Ocotepaque farmers with 2.5 to ten hectares received advice most often (Table 6.32a). Of those who received advice on agricultural credit, just more than 80 per cent in both regions thought this advice was 'good' (Table 6.34).

In Santa Bárbara 31.2 per cent of the respondents solicited credit in 1991 or 1992, nearly all of these alone, while in Ocotepaque 60.0 per cent of the respondents solicited credit (Table 6.35). Of these, nearly one-third solicited credit through a group. In Santa Bárbara, the size categories least likely to solicit credit were those with farms of less than 2.5 hectares and those with farms of five to ten hectares. In Ocotepaque, the category least likely to solicit credit was farmers with 2.5 to five hectares, followed by farmers with less than 2.5 hectares (Table 6.35a).

Overall, 27.4 per cent of farmers in Santa Bárbara and 50.8 per cent of farmers in Ocotepaque received credit in 1991 or 1992, compared to 14.1 per cent and 18.0 per cent respectively in 1981 to 1982 (Table 6.36). The percentage of farmers receiving credit in Ocotepaque nearly tripled in this ten-year period, while it nearly doubled in Santa Bárbara in the same time period. A chi-squared test showed the change to be statistically significant at one per cent in both regions. Interestingly, chi-squared tests found no statistically significant difference in the likelihood of receiving credit between the two regions in 1982 or 1987, but by 1992, the difference between the two regions was statistically significant at one per cent, *i.e.* it could be said that farmers in Ocotepaque were more likely to receive credit than were farmers in Santa Bárbara. In Ocotepaque the rate of those receiving credit was fairly consistent across

farm sizes, with farms of five to ten hectares generally most likely to receive credit (Table 6.36a), although in 1987 access to credit was still positively correlated to farm size. In Santa Bárbara, the percentage of farmers who received credit between 1991 and 1992 increased with farm size. Just 16.7 per cent of farmers who owned less than 2.5 hectares received credit compared to 41.7 per cent of farmers with 20 hectares or more. The correlation coefficient for size and receiving credit was positive (0.1829) and significant at five per cent for Santa Bárbara.

Interestingly, most of those who solicited credit in either region received it (87.9 per cent in Santa Bárbara and 80.6 per cent in Ocoatepeque) indicating a high degree of self-selection (Table 6.37). In Santa Bárbara this rate was fairly consistent across farm size, while in Ocoatepeque farmers with 10 hectares or less were more likely to be granted loans (Table 6.37a), reflecting the role of NGO credit for small farmers.

In Santa Bárbara, most loans in 1991 and 1992 were from private banks (it should be noted that private banks handled most of the loans for the AID/IHCAFE small coffee farmer project, referred to in the previous chapter) or BANADESA (the state development bank), while in Ocoatepeque, most loans were from NGOs, followed by private banks and BANADESA (Table 6.38).

The mean loan amounts for Santa Bárbara from 1991 to 1992 were Lps.5,830 and in Ocoatepeque were Lps.5,022.4 (Table 6.39). The median amounts, however were Lps.4,400.0 and Lps.1,500.0 respectively. M-estimates for loans in Santa Bárbara ranged from Lps.3,975.9 (Turkey) to Lps.4,351.8 (Huber). For Ocoatepeque they

were Lps.1,447.7 (Andrew) to 1,854.4 (Huber). These show the effect of a few extremes on the means of both regions, but especially in Ocotepeque. The mean amount of loans from NGOs in Ocotepeque was just less than Lps.1,000.

The mean repayment time for loans in Santa Bárbara was 40.2 months and the mean annual interest rate was 20.4 per cent (Tables 6.40 and 6.41). In Ocotepeque the mean repayment time was 20.0 months with a mean annual interest rate of 17.9 per cent, both of these figures representing the prevalence of lower-interest, short-term NGO loans in Ocotepeque. It should be noted that the rate of inflation western Honduras in 1991 was 37.4 per cent and in 1992 it was 12.3 per cent. This indicates that most loans from 1991 had a negative real interest rate due to unusually high inflation in that year.

In Santa Bárbara, INA titles were the most common guarantees used for loans in 1991 and 1992 (39.2 per cent), followed by the use of a co-signer (19.6 per cent). In Ocotepeque promissory notes were the most common guarantees (39.3 per cent) while 21.4 per cent of the loans were guaranteed by a public title (*escritura publica*) (Table 6.42). Most loans in both regions were used for the purchase of farm inputs rather than capital investments (Tables 6.43a and 6.43b).

F. TECHNICAL ASSISTANCE

Roughly one-third of producers in Santa Bárbara and more than half of producers in Ocotepeque have been visited by *agrónomos*, (agronomists or farm-management specialists) (Table 6.44). This shows a decline in visits of agronomists in Santa

Bárbara since 1982, but the 1982 number was probably inflated as farmers included as agronomists INA personnel working on the titling project. It also shows a significant increase in access to technical assistance in Ocoatepeque from 1982 to 1992. Again, in Santa Bárbara, farms with more than five hectares were more likely to be visited, while in Ocoatepeque there was no consistent relationship with size (Table 6.45). Of the farmers who reported visits, in Santa Bárbara in 1993 slightly fewer than 50 per cent of the respondents said the agronomists come three times a year or more, while in Ocoatepeque 70 per cent said the same (Table 6.46). Farmers in both regions were generally pleased with the advice (Table 6.47).

G. ACCESS TO SERVICES

In general, farmers in Ocoatepeque have better access to services than do those in Santa Bárbara. Although it has decreased greatly in both regions, (this decrease reflects that markets have been expanding into rural areas rather than that farmers have changed their mode of transport (Table 6.49)), it takes farmers in Santa Bárbara an average of four times as long to reach the site where they sell their produce (57.4 compared to 13.5 minutes) (Table 6.48), and it takes their children two and a half times as long to reach the nearest primary school. Farmers in Ocoatepeque are also more likely to sell their produce from their home.

H. USE OF INPUTS/IMPROVEMENTS/EQUIPMENT

Improved access to credit through titling was intended to increase the use of inputs, while enhanced security was hoped to lead to more improvements on the land. The percentage of farmers planting new areas to coffee or replanting old areas increased

in both departments over the ten-year period, and farmers in Santa Bárbara were much more likely to replant than those in Ocotepèque (Table 6.50). In most years, the mean number of trees planted per *manzana* fell well short of the recommended 3,333 trees/mz (Table 6.52).

Fertilizer is the input farmers in both regions are most likely to use -- 36.0 per cent of farmers in Santa Bárbara and 89.5 per cent in Ocotepèque reported fertilizer use in 1993 (Table 6.53). In 1983, the figures were 21.5 per cent and 57.4 per cent respectively. A t-test shows the change from 1982 to 1992 to be statistically significant at one per cent in both regions. In Santa Bárbara, the use of fertilizer increased with farm size, while in Ocotepèque farmers with 2.5 to five hectares were least likely to use fertilizer (Table 6.53a), although in both regions the use of fertilizer by this group nearly doubled from 1982 to 1992. Insecticides and herbicides were used by 22.6 per cent and 23.7 per cent of farmers in Santa Bárbara, respectively, while the corresponding rates in Ocotepèque were 59.6 per cent and 36.8 per cent. In Santa Bárbara the increase in the use of insecticides was statistically significant at one per cent while that of herbicides was significant at five per cent. In Ocotepèque, the change in the use of insecticides was also significant at one per cent while that of herbicides was not significant. Other inputs were consistently used at a higher rate in Ocotepèque than in Santa Bárbara. Again, these inputs had a higher rate of use in Ocotepèque in 1982, and the rate of increase in use was faster in Ocotepèque. It should be noted that in Santa Bárbara nearly half of all producers did not use any of the eleven inputs on which data have been gathered in all three surveys (the first eleven in Table 6.53), and that this figure hardly changed from that

of 1982 (Table 6.54) (the mean number of inputs used was 1.84). In Ocotepèque, 93 per cent of farms used at least one input and the mean number used was 4.14.

Farmers in Ocotepèque also have more improvements on their land -- in 1992 77.2 per cent had fences, 8.8 per cent had terraces and 47.4 per cent had concrete patios (to dry coffee), while the corresponding figures for Santa Bárbara were 34.4 per cent, 4.8 per cent and 36.6 per cent (Table 6.53). In addition, 42.1 per cent of farmers in Ocotepèque had a sprayer compared to 24.7 per cent in Santa Bárbara. Rates were nearly equal in both regions for coffee pruners, wells and storage facilities. More importantly, rates for most of these improvements had not increased in Santa Bárbara since 1982 when the project was initiated (more farms did, however, have terraces, sprayers and storage facilities).

Farmers in Santa Bárbara were more likely to finance the purchase of inputs with loans (Table 6.55). For example, 41.8 per cent of farmers in Santa Bárbara who used fertilizer in 1992 purchased it with a loan compared to 21.6 per cent in Ocotepèque. Few farmers used loans to finance capital improvements, although this was more common in Santa Bárbara. Of the farmers in Santa Bárbara that have concrete patios, 8.8 per cent used bank financing as did 9.5 per cent of the farmers with storage rooms, compared to none for both of these improvements in Ocotepèque.

I. LIVESTOCK

Only 5.4 per cent of farms in Santa Bárbara and 13.3 per cent of farms in Ocotepèque had beef cattle, and they owned means of 21.10 head and 30.75 head per

farm (Table 6.56), respectively, with medians of 6.50 head and 7.00 head. The maximum numbers were 100 head in Santa Bárbara and 200 in Ocotepaque. Estimates for Santa Bárbara range from 4.36 (Andrew) to 8.01 (Huber) and for Ocotepaque range from 6.62 (Hampel) to 7.33 (Huber), again reflecting the influence of extremes on the means. These farms sold a mean of 1.40 head in Santa Bárbara and 4.13 head in Ocotepaque in the year prior to the interview. The ownership of beef cattle has become slightly more concentrated over the past ten years in both regions, especially in Ocotepaque.

For the 15.6 per cent of farms in Santa Bárbara and 44.1 per cent of farms in Ocotepaque that owned dairy or dual purpose cattle in 1992, the means were 10.86 head and 4.46 head, respectively (Table 6.57) with medians of 4.00 head and 2.50 head. The maximum number owned in Santa Bárbara was 55 head and in Ocotepaque was 33. The ownership of dairy and dual purpose cattle became markedly more concentrated in Santa Bárbara in the ten years.

In 1992, 13 per cent of farmers in Santa Bárbara and 16.9 per cent in Ocotepaque owned a mean of 1.63 head of pigs and 2.90 head respectively (Table 6.58) with medians of 1.00 head and 2.00 head. The maxima were five pigs and 8 pigs respectively.

When considering only the 57.0 per cent of farms in Santa Bárbara and 76.3 per cent in Ocotepaque that had chickens in 1992, the mean numbers of birds per farm were 14.02 birds and 15.36 birds, respectively (Table 6.59), with medians of 11.50 birds

and 15.00 birds. Farm families with chickens consumed an average of five chickens per year in Santa Bárbara and 13 chickens in Ocotepaque.

J. CROP PRODUCTION

The 82.3 per cent of farmers in Santa Bárbara who cultivated coffee in 1992 had a mean of 3.81 *manzanas* in coffee and median of 2.50 mz. in 1992. In Ocotepaque, the 62.7 per cent of farmers cultivating coffee had a mean of 2.96 mz. and median of 1.00 mz.. Both these means increased slightly over those of 1982, while the percentage of farms cultivating coffee decreased (Table 6.70). In both regions, small farmers dedicated a higher proportion of their land to coffee than did large farmers (Tables 6.60a and 6.60b).

Coffee farmers in Santa Bárbara had a mean farm production of 21.45 quintals (100 pound units) and median of 12.00 q. in 1992, while those of Ocotepaque had a mean of 61.34 quintals and median of 6.00 q.(Table 6.61), reflecting the influence of a few farms that produce a great deal of coffee. The mean productivity of coffee in Santa Bárbara was 6.55 q/mz, and in Ocotepaque was 11.05 q/mz (Table 6.62), compared to the national mean productivity of just more than 12 q/mz. The range of productivity in Santa Bárbara was from 0.33 q/mz to 36.36 q/mz. The median was 4.62 q/mz and m-estimates ranged from 4.38 q/mz (Andrew) to 4.93 q/mz (Huber). The range of productivity in Ocotepaque was from 2.00 q/mz to 50.00 q/mz, with a median of 9.00 q/mz. M-estimates ranged from 7.78 q/mz (Andrew) to 8.61 q/mz (Huber). T-tests show that the changes in productivity from 1982 to 1992 were not statistically significant in either region, even at 10 per cent. A correlation of farm

size with coffee productivity was not significant in Santa Bárbara, but was significant at one per cent and positive (0.5791) in Ocotepèque. In Santa Bárbara, the likelihood of raising coffee was positively correlated with farm size (0.2620) and was significant at one per cent.

The 32.3 per cent of farmers in Santa Bárbara cultivating maize had a mean of 1.80 mz in production and median of 1.00 mz, while the 44.1 per cent of farmers in Ocotepèque with maize had a mean of 1.52 mz in maize production and median of 1.00 mz (Table 6.63). These figures are very similar to those of 1982, although the proportion of farmers growing maize declined slightly. Small farmers dedicated a higher proportion of their land to maize production than did large farmers (Tables 6.63a and 6.63b).

The mean per farm production of maize in Santa Bárbara was 32.87 q and the median was 16.00 q, while in Ocotepèque the mean was 34.46 q and the median was 22.50 q (Table 6.64). The mean productivity of maize in Santa Bárbara was 17.76 q/mz and in Ocotepèque was 27.14 q/mz (Table 6.65). Nationally, the mean productivity for maize in 1987 was 17.2 q/mz (Ruben 1991), showing that productivity in Santa Bárbara was very similar to the national average while that in Ocotepèque was 58 per cent higher than the national average. The median productivity of maize in Santa Bárbara was 14.50, q/mz in the range of 4.00 q/mz to 70.00 q/mz. M-estimates ranged from 14.07 q/mz (Andrew) to 15.08 q/mz (Huber). Productivity in Ocotepèque ranged from 6.00 q/mz to 83.33 q/mz with a median of 22.00 q/mz. M-estimates ranged from 20.76 q/mz (Turkey) to 22.31 q/mz (Huber). The decrease

in maize productivity from 1982 to 1992 in Santa Bárbara was statistically significant at 10 per cent, while the increase in Ocoatepeque was not statistically significant. In Santa Bárbara, maize productivity was positively associated with size (0.3978) and was significant at one per cent. In Ocoatepeque, the relationship was negative but not statistically significant (Tables 6.65a and 6.65b). In Santa Bárbara, the growing of maize was positively correlated with farm size (0.3763) and was significant at one per cent.

The 19.9 per cent of farmers in Santa Bárbara cultivating beans had a mean of 0.93 mzs in beans, while the 25.4 per cent of farmers cultivating beans in Ocoatepeque had a mean of 0.42 mzs (Table 6.66). This reflects an increase in the number of farms growing beans in both regions since 1982 and a slight decrease in the mean plot size devoted to beans in Ocoatepeque. There was a mean farm production of 8.01 q in Santa Bárbara (median 6.00 q) and 5.04 q in Ocoatepeque (median 4.00 q) (Table 6.67). Productivity of beans in Santa Bárbara ranged from 1.00 q/mz to 24.00 q/mz with a mean of 9.87 q/mz and median of 10.00 q/mz. Productivity of beans in Ocoatepeque ranged from 1.50 q/mz to 33.33 q/mz with a mean of 15.49 q/mz and median of 12.00 q/mz (Table 6.68). These changes in productivity were not statistically significant in either region. There was no statistically significant correlation between farm size and productivity of beans in either region. The national average for productivity of beans was 8.0 q/mz, (Ruben 1991) showing that the sample farmers in both regions had higher productivity than the average.

The 11.8 per cent of farms in Santa Bárbara with pasture had a mean of 8.94 mzs

while the 25.42 per cent of farms with pasture in Ocotepeque had a mean of 7.95 mz (Table 6.69). Pastures ranged in size in Santa Bárbara from 1.00 mz to 40.00 mz, with a median of 4.50 mz. M-estimates of pasture size ranged from 4.17 mz (Turkey) to 5.23 mz (Huber). In Ocotepeque, pasture size ranged from 0.25 mz to 35.00 mz with a median of 4.00 mz. M-estimates ranged from 3.53 mz (Turkey) to 4.62 mz (Huber).

Other crops of lesser importance in Santa Bárbara included cocoa (grown on 2.2 per cent of farms), fruit (7.0 per cent), rice (1.6 per cent), and vegetables (4.8 per cent) (Table 6.70). Bananas were also used to provide shade for coffee and for home consumption on 10.2 per cent of farms in Santa Bárbara and 1.7 per cent in Ocotepeque. Other crops produced on the farms in Ocotepeque included fruit (5.1 per cent), rice (1.7 per cent), sugar cane (8.5 per cent) and vegetables (10.2 per cent). It was hypothesised that farm size might affect cropping patterns, *i.e.* that small farms would be more likely to grow subsistence crops. However, logistic regressions for the production of coffee, maize and beans showed that farm size was not statistically significant in determining which crops were grown, and therefore that small farmers are integrated into the market and do not produce only for home consumption. In addition, larger farms are also involved in the production of basic grains.

K. OFF-FARM INCOME

Just more than a third (34.9 per cent) of the farm owners interviewed in Santa Bárbara had some type of off-farm employment in 1992 (Table 6.71), and they

worked half time (mean of 26.1 weeks/year; median of 25.0 weeks) (Table 6.72). Roughly one farm owner in five (19.7 per cent) in Ocotepeque had off-farm employment, and those with employment worked an average of 33.8 weeks a year (median of 40.0 weeks). The proportion of farmers with other employment remained nearly constant from 1982 to 1992, while the number of weeks worked rose slightly in Santa Bárbara (from 20.1 weeks) and substantially in Ocotepeque (from 13.1 weeks). In Santa Bárbara, the likelihood of working off the farm was negatively associated with farm size (-0.2493) and was significant at one per cent (Table 6.71a).

The 1992 mean weekly pay in Santa Bárbara was Lps.92.5 while it was Lps.130.9 in Ocotepeque³ (Table 6.73). The median rates of pay were Lps.60.0 and Lps.108.0 respectively. M-estimators for Santa Bárbara ranged from Lps.56.1 (Turkey and Andrew) to Lps.59.8 (Huber), and for Ocotepeque ranged from Lps.93.0 (Andrew) to Lps.111.7 (Hampel). These reveal the influence of a few extreme salaries.

Less than ten per cent of farmers in both departments had another source of income in 1992, most commonly a small store (Table 6.74), and the mean annual income from this source was Lps.4,022.9 in Santa Bárbara and Lps.5,466.7 in Ocotepeque (Table 6.75). The range earned from this source in Santa Bárbara was Lps.100 to Lps.15,200 and in Ocotepeque was Lps.600 to Lps.15,000. The medians were Lps.2,160.0 and Lps.3,500.0, respectively. M-estimators for Santa Bárbara ranged from Lps.1,604.1 (Andrew) to Lps.2,187.1 (Huber); while those for Ocotepeque ranged from Lps.3,147.4 (Andrew) to Lps.4,245.0 (Hampel).

³ At the 1992 exchange rate, one Lempira equalled approximately 0.11 pounds sterling.

In Santa Bárbara, 5.4 per cent of the spouses had outside employment in 1992, while in Ocotepaque, 6.6 per cent did (Table 6.71). Again the employment time in Santa Bárbara was shorter -- 30.9 weeks (median 37.5) compared to 44.8 weeks (median 51.00) in Ocotepaque (Table 6.76). However, the mean weekly pay in Santa Bárbara was higher -- Lps.181.4 compared to Lps.155.0 (Table 6.77). The median weekly pay in Santa Bárbara was Lps.121.5 and in Ocotepaque was Lps.100.0. The 'other' source of income provided spouses with a mean of Lps.2,254.0 a year in Santa Bárbara and Lps.3,000.0 a year in Ocotepaque (Table 6.78). The range in Santa Bárbara was Lps.140 to Lps.10,000 with a median of Lps.800, while the range in Ocotepaque was Lps.200 to Lps.7,300. M-estimates for Santa Bárbara were Lps.732.8 (Andrew) to Lps. 848.2 (Huber), and for Ocotepaque were Lps.1,935.4 (Andrew) to 2,499.5 (Huber).

In 11.8 per cent of the households in Santa Bárbara in 1992 at least one child worked, while in Ocotepaque the proportion was 4.9 per cent (Table 6.71). A further 3.2 per cent of households in Santa Bárbara and 1.6 per cent in Ocotepaque had two or more children working, and 1.6 per cent of households in Ocotepaque had three children working. Overall, the children in Santa Bárbara worked a mean of 29.42 and median of 29.00 weeks and received a mean of Lps.76.80 a week (median Lps.60.00). Children in Ocotepaque worked a mean of 5.50 weeks and received a mean of Lps.61.50 a week (median Lps.60.00).

L. ANNUAL TOTAL INCOME

The mean 1992 total farm income in Santa Bárbara was Lps.3,645.4 and in

Ocotepeque it was Lps.9,657.5 (Table 6.79). The range in Santa Bárbara was Lps.0.0 to Lps.60,000, while the median was Lps.1,580.0. M-estimators for total farm income in Santa Bárbara ranged from Lps.1,524.6 (Andrew) to Lps.1,880.3 (Huber). The range for total farm income in Ocotepeque was Lps.0.0 to Lps.262,500, with a median of Lps.2,400.0. M-estimators for Ocotepeque were Lps.2,205.3 (Turkey) to Lps.2,757.3 (Huber). The medians and m-estimators show a smaller degree of difference between the regions. Unsurprisingly, farm size was positively associated with farm income in both regions and was statistically significant at one per cent. The correlation coefficient for Santa Bárbara was 0.3137 and for Ocotepeque was 0.7776.

Real mean farm income, in 1992 Lempiras, for Santa Bárbara in 1982 was Lps.4,764.81 (median Lps.2,156.88) while that of Ocotepeque was Lps.4,028.58 (median Lps.1,591.86). Real per capita farm incomes in 1982 were Lps.844.60 (median Lps.336.05) and Lps.690.46 (median Lps.343.57), and in 1992 were Lps.761.91 (Lps.283.13) and 1,459.24 (Lps.367.50) respectively. Only the decrease in farm income from 1982 to 1992 in Santa Bárbara was statistically significant (at five per cent).

The 1992 mean total income in Santa Bárbara was Lps.7,324.5 and in Ocotepeque it was Lps.14,955.5 (Table 6.80). The range in Santa Bárbara was Lps.330.0 to Lps.80,000.0 and the median was Lps.3,292.5. M-estimates for total income in Santa Bárbara ranged from Lps.2,980.4 (Andrew) to Lps.3,784.9 (Huber). The range in Ocotepeque was Lps.850.0 to Lps.314,500, with a median of Lps.5,400.0.

M-estimates for total income were Lps.4,856.4 (Andrew) to Lps.6,105.2 (Huber). Farm size was also positively related to total income in both regions and was significant at one per cent. The correlation coefficient for Santa Bárbara was 0.2504 and for Ocotepeque was 0.8283.

Real total income (in 1992 lempiras) in 1982 in Santa Bárbara was Lps.6,486.94 (median Lps.3,159.49), and in Ocotepeque was Lps.6,286.88 (median Lps.2,594.45). The increase in total income was not statistically significant in either region. Real per capita income in 1982 in Santa Bárbara was Lps.1,105.03 (median Lps.584.97) and in Ocotepeque was Lps.1,099.20 (median Lps.513.64). The corresponding figures for 1992 were Lps.1,309.4 (median Lps.605) and Lps.2,965.0 (median Lps.1,260). The increase in real per capita income was only statistically significant in Ocotepeque (at five per cent). At the 1992 exchange rate of Lps.5.5/U.S.\$1, the 1992 figures for Santa Bárbara and Ocotepeque are equal to \$239 and \$539, respectively. The per capita income in Santa Bárbara, therefore, is well below the poverty line established by the United Nations of \$370. Distribution of real per capita income in Santa Bárbara changed little from 1982 to 1992 (Table 6.81) and more farms than in Ocotepeque were in the lowest income categories. This table also shows that in 1982 86.3 per cent of the population in Santa Bárbara and 82.0 per cent of the population in Ocotepeque were living below this poverty line (Lps.2,000/year). By 1992 these figures had improved somewhat to 79.0 per cent and 66.7 per cent, respectively, showing that poverty is still a serious problem in both areas.

On the average, farmers in Santa Bárbara received 59.9 per cent of their income from

the farm in 1992, while in Ocotepaque the figure was 72.4 per cent (Table 6.82). In Santa Bárbara, the percent of income received from the farm was positively correlated to total farm size (0.1671) and was statistically significant at five per cent.

M. PERCEPTION OF TITLING PROJECT

Respondents could list up to three advantages of titling. The two mostly commonly mentioned advantages of INA titles in Santa Bárbara in 1993 were that titles 'legalise the situation' (57.5 per cent) and 'increase security' (53.8 per cent), with another 3.8 per cent stating the main advantage was 'to be the owner' (Table 6.83). In 1983, the main advantages mentioned were that titles would 'increase security' (72.3 per cent) and 'give access to credit' (48.7 per cent). The latter response dropped to 36.0 per cent in 1993, probably reflecting the difficulty of obtaining credit even with titles. Twenty-one per cent of the respondents in Santa Bárbara believe titling 'increases the value of the land', compared to 3.7 per cent who did so in 1983. The perception that titles 'facilitate sales' increased from 3.1 per cent to 10.8 per cent from 1983 to 1993 and that they 'facilitate bequeathing' increased from 0 per cent to 17.7 per cent. These last three responses show that the goal of stimulating the land market through titling may be achievable. Of the respondents in Santa Bárbara in 1983, 4.7 per cent did not know if there was an advantage. This figure increased to 10.2 per cent in 1993 and a further 8.6 per cent of respondents believed titles to have no advantage. Promotion of the project prior to its start in 1983 could have influenced the responses from that year.

As could be expected, farmers in Ocotepaque had fewer opinions of titling. In 1983,

the most common response (45.9 per cent) was that the respondent did not know of an advantage to titling (Table 6.83). This was followed by 37.7 per cent of respondents who thought 'increased security' was the main advantage. In 1993, the most common response was that titles would 'increase security' (56.7 per cent), followed by 'legalise the situation' (43.3 per cent) and 'give access to credit' (36.7 per cent). In 1993, only 5.0 per cent of farmers thought there was no advantage to having a title, and 11.7 per cent did not know.

Respondents were also asked to name up to three disadvantages of titling (Table 6.84). In Santa Bárbara in 1993 the most common response was 'there is no disadvantage' (33.3 per cent), and a further 24.9 per cent did not know of a disadvantage. The main disadvantage mentioned was 'the cost of the title' (25.8 per cent) followed by 'the cost of the land' (18.3 per cent). An even higher proportion in 1983 thought there were no disadvantages (51.3 per cent) and 22.0 per cent did not know. The main disadvantage mentioned in 1983 was the cost of the land. Other disadvantages mentioned by less than ten per cent in 1993 included 'taxes,' 'it is a difficult process,' 'sales are made difficult' (until 1992 farms of less than 17 hectares had to receive INA permission to be sold), 'there is still no credit' and 'errors on the title'.

In Ocoatepeque in 1993, 25.0 per cent thought there was no disadvantage in having a title and 20.0 per cent did not know. The most frequently mentioned disadvantage was 'taxes' (38.3 per cent), followed by 'the cost of the title' (18.3 per cent) and 'the cost of the land' (15.0 per cent).

Fandino *et al.* (1986) found in interviews in Colinas that the INA title is considered to be less valuable than traditional documents because the title does not list improvements or their value, the price paid for the land, the history of transactions of the parcel, or neighbouring lands, and it is not witnessed. After sales or inheritances, Coles (1988) discovered that most often the new owners had a private bill of sale, followed by no formal documentation, while some had the INA title in the name of the previous owner, often with the terms of the sale written on the back.

Most farmers in both regions, (74.7 per cent in Santa Bárbara and 85.0 per cent in Ocotepaque) believed more services were needed in their area (Table 6.85). When asked to name up to three services, 64.0 per cent of farmers in Santa Bárbara in 1993 mentioned credit, 55.4 per cent technical assistance, 20.4 per cent markets and 15.6 per cent better roads. In Ocotepaque, technical assistance was cited by 71.7 per cent of farmers and credit by 53 per cent. No other responses were given by ten per cent or more of the sample. In Santa Bárbara the perceived need for credit hardly changed since 1983, the demand for technical assistance increased slightly and that for markets and roads increased greatly. Ocotepaque saw a slight increase in demand for more credit, while that for technical assistance nearly doubled.

Most people in both regions believed titles facilitate access to other services (this was one of the original goals of titling), but the proportion that believed they do not is higher in Santa Bárbara (Table 6.86). Nearly two-thirds of farmers in Ocotepaque believed titles would have a positive impact on their owner's standard of living, while less than half did in Santa Bárbara (Table 6.87). Both these statistics reflect that

titling may not be fulfilling the expectations created by the promotion of the project. When asked what most people thought about titling, the most common response was that titling was a good idea with little practical value (Table 6.88). This was followed by the comment that it increases security.

When asked about land rights, only 11.3 per cent of respondents in Ocotepaque reported conflict with neighbours or family members (Table 6.89). Still, 65 per cent of those in Ocotepaque without legal title stated they would like to receive an INA title (Table 6.90), primarily to increase their security, gain access to credit and legalise their situation (Table 6.91).

N. PERCEPTION OF ECONOMIC SITUATION

As a subjective gauge of the farmers' economic situation, they were asked to evaluate their present and future prospects. Comparing 'this year's' economic situation to 'last year's', 55.9 per cent of farmers in Santa Barbara thought it was worse, compared to 43.3 per cent in Ocotepaque (Table 6.92). Of the three time periods, 1982 was considered the worst in both regions and 1987 was considered the best, which is surprising, considering that per capita income in 1987 was the lowest of the three years. Farmers in Ocotepaque were hesitant to predict the future -- 56.7 per cent declined to say if they thought 'next year' would be better, worse or the same (Table 6.93). Farmers in Santa Bárbara were fairly pessimistic -- 44.6 per cent thought it would be worse. Fewer farmers in either region could say what sort of future they saw for their children, still, farmers in Ocotepaque were more optimistic -- 28.3 per cent thought they would live better, compared to 15.1 per cent in Santa Bárbara

(Table 6.94).

In order to assess their most urgent needs, farmers were asked on what two things they would spend an extra Lps.150 a week (Table 6.95). In Santa Bárbara, 58.6 per cent said they would buy food and 44.1 per cent said they would invest it in the farm. In Ocoatepeque, the responses were more varied. Forty per cent would invest it in the farm, 31.7 per cent buy more food, 18.3 per cent would invest in a business, 15.0 per cent would save it, 13.3 per cent would buy land and 13.3 per cent would improve their home. The priorities in both regions are roughly similar to what they were ten years ago.

III. Conclusion

Access to credit and the use of inputs have increased substantially in both regions. The following chapter will attempt to determine to what extent this increase has been brought about by titling in Santa Bárbara, education or other factors. Significantly, productivity of the two major crops, coffee and maize, has declined slightly in Santa Bárbara and risen slightly in Ocoatepeque. Real farm income has also declined in Santa Bárbara. Reasons for these changes will be explored in the following chapter, as will factors determining land sales.

DESCRIPTIVE TABLES

Personal Characteristics

Table 6.1 Age of owner, in years

	1982 Mean	1982 S.D.	1987 Mean	1987 S.D.	1992 Mean	1992 S.D.
Santa Bárbara	47.60	(15.11)	50.48	(14.75)	53.00	(14.57)
Ocotepeque	52.84	(15.27)	53.97	(15.36)	58.13	(15.58)

Table 6.1a Age of owner by farm size, Santa Bárbara

	1982 Mean	1982 S.D.	1987 Mean	1987 S.D.	1992 Mean	1992 S.D.
< = 2.5 ha	42.68	(15.06)	46.85	(15.23)	48.87	(13.21)
2.6-5 ha	47.76	(14.89)	49.74	(16.59)	51.70	(15.62)
5.1-10 ha	49.74	(14.94)	49.36	(13.45)	54.55	(15.81)
10.1-20ha	48.55	(15.01)	53.47	(14.41)	54.49	(14.82)
20.1 ha +	52.53	(14.12)	56.15	(10.93)	60.21	(10.88)

Table 6.1b Age of owner by farm size, Ocotepeque

	1982 Mean	1982 S.D.	1987 Mean	1987 S.D.	1992 Mean	1992 S.D.
< = 2.5ha	52.86	(16.72)	51.97	(16.43)	57.28	(17.81)
2.6-5 ha	57.00	(12.36)	53.13	(18.50)	60.22	(10.91)
5.1-10 ha	50.00	(17.55)	55.90	(12.75)	60.44	(16.00)
10.1-20ha	57.17	(7.31)	64.80	(8.04)	58.86	(16.32)
20.1 ha +	45.60	(12.46)	53.00	(14.73)	56.40	(12.18)

Table 6.2 Sex of owner, per cent

	Santa Bárbara			Ocotepeque		
	1982	1987	1992	1982	1987	1992
Male	83.8	83.2	80.1	75.4	72.1	75.4
Female	16.2	16.8	19.9	24.6	27.9	24.6

Table 6.3 Years of owner's education

	1982 Mean	1982 S.D.	1987 Mean	1987 S.D.	1992 Mean	1992 S.D.
Santa Bárbara	1.43	(2.35)	1.57	(2.23)	1.77	(2.81)
Ocotepeque	2.05	(2.29)	2.51	(2.50)	3.05	(3.05)

Table 6.3a Years of education by farm size, Santa Bárbara

	1982 Mean	1982 S.D.	1987 Mean	1987 S.D.	1992 Mean	1992 S.D.
<= 2.5 ha	1.39	(2.03)	1.25	(2.33)	1.48	(2.51)
2.6-5 ha	0.90	(1.26)	1.58	(2.21)	1.78	(2.90)
5.1-10 ha	1.03	(1.35)	1.55	(2.06)	1.39	(2.51)
10.1-20ha	1.72	(3.01)	1.75	(1.89)	2.59	(3.57)
20.1 ha +	2.11	(3.42)	1.96	(2.72)	1.67	(2.24)

Table 6.3b Years of education by farm size, Ocotepeque

	1982 Mean	1982 S.D.	1987 Mean	1987 S.D.	1992 Mean	1992 S.D.
<= 2.5 ha	1.28	(1.56)	2.17	(2.27)	2.55	(2.92)
2.6-5 ha	2.71	(2.56)	3.00	(2.14)	3.33	(2.40)
5.1-10 ha	2.43	(1.90)	2.50	(2.22)	2.22	(2.22)
10.1-20ha	3.00	(2.45)	2.60	(2.41)	4.57	(3.99)
20.1 ha +	5.00	(4.00)	3.11	(3.92)	5.40	(3.91)

Table 6.3c Years of education, per cent in each category, 1992

	Santa Bárbara	Ocotepeque
None	55.9	28.3
One	4.8	6.7
Two	10.2	13.3
Three or four	15.1	23.4
Five or six	9.2	23.4
Seven or more	4.7	5.0

Table 6.4 Participation in other courses, per cent

	Santa Bárbara			Ocotepeque		
	1982	1987	1992	1982	1987	1992
Yes	19.5	23.7	25.0	32.8	44.3	68.3
No	80.5	76.3	75.0	67.2	55.7	31.7

Table 6.5 Marital status, per cent

	Santa Bárbara			Ocotepeque		
	1982	1987	1992	1982	1987	1992
Single	6.8	5.8	3.2	4.9	3.3	3.3
Married	47.6	51.3	50.5	68.9	65.0	61.7
Union	37.2	33.5	28.5	8.2	10.0	15.0
Widowed	6.8	6.8	14.5	23.0	20.0	18.3
Divorced	0.5	1.0	1.1	0.0	1.7	1.7
Separated	1.0	1.6	2.2	0.0	0.0	0.0

Table 6.6 Number of people in household

	1982 Mean	1982 S.D.	1987 Mean	1987 S.D.	1992 Mean	1992 S.D.
Santa Bárbara	6.39	(2.61)	6.72	(3.02)	6.12	(2.80)
Ocotepeque	5.62	(2.42)	6.46	(6.81)	4.95	(2.43)

Table 6.7 Number of years residency in village

	1982 Mean	1982 S.D.	1987 Mean	1987 S.D.	1992 Mean	1992 S.D.
Santa Bárbara	28.42	(19.31)	29.35	(20.03)	33.12	(21.25)
Ocotepeque	41.79	(21.78)	39.08	(21.91)	47.02	(22.20)

Table 6.8. Number of years residency in department

	1982 Mean	1982 S.D.	1987 Mean	1987 S.D.	1992 Mean	1992 S.D.
Santa Bárbara	39.67	(19.71)	39.45	(21.27)	44.94	(20.24)
Ocotepeque	50.62	(17.30)	52.59	(17.27)	56.64	(16.86)

Standard of Living

Table 6.9 Method of lighting home, per cent

	Santa Bárbara			Ocotepeque		
	1982	1987	1992	1982	1987	1992
Oil lamp	70.7	81.6	64.9	57.4	60.7	30.5
Candle	3.1	1.1	5.4	1.6	0.0	10.2
Gas lamp	16.2	11.1	14.6	18.0	18.0	25.4
Electricity	9.9	6.3	15.1	23.0	21.3	34.0

Table 6.10 Possession of these goods, per cent

	Santa Bárbara			Ocotepeque		
	1982	1987	1992	1982	1987	1992
Radio	65.4	69.1	64.0	82.0	78.7	80.0
Sew machine	22.0	21.1	20.4	39.3	37.7	41.7
Refrig.	9.4	8.9	9.7	6.6	13.1	16.7
TV	5.2	6.3	8.6	9.8	11.5	21.7

Table 6.11 Type of sanitation, per cent

	Santa Bárbara			Ocotepeque		
	1982	1987	1992	1982	1987	1992
Nothing	69.5	40.3	23.1	54.1	19.7	13.8
Latrine	19.5	50.3	65.9	23.0	52.5	41.4
Toilet	11.1	9.4	11.0	23.0	27.9	44.8

Table 6.12 Source of water, per cent

	Santa Bárbara			Ocotepeque		
	1982	1987	1992	1982	1987	1992
River	11.1	17.3	11.0	3.3	0.0	0.0
Public well	16.9	5.2	3.9	1.7	0.0	1.8
Private well	11.6	15.2	16.6	0.0	0.0	1.8
Public fauc.	2.6	4.2	2.2	5.0	1.6	0.0
In house	57.7	58.1	66.3	90.0	98.4	96.4

Farm Size and Tenancy

Table 6.13 Total *manzanas* owned

	1982 Mean	1982 S.D.	1987 Mean	1987 S.D.	1992 Mean	1992 S.D.
Santa Bárbara	18.72	(36.02)	14.93	(23.83)	14.64	(21.11)
Ocotepeque	9.67	(19.40)	13.11	(22.78)	17.71	(52.80)

Table 6.14 Total number of parcels owned

	1987 Mean	1987 S.D.	1992 Mean	1992 S.D.
Santa Bárbara	1.91	(1.11)	1.48	(0.85)
Ocotepeque	2.15	(1.30)	1.80	(1.39)

Table 6.15 Percentage of farms in each size category

	Santa Bárbara			Ocoatepeque		
	1982	1987	1992	1982	1987	1992
<= 2.5 ha	30.9	28.8	29.0	59.0	47.5	49.2
2.6-5 ha	15.2	20.9	21.5	11.5	13.1	15.3
5.1-10 ha	19.9	17.3	16.7	11.5	16.4	15.3
10.1-20ha	15.2	18.8	19.9	9.8	8.2	11.9
20.1 + ha	18.8	14.1	12.9	8.2	14.8	8.5

Table 6.16 Years as owner of parcel

	1982 Mean	1982 S.D.	1987 Mean	1987 S.D.	1992 Mean	1992 S.D.
Santa Bárbara	13.60	(12.55)	14.55	(12.00)	18.46	(13.11)
Ocoatepeque	16.23	(13.65)	16.00	(12.25)	18.15	(16.03)

Table 6.16a Years as owner of parcel by farm size, Santa Bárbara

	1982 Mean	1982 S.D.	1987 Mean	1987 S.D.	1992 Mean	1992 S.D.
<= 2.5 ha	11.19	(13.23)	12.47	(11.90)	15.19	(9.67)
2.6-5 ha	10.21	(8.82)	12.58	(11.95)	15.10	(9.90)
5.1-10 ha	14.87	(12.40)	16.67	(13.72)	22.40	(18.83)
10.1-40ha	16.17	(13.84)	15.92	(12.32)	19.16	(13.27)
20.1 ha +	16.89	(12.23)	17.15	(8.87)	25.39	(12.27)

Table 6.16b Years as owner of parcel by farm size, Ocoatepeque

	1982 Mean	1982 S.D.	1987 Mean	1987 S.D.	1992 Mean	1992 S.D.
<= 2.5 ha	15.94	(15.01)	16.28	(14.42)	18.52	(18.53)
2.6-5 ha	15.57	(15.47)	13.25	(11.50)	21.71	(18.50)
5.1-10 ha	14.86	(9.15)	18.00	(11.19)	15.00	(7.76)
10.1-20ha	23.59	(9.35)	16.80	(7.98)	20.80	(12.70)
20.1 ha +	12.40	(11.24)	14.89	(9.78)	15.89	(15.19)

Table 6.17 Land use, per cent

	Santa Bárbara		Ocotepeque	
	1987	1992	1987	1992
Production	63.2 (0.378)	62.8 (0.359)	74.6 (0.385)	87.9 (0.249)
Idle	22.1 (0.343)	8.0 (0.182)	16.6 (0.330)	2.8 (0.110)
Brush	14.6 (0.284)	19.7 (0.273)	8.7 (0.262)	5.9 (0.181)
Forest	--	9.4 (0.204)	--	3.4 (0.142)

Table 6.18 How acquired land, per cent

	Santa Bárbara			Ocotepeque		
	1982	1987	1992	1982	1987	1992
Inherited	25.1	24.9	26.6	47.5	35.0	33.3
Purchased	67.0	56.6	65.8	44.3	56.7	53.3
Bought parents	0.5	6.3	2.7	4.9	5.0	8.3
Other	7.4	12.1	4.9	3.2	3.4	5.0

Table 6.18a Percentage that purchased land by farm size, from parents or others

	Santa Bárbara			Ocotepeque		
	1982	1987	1992	1982	1987	1992
<= 2.5 ha	59.3	55.5	64.8	33.4	46.5	44.8
2.6-5 ha	62.1	60.0	45.0	42.9	62.5	100.0
5.1-10 ha	63.2	59.4	76.6	71.4	70.0	77.8
10.1-20ha	79.3	69.5	80.6	83.4	60.0	60.0
20.1 + ha	80.6	81.5	87.5	100.0	88.9	77.8

Table 6.19 Documentation for the parcel, per cent; may have more than one

	Santa Bárbara			Ocotepeque	
	1982	1987	1992	1987	1992
Reg. pub.	13.4	16.7	20.4	26.2	25.9
Unreg. pu	10.1	4.7	4.8	3.3	10.3
Private	47.6	45.0	37.6	44.3	34.5
Inherit.	3.9	3.7	4.3	16.4	3.4
Municipal	1.1	1.0	2.2	3.3	17.2
Nothing	23.5	0.0	0.0	6.6	8.6
INA title	--	100.0	97.8	0.0	0.0

Table 6.20 Have registered improvements, per cent (Santa Bárbara only)

	1987	1992
Yes	11.3	11.5
No	88.8	88.5

Table 6.20a If not, why not, per cent (Santa Bárbara only)

	1987	1992
Do not know how	35.9	34.6
Have not had time	17.6	19.6
Do not think is necessary	37.4	19.6
Do not have documents	4.6	3.9
Economic reasons	4.6	7.8
Have not made improvements	--	14.4

Table 6.21 Rent/borrow land from others, per cent

	Santa Bárbara			Ocotepeque		
	1982	1987	1992	1982	1987	1992
Yes	30.9	26.7	25.8	31.1	23.0	28.3
No	69.1	73.3	74.2	68.9	77.0	71.7

Table 6.21a Area rented in (mz)

	1987 Mean	1987 S.D.	1992 Mean	1992 S.D.
Santa Bárbara	3.34	(7.85)	1.75	(2.44)
Ocotepeque	1.14	(0.46)	1.17	(0.54)

Table 6.22 Rent/loan land to others, per cent

	Santa Bárbara			Ocotepeque		
	1982	1987	1992	1982	1987	1992
Yes	13.9	15.2	4.8	8.2	14.8	18.6
No	86.1	84.8	95.2	91.8	85.2	81.4

Table 6.22a Area rented out (mz)

	1987 Mean	1987 S.D.	1992 Mean	1992 S.D.
Santa Bárbara	2.73	(2.33)	3.06	(2.04)
Ocotepeque	1.86	(0.97)	6.83	(8.56)

Table 6.23 Percentage that rents land from others, by farm size

	Santa Bárbara			Ocotepeque		
	1982	1987	1992	1982	1987	1992
<= 2.5 ha	45.8	45.5	33.3	44.4	37.9	41.4
2.6-5 ha	34.5	22.5	35.0	14.3	12.5	11.1
5.1-10 ha	28.9	12.1	22.6	28.6	10.0	22.2
10.1-20ha	17.2	30.6	18.9	0.0	0.0	0.0
20.1 + ha	16.7	7.4	12.5	0.0	11.1	20.0

Table 6.24 Percentage that rents land to others, by farm size

	Santa Bárbara			Ocoatepeque		
	1982	1987	1992	1982	1987	1992
<= 2.5 ha	1.7	3.6	0.0	0.0	3.4	6.9
2.6-5 ha	11.1	10.0	0.0	14.3	12.5	0.0
5.1-10 ha	18.4	6.1	6.5	42.9	20.0	11.1
10.1-20ha	14.3	22.2	5.4	0.0	0.0	80.0
20.1 + ha	30.6	11.1	20.8	0.0	11.1	44.4

Land Sales/Transfers

Table 6.25 Transferred land ownership in last five years, per cent

	1987	1992
Santa Bárbara	6.3	16.2
Ocoatepeque	15.3	19.7

Table 6.25a Percentage that transferred land in previous five years, by farm size

	Santa Bárbara		Ocoatepeque	
	1987	1992	1987	1992
<= 2.5 has	5.5	14.8	6.9	27.6
2.6-5 has	7.5	25.0	37.5	0.0
5.1-10 has	12.1	16.1	11.1	22.2
10.1-20 has	2.9	10.8	20.0	14.3
20.1 + has	3.7	0.0	25.0	0.0

Table 6.26 Percentage of transfers sold (not inherited or given)

	1987	1992
Santa Bárbara	42.9	61.3
Ocoatepeque	70.0	75.0

Table 6.27 Sex of new owner, per cent

	Santa Bárbara		Ocoatepeque	
	1987	1992	1987	1992
Male	50.0	71.0	80.0	81.8
Female	50.0	29.0	20.0	18.2

Table 6.28 Reason parcel was transferred, per cent

	Santa Bárbara		Ocoatepeque	
	1987	1992	1987	1992
Needed money	8.3	9.7	11.1	8.3
Parcel unprofitable	8.3	0.0	22.2	0.0
To buy land	0.0	0.0	11.1	8.3
Old/ill	8.3	12.9	0.0	16.7
To emigrate	25.0	6.5	33.3	0.0
Improve other	8.3	0.5	0.0	0.0
Owner died	0.0	29.0	0.0	25.0
Do not know	41.7	38.7	22.2	41.7

Table 6.29 Location of previous owner, per cent

	Santa Bárbara		Ocoatepeque	
	1987	1992	1987	1992
Same town	27.3	42.9	40.0	58.3
Deceased	45.5	46.4	30.0	25.0
In department	27.3	3.6	0.0	0.0
Out of dept.	0.0	7.1	30.0	16.7

Table 6.30 Previous owner in rural or urban location, per cent

	Santa Bárbara		Ocoatepeque	
	1987	1992	1987	1992
Rural	58.3	51.9	54.5	66.7
Urban	0.0	3.7	27.3	22.2
Deceased	41.7	44.4	18.2	11.1

Table 6.31 Notarisation/registration of transfer, per cent

1992	Santa Bárbara	Ocoatepeque
Notarised	34.5	27.3
Registered	20.7	36.4

Access to Credit

Table 6.32 Received advice on agricultural credit, per cent

	Santa Bárbara			Ocoatepeque		
	1982	1987	1992	1982	1987	1992
Yes	13.6	24.6	28.0	11.8	24.6	55.9
No	86.4	75.4	72.0	88.5	75.4	44.1

Table 6.32a Percentage that received advice on agricultural credit, by farm size

	Santa Bárbara			Ocoatepeque		
	1982	1987	1992	1982	1987	1992
<= 2.5 ha	8.5	14.5	16.7	2.8	17.2	41.4
2.6-5 ha	10.3	20.0	17.5	28.6	12.5	77.8
5.1-10 ha	13.2	35.4	32.3	14.3	30.0	77.8
10.1-20ha	3.4	30.6	37.8	60.0	60.0	57.1
20.1 + ha	33.3	29.6	50.0	60.0	33.3	60.0

Table 6.33 Institution from which advice on credit was received.

	Santa Bárbara			Ocoatepeque		
	1982	1987	1992	1982	1987	1992
BANADESA	3.1	4.2	7.0	0.0	8.5	10.0
Private bank	0.5	5.2	4.8	4.9	5.0	11.7
INA	3.1	1.6	1.6	1.6	5.0	3.3
MRN	0.5	3.1	2.7	0.0	3.3	15.0
IHCAFE	4.7	15.2	14.0	0.0	1.7	3.3
Business	0.5	0.0	0.1	0.0	0.0	0.0
AHPROCAFE	0.5	3.1	3.8	0.0	1.7	0.0
NGO	0.5	5.2	1.6	1.6	1.7	21.7
Coop	0.5	0.0	1.0	1.6	0.0	1.7
Don't know	1.0	0.0	0.0	1.6	0.0	6.7
No advice	86.9	75.4	72.0	88.5	75.4	44.1

Note: Respondents could name up to three, therefore totals may be greater than 100 per cent.

Table 6.34 Perceived quality of advice on credit, per cent

	Santa Bárbara			Ocoatepeque		
	1982	1987	1992	1982	1987	1992
Good	78.3	74.5	80.4	100.0	93.8	83.3
Average	21.7	21.3	17.6	0.0	6.3	3.3
Poor	0.0	4.3	2.0	0.0	0.0	13.3

Table 6.35 Have solicited credit, per cent

	Santa Bárbara			Ocoatepeque		
	1982	1987	1992	1982	1987	1992
Alone	16.2	18.8	27.4	24.6	23.0	36.7
In group	6.8	3.1	3.8	0.0	4.9	23.3
Both	0.0	0.0	0.0	1.6	0.0	0.0
No	77.0	78.0	68.8	73.8	73.8	40.0

Table 6.35a Percentage that solicited agricultural credit, by farm size

	Santa Bárbara			Ocoatepeque		
	1982	1987	1992	1982	1987	1992
<= 2.5 ha	6.8	12.7	18.5	8.3	20.7	58.6
2.6-5 ha	27.6	22.5	32.5	28.6	12.5	44.4
5.1-10 ha	23.7	27.3	25.8	42.9	30.0	66.7
10.1-20ha	27.6	25.0	45.9	50.0	60.0	71.4
20.1 + ha	41.7	29.6	41.7	100.0	44.4	80.0

Table 6.36 Received credit, per cent

	Santa Bárbara			Ocoatepeque		
	1982	1987	1992	1982	1987	1992
Yes	14.1	22.0	27.4	18.0	24.6	50.8
No	85.9	78.0	72.6	82.0	75.4	49.2

Table 6.36a Percentage of farmers who received credit, by farm size

	Santa Bárbara			Ocoatepeque		
	1982	1987	1992	1982	1987	1992
<=2.5 ha	3.4	9.1	16.7	5.5	13.8	48.2
2.6-5 ha	20.7	22.5	25.0	14.3	12.5	44.4
5.1-10 ha	5.3	27.3	25.8	28.6	30.0	55.6
10.1-20ha	20.7	25.0	37.8	33.3	60.0	42.8
20.1 + ha	30.6	29.6	41.7	80.0	44.4	40.0

Table 6.37 Of those who requested credit, per cent who received it

	Santa Bárbara			Ocoatepeque		
	1982	1987	1992	1982	1987	1992
Yes	61.4	98.1	87.9	68.8	88.2	80.6
No	38.6	0.0	12.1	31.2	11.8	19.4

Table 6.37a Of those who requested credit, per cent who received it, by farm size

	Santa Bárbara			Ocotepeque		
	1982	1987	1992	1982	1987	1992
<= 2.5 ha	50.0	71.4	90.0	66.7	66.7	82.3
2.6-5 ha	75.0	100.0	76.9	50.0	100.0	100.0
5.1-10 ha	22.2	100.0	100.0	66.7	100.0	83.3
10.1-20ha	75.0	100.0	82.3	66.7	100.0	60.0
20.1 + ha	73.3	100.0	100.0	80.0	100.0	50.0

Table 6.38 Percentage of farmers receiving loans from each institution

	Santa Bárbara			Ocotepeque		
	1982	1987	1992	1982	1987	1992
BANADESA	4.71	4.71	12.37	4.92	9.84	10.17
Private bank	3.66	9.42	12.90	11.47	8.20	11.86
IHCAFE	2.09	2.62	1.61	0.00	0.00	6.78
Business	1.05	0.53	0.00	0.00	0.00	0.00
Lender	0.53	0.53	0.00	0.00	1.64	0.00
Family/friend	2.09	0.53	0.00	1.64	0.00	0.00
NGO	0.00	0.50 (coop)	0.54	0.00	0.00	22.03

Table 6.39 Loan amounts, in Lps. (standard deviations in ())

	Santa Bárbara			Ocoatepeque		
	1982 Mean	1987 Mean	1992 Mean	1982 Mean	1987 Mean	1992 Mean
BANADESA (Devt.)	3,300.3 (2,917.0)	3,423.8 (1,722.4)	6,660.9 (7459.8)	3,207.0 (2,418.8)	2,966.7 (706.2)	1,616.7 (1,980.3)
Other bank	6,496.6 (11,307.1)	4,692.2 (4,094.8)	5,725.0 (4,818.6)	5,171.43 (5,810.83)	3,497.8 (5,194.0)	14,000 (20,485.8)
IHCAFE (Cof.Prod)	1,580.0 (1,220.5)	4,770.0 (3,562.2)	3,699.0 (3,799.2)	0.0	0.0	24,375.0 (37,200.8)
Business	1,000 (0.0)	4,000 (--) ¹	0.0	0.0	0.0	0.0
Lender	8,000 (--)	1,500 (--)	0.0	0.0	500.0 (--)	0.0 (--)
Family/ Friend	1,175.0 (665.2)	200.0 (--)	0.0	1,800.0 (--)	0.0	0.0
NGO	0.0	3,600 (--) COOP	120.0 (--)	0.0	0.0	955.9 (853.7)
Average of all loans	3,118.0 (3,794.0)	4,062.5 (3,292.6)	5,830.0 (6,062.9)	4,329.2 (4,790.0)	2,982.4 (3,273.8)	5,022.4 (13,053.8)

Table 6.40 Loan repayment time, months

	Santa Bárbara			Ocoatepeque		
	1982 Mean	1987 Mean	1992 Mean	1982 Mean	1987 Mean	1992 Mean
BANADESA	26.9 (24.9)	34.8 (34.9)	44.2 (30.8)	36.0 (41.6)	10.0 (2.5)	11.3 (1.6)
Bank	21.3 (25.7)	32.5 (33.5)	30.9 (32.3)	24.0 (23.0)	13.4 (6.3)	11.4 (1.5)
IHCAFE	31.5 (35.8)	49.4 (33.7)	84.0 (0.0)	--	--	84.0 (0.0)
Business	7.0 (1.4)	8.0 (--)	--	--	--	--
Lender	12.0 (--)	12.0 (--)	--	--	36.0(--)	--
Family/friend	49.5 (50.0)	12.0 (--)	--	24.0 (--)	--	--
NGO		15.0 (--)	24.0 (--)	--	--	11.0 (1.4)
Ave.	28.1 (31.0)	32.2 (31.3)	40.2 (32.2)	27.3 (26.3)	13.6 (8.4)	20.0 (21.7)

¹ (--) signifies that only one farmer responded.

Table 6.41 Loan annual interest rates

	Santa Bárbara		Ocoatepeque	
	1987 Mean (SD)	1992 Mean (SD)	1987 Mean (SD)	1992 Mean (SD)
BANADESA	13.3 (2.8)	19.1 (6.4)	13.2 (3.3)	16.5 (7.6)
Bank	12.5 (4.4)	22.3 (6.3)	10.8 (6.0)	24.0 (3.1)
IHCAFE	11.4 (5.9)	17.0 (0.0)	--	16.8 (0.5)
Business	48.0 (--)	--	--	--
Lender	11.0 (--)	--	9.0 (--)	--
Family/friend	3.0 (--)	--	--	--
NGO	17.0 (--)	--	--	15.8 (6.2)
Average	13.24 (7.58)	20.40 (6.30)	11.83 (4.49)	17.91 (6.36)

Table 6.42 How loan was guaranteed, per cent

	Santa Bárbara		Ocoatepeque	
	1987	1992	1987	1992
INA title	23.8	39.2	0.0	0.0
Private title	2.4	0.0	6.7	0.0
House	19.0	7.8	0.0	10.7
Untitled land	2.4	0.0	0.0	10.7
Co-signer	4.8	19.6	0.0	0.0
No guarantee	9.5	3.9	26.7	17.9
Animals	0.0	3.9	0.0	0.0
Harvest	21.4	5.9	13.3	0.0
Other document	7.1	7.8	26.7	39.3
Escritura	23.8	11.8	40.0	21.4
Savings	7.1	0.0	0.0	0.0

Note: There were sometimes two guarantees, so totals may be greater than 100 per cent.

Table 6.43a Use of loan, Santa Bárbara, percentage for inputs and percentage for capital investment

	Inputs			Capital		
	1982	1987	1992	1982	1987	1992
BANADESA	62.5	90.0	95.8	37.5	40.0	41.7
Bank	42.9	40.0	100.0	71.4	56.3	16.7
IHCAFE	100.0	75.0	66.7	50.0	50.0	33.3
Business	50.0	50.0	--	50.0	0.0	--
Lender	100.0	50.0	--	0.0	50.0	--
Family/friend	33.3	33.3	--	66.7	33.3	--
NGO	0.0	0.0	100.0	0.0	50.0	0.0

Note: If the loan was used for both, the total is greater than 100 per cent.

Table 6.43b Use of loan, Ocotepque, percentage for inputs and percentage for capital investment

	Inputs			Capital		
	1982	1987	1992	1982	1987	1992
BANADESA	100.0	80.0	100.0	0.0	83.3	0.0
Bank	71.4	100.0	100.0	50.0	75.0	14.3
IHCAFE	--	--	80.0	--	--	40.0
Business	--	--	--	--	--	--
Lender	--	100.0	--	--	100.0	--
Family/friend	100.0	--	--	100.0	--	--
NGO	--	--	100.0	--	--	0.0

Note: If the loan was used for both, the total is greater than 100 per cent.

Technical Assistance

Table 6.44 Source of technical assistance, per cent

	Santa Bárbara			Ocoatepeque		
	1982	1987	1992	1982	1987	1992
Bank	5.2	3.9	7.0	3.3	6.7	8.4
INA	19.4	3.3	3.8	1.6	6.7	6.8
MRN	1.0	5.5	4.3	4.9	5.0	20.3
IHCAFE	24.1	18.8	19.9	9.8	13.3	18.6
Private	0.0	1.1	1.1	0.0	0.0	0.0
NGO	0.5	5.5	4.3	3.3	0.0	10.2
AHPROCAFE	0.0	5.0	0.0	0.0	5.0	0.0
Do not know	2.1	0.0	3.2	3.3	1.7	6.8
None	53.4	68.0	65.6	73.8	66.7	44.1

Note: Totals may be greater than 100 per cent.

Table 6.45 Percentage visited by agronomists, by farm size

	Santa Bárbara			Ocoatepeque		
	1982	1987	1992	1982	1987	1992
<= 2.5 ha	44.1	25.5	24.1	19.4	17.9	58.6
2.6-5 ha	41.4	35.9	25.0	28.6	37.5	33.3
5.1-10 ha	50.0	25.8	48.4	42.9	40.0	66.7
10.1-20ha	37.9	30.3	43.2	16.7	60.0	57.1
20.1 + ha	58.3	48.1	41.7	60.0	55.6	60.0

Table 6.46 Frequency of visits, visits per year

	Santa Bárbara			Ocoatepeque		
	1982	1987	1992	1982	1987	1992
7 +	1.1	18.3	9.7	12.5	5.0	15.2
3 - 6	25.6	30.0	38.7	37.5	30.0	54.5
1 - 2	17.8	30.0	16.1	25.0	35.0	6.1
Rarely	55.6	21.7	35.5	25.0	30.0	24.2

Table 6.47 Perceived quality of advice, per cent

	Santa Bárbara			Ocoatepeque		
	1982	1987	1992	1982	1987	1992
Good	73.6	72.9	94.2	93.3	90.0	80.0
Average	24.1	25.4	5.8	6.7	5.0	16.7
Bad	2.3	1.7	0.0	0.0	5.0	3.3

Access to Services

Table 6.48 Time to arrive at place where produce is sold, minutes

	1982 Mean	1982 S.D.	1987 Mean	1987 S.D.	1992 Mean	1992 S.D.
Santa Bárbara	106.5	(113.3)	71.7	(82.4)	57.4	(18.6)
Ocoatepeque	45.1	(70.8)	10.6	(22.8)	13.5	(30.0)

Table 6.49 Means to arrive at place where produce is sold, per cent

	Santa Bárbara			Ocoatepeque		
	1982	1987	1992	1982	1987	1992
On foot	18.8	27.2	28.0	13.1	27.9	13.8
Bus	1.6	5.2	1.1	0.0	0.0	6.9
Motorbike	0.0	0.0	0.5	0.0	0.0	0.0
Own car	4.2	5.8	7.5	0.0	3.3	6.9
Other car	36.6	23.0	34.4	14.8	4.9	3.4
Animal	19.4	12.0	7.0	14.8	0.0	0.0
Foot/car	0.0	0.0	3.2	0.0	0.0	0.0
In house	19.4	26.7	18.3	57.4	63.9	69.0

Use of Inputs/Improvements/Equipment

Table 6.50 Percentage of farms planting or replanting coffee

Years	Santa Bárbara		Ocoatepeque	
	% New	% Replanted	% New	% Replanted
1982	1.6	2.1	0.0	0.0
1982	0.5	3.1	0.0	3.3
1984	2.1	4.2	1.6	3.3
1985	4.2	5.8	0.0	6.6
1986	4.2	6.3	1.6	3.3
1987	11.0	23.0	4.9	8.2
1987	1.0	19.4	1.6	4.9
1989	0.5	18.8	3.3	4.9
1990	0.5	25.1	0.0	1.6
1991	0.5	22.5	0.0	8.2
1992	1.6	32.5	1.6	11.5

Table 6.51a Number of trees planted and area (in *manzanas*), Santa Bárbara

Years	New		Replanted	
	No. trees	No. <i>manzanas</i>	No. trees	No. <i>manzanas</i>
1982	3,033.3 (2,814.8)	1.3 (0.6)	1,600.0 (2,301.1)	5.0 (4.1)
1982	4,600.0 (--)	2.0 (--)	1,191.7 (1,893.0)	5.2 (3.9)
1984	1,425.0 (1,350.0)	1.0 (0.0)	1,337.5 (1,816.0)	4.1 (3.8)
1985	1,834.5 (1,836.3)	1.1 (0.4)	1,017.7 (1,498.0)	4.0 (3.6)
1986	1,916.3 (2,273.9)	1.1 (0.4)	1,920.8 (1,960.8)	3.9 (3.1)
1987	2,536.4 (2,451.5)	2.0 (1.9)	1,571.5 (1,915.3)	9.1 (38.7)
1987	4,000.0 (1,414.2)	1.3 (0.6)	2,022.3 (1,730.8)	1.1 (0.9)
1989	4,000.0 (--)	1.0 (--)	1,886.1 (1,863.1)	1.1 (0.8)
1990	6,000.0 (--)	3.0 (--)	2,253.1 (2,276.0)	1.2 (1.3)
1991	2,000.0 (--)	0.5 (--)	2,130.2 (1,895.2)	1.1 (0.8)
1992	3,833.3 (1,258.3)	1.2 (0.3)	1,956.9 (1,666.6)	1.1 (0.9)

Table 6.51b Number of trees planted and area (in *manzanas*), Ocotepaque

Years	New		Replanted	
	No. trees	No. <i>manzanas</i>	No. trees	No. <i>manzanas</i>
1982	--	--	--	--
1982	--	--	1,050.0 (1,343.5)	1.5 (0.7)
1984	3,000.0 (--)	1.0 (--)	125.0 (106.1)	1.0 (0.0)
1985	--	--	137.5 (75.0)	2.3 (2.5)
1986	1,000.0 (--)	1.0 (--)	6,250.0 (8,131.7)	1.5 (0.7)
1987	551.7 (460.4)	1.0 (0.0)	574.0 (569.1)	2.6 (2.3)
1987	2,500 (--)	1.0 (--)	4,000.0 (3,700)	2.1 (0.2)
1989	4,500 (4949.75)	2.0 (0.0)	12,333.3 (20,496.2)	4.8 (6.3)
1990	--	--	3,300.0 (--)	1.5 (--)
1991	--	--	5,260.0 (4,299.2)	1.5 (1.4)
1992	11,000.0 (--)	3.5 (--)	3,157.1 (2,953.5)	2.6 (3.3)

Table 6.52 Number of trees per *manzana*, new and replanted combined

Years	Santa Bárbara		Ocotepeque	
	Mean trees/mz	Std. Dev.	Mean trees/mz	Std. Dev.
1982	776.7	980.4	--	--
1982	494.0	810.3	550.0	636.4
1984	891.7	1,257.0	1,083.3	1,661.6
1985	995.1	1,057.6	127.1	92.1
1986	994.0	999.3	2,500.0	3,041.4
1987	983.7	1,059.1	469.8	474.6
1987	2,119.5	1,198.6	1,984.8	1,870.4
1989	2,085.6	1,294.8	2,400.0	1,608.3
1990	2,140.5	1,177.1	2,000.0	--
1991	2,114.7	1,139.8	4,608.5	1,859.1
1992	3,843.0	8,901.6	1,636.6	1,348.7

Table 6.53 Inputs/equipment used, per cent

	Santa Bárbara			Ocoatepeque		
	1982	1987	1992	1982	1987	1992
Improved seeds/plants	11.5	28.8	10.8	19.7	24.6	40.4
Treated/fumigated	5.2	17.3	10.2	13.1	27.9	21.1
Vets.	13.6	17.8	10.8	23.0	31.1	28.1
Fertilizers	21.5	35.6	36.0	57.4	73.8	89.5
Insecticides	12.0	26.2	22.6	26.2	32.8	59.6
Herbicides	16.2	17.3	23.7	24.6	27.9	36.8
Fungicides	8.9	17.3	11.8	27.9	24.6	33.3
Irrigation pump	10.5	2.1	18.8	9.8	3.3	10.5
Fumigation sprayer	17.8	27.2	24.7	18.0	44.3	42.1
Granary	4.2	7.3	10.2	11.5	31.1	36.8
Oxen	4.7	3.1	2.7	6.6	18.0	14.0
Tractor	0.0	0.5	1.6	0.0	0.0	1.8
Coffee pruner		47.6	28.0		42.6	28.1
Fences	34.6	49.7	34.4	63.9	93.4	77.2
Well w/pump	1.0	1.6	2.7	0.0	0.0	1.8
Well w/o pump	12.6	17.3	9.7	4.9	8.2	7.0
Corrals	4.7	8.9	8.1	6.6	14.8	21.1
Stone walls	1.6	2.1	2.7	9.8	11.5	17.5
Terraces	1.0	4.2	4.8	6.6	6.6	8.8
Wind break	7.9	10.5	2.2	0.0	0.0	8.8
Conc. patio	32.4	36.1	36.6	9.8	31.1	47.4
Depulper - manual	27.2	37.2	39.2	13.1	14.8	28.1
Depulper - w/motor	0.0	1.6	5.9	0.0	3.3	12.3
Storage	5.8	7.9	11.3	9.8	9.8	10.5
Ground silo	7.9	17.8	9.1	14.8	16.4	7.0
Metal silo	2.6	5.2	5.9			10.5
Pila -- ferment	15.2	18.8	26.9	4.9	8.2	22.8
Plumbing	17.8	27.7	10.8	11.5	24.6	19.3
Planter - man			3.8			22.8
Planter - ox			1.1			3.5
Planter - mechanical			0.0			0.0

Table 6.53a Percentage that used fertilizers, by farm size

	Santa Bárbara			Ocotepeque		
	1982	1987	1992	1982	1987	1992
<= 2.5 ha	8.5	18.2	20.4	47.2	58.6	89.3
2.6-5 ha	31.0	32.5	32.5	71.4	100.0	77.8
5.1-10 ha	13.2	51.5	32.3	85.7	70.0	100.0
10.1-20 ha	27.6	41.7	48.6	50.0	100.0	100.0
20.1 + ha	38.9	48.1	62.5	80.0	88.9	80.0

Table 6.54 Percentage of farms using inputs (of total of 11 inputs)

	Santa Bárbara			Ocotepeque		
	1982	1987	1992	1982	1987	1992
None	53.4	45.5	49.5	34.4	14.8	7.0
One	17.8	14.7	11.8	16.4	16.4	12.3
Two	10.5	7.9	7.0	9.8	13.1	14.0
Three-four	11.0	10.5	14.5	16.4	23.0	22.8
Five-six	3.7	15.2	11.3	16.4	13.1	22.8
Seven-eight	3.2	5.2	4.9	4.9	16.4	14.0
Nine plus	0.5	1.0	1.0	1.6	3.3	7.0

Table 6.55 Percentage financed with loans, 1987 and 1992

	Santa Bárbara		Ocoatepeque	
	1987	1992	1987	1992
Improved seeds/plants		35.0		21.7
Treated/fumigated		31.6		25.0
Vets.		15.0		6.3
Fertilizers		41.8		21.6
Insecticides		31.0		26.5
Herbicides		22.7		33.3
Fungicides		27.3		47.4
Irrigation pump		14.3		16.7
Fumigation sprayer		10.9		8.3
Granary		0.0	0.0	0.0
Oxen		0.0		0.0
Tractor		33.3		0.0
Coffee pruner		7.7		0.0
Fences	9.4	3.1	1.8	2.3
Well w/pump	0.0	0.0	--	0.0
Well w/o pump	6.1	0.0	0.0.	0.0
Corrals	0.0	0.0	0.0	8.3
Stone walls	0.0	0.0	0.0	0.0
Terraces	25.0	11.1	0.0	0.0
Wind break	10.0	25.0	--	0.0
Conc. patio	7.0	8.8	0.0	0.0
Depulper - manual	8.3	6.8	0.0	0.0
Depulper - w/motor	0.0	0.0	0.0	14.3
Storage	13.3	9.5	0.0	0.0
Ground silo	9.1	0.0	0.0	0.0
Metal silo	22.2	9.1	0.0	0.0
Pila -- ferment	5.6	4.0	0.0	0.0
Plumbing	17.0	0.0	0.0	0.0
Planter - man		0.0		0.0
Planter - ox		0.0		0.0
Planter - mechanical		--		--

Livestock

Table 6.56 Beef cattle owned, only farms with cattle

	1982 Mean	1982 S.D.	1987 Mean	1987 S.D.	1992 Mean	1992 S.D.
Santa Bárbara	16.64 [14]	(38.65)	13.44 [16]	(19.49)	21.10 [10]	(30.64)
Ocoatepeque	8.90 [10]	(9.96)	9.30 [10]	(7.41)	30.75 [8]	(68.44)

Note: Number of farms in [].

Table 6.57 Dairy/dual purpose cattle owned this year, only farms with cattle

	1982 Mean	1982 S.D.	1987 Mean	1987 S.D.	1992 Mean	1992 S.D.
Santa Bárbara	5.95 [41]	(6.91)	8.82 [22]	(12.13)	10.86 [29]	(13.55)
Ocoatepeque	2.88 [24]	(2.11)	6.50 [12]	(5.99)	4.46 [26]	(6.45)

Note: Number of farms in [].

Table 6.58 Pigs owned, only farms with pigs

	1982 Mean	1982 S.D.	1987 Mean	1987 S.D.	1992 Mean	1992 S.D.
Santa Bárbara	3.22 [45]	(4.74)	1.78 [9]	(1.30)	1.63 [24]	(1.06)
Ocoatepeque	2.40 [20]	(1.67)	1.50 [2]	(0.71)	2.90 [10]	(2.42)

Note: Number of farms in [].

Table 6.59 Chickens owned, only farms with chickens

	1982 Mean	1982 S.D.	1987 Mean	1987 S.D.	1992 Mean	1992 S.D.
Santa Bárbara	14.60 [157]	(10.34)	16.22 [68]	(11.09)	14.02 [106]	(11.00)
Ocoatepeque	13.04 [47]	(12.45)	18.88 [8]	(16.44)	15.36 [45]	(8.09)

Note: Number of farms in [].

Crop Production

Table 6.60 Area in coffee, (mz) only farms with coffee

	1982 Mean	1982 S.D.	1987 Mean	1987 S.D.	1992 Mean	1992 S.D.
Santa Bárbara	3.30	(3.67)	3.19	(3.60)	3.81	(5.90)
Ocotepeque	2.41	(4.63)	1.48	(1.78)	2.96	(5.77)

Table 6.60a *Manzanas* in coffee by farm size, Santa Bárbara, only farms with coffee

	1982 Mean	1982 S.D.	1987 Mean	1987 S.D.	1992 Mean	1992 S.D.
<= 2.5 ha	1.22	(0.82)	1.43	(1.36)	1.22 [71.3]	(0.89)
2.6-5 ha	2.10	(1.55)	2.34	(1.64)	3.69 [73.2]	(7.18)
5.1-10 ha	3.05	(2.76)	3.97	(2.88)	3.93 [36.6]	(3.06)
10.1-20ha	5.57	(4.92)	4.38	(3.50)	5.23 [24.7]	(5.00)
20.1 ha +	6.26	(4.66)	7.64	(7.29)	7.58 [13.9]	(10.61)

Note: *manzanas* of coffee as a per cent of mean farm size of the category in []

Table 6.60b *Manzanas* in coffee by farm size, Ocotepeque, only farms with coffee

	1982 Mean	1982 S.D.	1987 Mean	1987 S.D.	1992 Mean	1992 S.D.
<= 2.5 ha	0.78	(0.79)	0.69	(0.39)	0.91 [64.5]	(0.73)
2.6-5 ha	0.58	(0.30)	1.38	(1.47)	1.42 [28.1]	(0.86)
5.1-10 ha	4.63	(9.03)	1.00	(0.61)	0.81 [7.6]	(0.24)
10.1-20ha	5.50	(6.32)	3.75	(3.18)	6.88 [36.1]	(6.76)
20.1 ha +	5.50	(4.44)	4.07	(2.91)	13.33 [9.1]	(14.74)

Note: *manzanas* of coffee as a per cent of mean farm size of the category in []

Table 6.61 Coffee production, quintals (100# units)

	1982 Mean	1982 S.D.	1987 Mean	1987 S.D.	1992 Mean	1992 S.D.
Santa Bárbara	22.16	(31.62)	19.68	(50.28)	21.45	(31.26)
Ocotepeque	17.25	(28.30)	12.89	(19.94)	61.34	(255.38)

Table 6.62 Coffee productivity, quintals/mz

	1982 Mean	1982 S.D.	1987 Mean	1987 S.D.	1992 Mean	1992 S.D.
Santa Bárbara	6.95	(9.76)	5.13	(6.65)	6.55	(6.36)
Ocoatepeque	9.99	(2.71)	8.41	(6.70)	11.05	(10.72)

Table 6.62a Coffee productivity by farm size, Santa Bárbara

	1982 Mean	1982 S.D.	1987 Mean	1987 S.D.	1992 Mean	1992 S.D.
<= 2.5 ha	6.76	(6.08)	4.96	(4.99)	7.17	(6.19)
2.6-5 ha	6.66	(7.05)	4.82	(4.66)	5.53	(4.50)
5.1-10 ha	6.23	(7.75)	5.24	(6.24)	7.13	(6.71)
10.1-20 ha	6.16	(4.35)	6.78	(11.65)	4.23	(2.88)
20.1 ha +	6.53	(9.62)	6.97	(7.51)	5.93	(4.02)

Table 6.62b Coffee productivity by farm size, Ocoatepeque

	1982 Mean	1982 S.D.	1987 Mean	1987 S.D.	1992 Mean	1992 S.D.
<= 2.5 ha	8.78	(7.11)	8.84	(5.86)	9.67	(8.19)
2.6-5 ha	4.58	(3.06)	8.63	(10.86)	9.82	(11.16)
5.1-10 ha	13.97	(15.22)	8.00	(5.83)	15.29	(18.21)
10.1-20 ha	10.75	(10.94)	6.67	(0.0)	6.90	(3.37)
20.1 ha +	8.83	(5.57)	10.71	(4.91)	9.72	(7.28)

Table 6.63 Area in maize, (mz)

	1982 Mean	1982 S.D.	1987 Mean	1987 S.D.	1992 Mean	1992 S.D.
Santa Bárbara	1.79	(1.53)	1.60	(0.98)	1.80	(2.20)
Ocoatepeque	1.26	(0.61)	1.27	(0.87)	1.52	(1.33)

Table 6.63a *Manzanas* in maize by farm size, Santa Bárbara, only farms with maize

	1982 Mean	1982 S.D.	1987 Mean	1987 S.D.	1992 Mean	1992 S.D.
<= 2.5 ha	0.80	(0.57)	0.75	(0.56)	0.90 [52.6]	(0.61)
2.6-5 ha	1.20	(0.57)	1.02	(0.48)	0.86 [17.1]	(0.47)
5.1-10 ha	1.84	(0.89)	1.36	(0.56)	1.67 [15.5]	(1.37)
10.1-20 ha	2.14	(2.37)	2.22	(1.30)	2.37 [11.2]	(2.67)
20.1 ha +	2.28	(1.59)	1.93	(0.73)	2.77 [5.1]	(3.24)

Note: *manzanas* of maize as a per cent of mean farm size of the category in []

Table 6.63b *Manzanas* in maize by farm size, Ocotepique, only farms with maize

	1982 Mean	1982 S.D.	1987 Mean	1987 S.D.	1992 Mean	1992 S.D.
<= 2.5 ha	0.93	(0.51)	0.80	(0.67)	0.87 [61.7]	(0.61)
2.6-5 ha	1.13	(0.54)	1.00	--	1.13 [22.3]	(0.25)
5.1-10 ha	1.92	(0.38)	1.70	(0.84)	2.42 [22.9]	(1.88)
10.1-20 ha	1.50	(0.41)	2.25	(1.06)	1.50 [7.9]	(0.41)
20.1 ha +	1.67	(0.58)	1.25	(1.06)	5.00 [3.4]	--

Note: *manzanas* of maize as a per cent of mean farm size of the category in []

Table 6.64 Maize production, quintals

	1982 Mean	1982 S.D.	1987 Mean	1987 S.D.	1992 Mean	1992 S.D.
Santa Bárbara	41.93	(86.95)	20.16	(18.52)	32.87	(55.33)
Ocotepique	27.65	(19.29)	20.83	(19.52)	34.46	(37.84)

Table 6.65 Maize productivity, quintals/mz

	1982 Mean	1982 S.D.	1987 Mean	1987 S.D.	1992 Mean	1992 S.D.
Santa Bárbara	21.70	(16.37)	14.26	(12.30)	17.76	(12.29)
Ocotepique	23.33	(15.15)	22.16	(19.93)	27.14	(20.08)

Table 6.65a Maize productivity by farm size, Santa Bárbara, (Quintals/mz)

	1982 Mean	1982 S.D.	1987 Mean	1987 S.D.	1992 Mean	1992 S.D.
<= 2.5 ha	13.24	(9.96)	16.88	(9.58)	16.61	(8.99)
2.6-5 ha	19.33	(9.52)	20.53	(23.05)	19.40	(9.83)
5.1-10 ha	18.56	(18.61)	14.52	(14.34)	14.46	(10.65)
10.1-20ha	13.62	(13.88)	10.67	(4.56)	13.79	(9.96)
20.1 ha +	54.68	(76.74)	12.64	(9.42)	24.64	(18.10)

Table 6.65b Maize productivity by farm size, Ocoatepeque (Quintals/mz)

	1982 Mean	1982 S.D.	1987 Mean	1987 S.D.	1992 Mean	1992 S.D.
<= 2.5 ha	37.52	(38.90)	28.36	(15.14)	37.67	(26.66)
2.6-5 ha	30.50	(39.07)	8.00	--	19.83	(7.31)
5.1-10 ha	15.65	(15.27)	9.87	(6.79)	24.88	(8.84)
10.1-20ha	37.33	(17.86)	9.83	(1.18)	16.25	(6.74)
20.1 ha +	15.67	(4.04)	47.50	(45.96)	6.00	--

Table 6.66 Area in beans, (mz)

	1982 Mean	1982 S.D.	1987 Mean	1987 S.D.	1992 Mean	1992 S.D.
Santa Bárbara	0.86	(0.67)	1.35	(1.33)	0.93	(0.78)
Ocoatepeque	0.86	(0.47)	0.48	(0.39)	0.42	(0.22)

Table 6.67 Production of beans, quintals

	1982 Mean	1982 S.D.	1987 Mean	1987 S.D.	1992 Mean	1992 S.D.
Santa Bárbara	9.54	(8.17)	6.59	(9.86)	8.01	(7.11)
Ocoatepeque	3.60	(2.51)	1.80	(1.30)	5.04	(4.32)

Table 6.68 Bean productivity, quintals/mz

	1982 Mean	1982 S.D.	1987 Mean	1987 S.D.	1992 Mean	1992 S.D.
Santa Bárbara	11.61	(6.91)	5.81	(5.28)	9.87	(5.51)
Ocoatepeque	5.00	(4.31)	8.06	(7.58)	15.49	(11.28)

Table 6.69 Area in pasture, (mz)

	1982 Mean	1982 S.D.	1987 Mean	1987 S.D.	1992 Mean	1992 S.D.
Santa Bárbara	6.83	(11.45)	6.11	(6.48)	8.94	(10.81)
Ocoatepeque	7.03	(8.69)	8.28	(8.87)	7.95	(9.74)

Table 6.70 Percentage of farms cultivating each crop

	Santa Bárbara			Ocoatepeque		
	1982	1987	1992	1982	1987	1992
Coffee	89.01	74.87	82.26	78.69	50.82	62.71
Cocoa	2.09	1.05	2.15	0.00	0.00	0.00
Bananas	34.03	2.62	10.21	14.75	0.00	1.69
Fruit	6.81	2.09	6.99	0.00	0.00	5.08
Pasture	44.50	12.04	11.83	47.54	19.67	25.42
Maize	36.65	16.75	32.26	57.38	29.51	44.07
Beans	17.28	8.90	19.89	8.20	8.20	25.42
Rice	9.42	3.66	1.61	3.28	1.64	1.69
S. Cane	7.85	1.05	0.00	6.56	3.28	8.47
Vegetable	--	--	4.84	--	--	10.17
Cardamon	--	2.09	0.00	--	0.00	0.00

Off-Farm Income

Table 6.71 Percentage of family members who worked off farm

	Santa Bárbara			Ocoatepeque		
	1982	1987	1992	1982	1987	1992
Owner	30.9	13.1	34.9	18.0	19.7	19.7
Spouse	1.0	1.0	5.4	3.3	0.0	6.6
Child	4.7	15.7	11.8	3.3	24.6	4.9
Child	1.0	7.3	3.2	0.0	9.8	1.6
Child	1.0	3.1	1.6	0.0	1.6	0.0
Other	0.5	0.5	0.0	1.6	3.3	0.0

Table 6.71a Percentage of owners that worked off the farm by farm size

	Santa Bárbara			Ocoatepeque		
	1982	1987	1992	1982	1987	1992
<= 2.5 ha	32.2	27.3	48.1	22.2	31.0	24.1
2.6-5 ha	20.7	10.0	40.0	0.0	0.0	11.1
5.1-10 ha	13.2	9.1	32.3	14.3	0.0	0.0
10.1-20ha	10.3	5.6	27.0	0.0	0.0	14.3
20.1 + ha	2.8	3.7	4.2	40.0	0.0	40.0

Table 6.72 Weeks worked by owner

	1982 Mean	1982 S.D.	1987 Mean	1987 S.D.	1992 Mean	1992 S.D.
Santa Bárbara	20.1	(18.0)	27.4	(17.5)	26.1	(15.7)
Ocoatepeque	13.1	(19.1)	34.4	(14.4)	33.8	(18.7)

Table 6.73 Weekly pay in Lps, owner

	1982 Mean	1982 S.D.	1987 Mean	1987 S.D.	1992 Mean	1992 S.D.
Santa Bárbara	32.9	(30.2)	32.0	(14.1)	92.5	(100.3)
Ocoatepeque	39.7	(23.1)	41.3	(16.1)	130.9	(89.4)

Table 6.74 Percentage of family members with other income

	Santa Bárbara			Ocoatepeque		
	1982	1987	1992	1982	1987	1992
Owner	4.2	1.0	7.5	1.6	3.3	9.8
Spouse	0.0	0.0	5.4	0.0	0.0	8.2
Child	0.0	--	0.5	0.0	--	6.6
Child	0.0	0.0	0.5	0.0	0.0	1.6
Child	0.0	0.0	0.5	0.0	0.0	1.6
Other	0.0	0.0	0.0	0.0	0.0	1.6

Table 6.75 Other income, owner, Lps

	1982 Mean	1982 S.D.	1987 Mean	1987 S.D.	1992 Mean	1992 S.D.
Santa Bárbara	1,461.9	(1,939.2)	1,872.0	(950.4)	4,022.9	(5,118.1)
Ocoatepeque	300.0	--	1,425.0	(1,039.4)	5,466.7	(5,540.6)

Table 6.76 Weeks worked by spouse

	1982 Mean	1982 S.D.	1987 Mean	1987 S.D.	1992 Mean	1992 S.D.
Santa Bárbara	52.0	(0.0)	18.5	(9.2)	30.9	(19.4)
Ocoatepeque	14.0	(14.1)	0.0		44.8	(13.2)

Table 6.77 Weekly pay in Lps., spouse

	1982 Mean	1982 S.D.	1987 Mean	1987 S.D.	1992 Mean	1992 S.D.
Santa Bárbara	125.5	(88.4)	30.0	(0.0)	181.4	(191.6)
Ocoatepeque	37.5	(17.7)	0.0		155.0	(131.4)

Table 6.78 Other income, spouse, Lps.

	1982 Mean	1982 S.D.	1987 Mean	1987 S.D.	1992 Mean	1992 S.D.
Santa Bárbara	0.0		0.0		2,254.0	(3,323.2)
Ocoatepeque	0.0		0.0		3,000	(2,760.5)

Total Income

Table 6.79 Total farm income, Lps.

	1982 Mean	1982 S.D.	1987 Mean	1987 S.D.	1992 Mean	1992 S.D.
Santa Bárbara	2,427.6	(3,895.2)	1,487.8	(3,903.5)	3,645.4	(7,178.2)
Ocotepeque	2,206.7	(3,146.9)	999.8	(2,229.9)	9,657.5	(36,751.8)

Table 6.80 Total income, Lps.

	1982 Mean	1982 S.D.	1987 Mean	1987 S.D.	1992 Mean	1992 S.D.
Santa Bárbara	2,472.7	(4,022.4)	2,925.3	(4,914.5)	7,324.5	(11,540.5)
Ocotepeque	2,406.7	(3,392.2)	3,386.8	(6,131.5)	14,955.5	(44,977.8)

Table 6.81 Real per capita income, per cent of farms in each category, in 1992 Lps.

	Santa Bárbara			Ocotepeque		
	1982	1987	1992	1982	1987	1992
< Lps. 250	29.1	47.1	17.0	24.6	39.3	6.3
250-499	17.5	19.4	23.9	24.6	13.1	12.5
500-749	12.2	6.8	18.2	6.6	11.5	10.4
750-999	8.5	6.8	6.3	9.8	14.8	6.3
1000-1499	15.3	5.2	9.7	8.2	4.9	22.9
1500-1999	3.7	3.7	4.0	8.2	4.9	8.3
2000-2499	3.7	1.6	5.7	8.2	3.3	4.2
2500-2999	2.1	0.0	3.4	0.0	1.6	8.3
3000 +	7.9	9.4	11.9	9.8	6.6	20.8

Table 6.82 Percentage of income from farm

	1982 Mean	1982 S.D.	1987 Mean	1987 S.D.	1992 Mean	1992 S.D.
Santa Bárbara	89.3	(25.3)	47.3	(41.5)	59.9	(37.2)
Ocotepeque	91.7	(20.8)	29.8	(36.3)	72.4	(98.2)

Perception of Titling Project

Table 6.83 Advantages of INA title, per cent

	Santa Bárbara			Ocotepeque		
	1982	1987	1992	1982	1987	1992
Credit access	48.7	37.7	36.0	8.2	27.9	36.7
Legalise situation	22.0	42.4	57.5	11.5	19.7	43.3
Increase value	3.7	7.3	21.0	1.6	4.9	6.6
Facilitate sales	3.1	9.4	10.8	4.9	3.3	8.3
Increase security	72.3	66.5	53.8	37.7	59.0	56.7
Bequeath	0.0	16.2	17.7	0.0	8.2	1.7
No advantage	--	12.6	8.6	--	0.0	5.0
To be owner	0.5	0.0	3.8	0.0	0.0	5.0
Do not know	4.7	9.4	10.2	45.9	36.1	11.7

Note: Respondents could name up to three, therefore total may be greater than 100 per cent.

Table 6.84 Disadvantage of titles, per cent

	Santa Bárbara			Ocotepeque		
	1982	1987	1992	1982	1987	1992
No disadvantage	51.3	31.4	33.3	34.4	42.6	25.0
Taxes	9.4	18.3	9.7	3.3	4.9	38.3
Cost of land	13.1	32.5	18.3	0.0	0.0	15.0
Cost of title	3.1	31.4	25.8	1.6	1.6	18.3
Fights w/neighbours	0.5	4.7	0.0	0.0	1.6	1.7
Fights w/family	0.0	1.0	0.0	0.0	3.3	0.0
Difficult process	0.5	0.5	2.7	0.0	0.0	0.0
Errors on titles	0.0	0.0	0.5	0.0	0.0	0.0
Sales difficult	1.0	8.9	3.8	0.0	0.0	0.0
Still no credit	0.5	0.0	4.9	0.0	0.0	0.0
Can't sell lumber	1.0	0.0	0.0	0.0	0.0	0.0
Others take title	0.5	0.0	0.0	0.0	0.0	0.0
Do not know	22.0	18.8	24.9	60.7	96.7	20.0

Note: Respondents could name up to three, therefore total may be greater than 100 per cent.

Table 6.85 Other services that are needed to increase production, per cent

	Santa Bárbara			Ocotepeque		
	1982	1987	1992	1982	1987	1992
Credit	61.8	67.5	64.0	42.6	60.7	53.3
Technical assistance	47.1	60.7	55.4	36.1	62.3	71.7
Markets	5.8	7.3	20.4	0.0	3.3	1.7
Roads	1.0	17.3	15.6	1.6	1.6	6.7
Land	0.0	0.0	0.5	1.6	0.0	0.0
Transport	0.0	2.1	1.6	0.0	0.0	0.0
Water	0.0	0.0	1.6	0.0	0.0	0.0
Nothing	0.5	6.8	8.6	0.0	4.9	3.3
Do not know	11.5	11.0	16.7	24.6	14.8	11.7

Note: Respondents could name up to three, therefore total may be greater than 100 per cent.

Table 6.86 Perception that titles give more access to services, per cent

	Santa Bárbara		Ocotepeque	
	1987	1992	1987	1992
Yes	72.3	71.0	63.9	71.7
No	12.6	24.2	6.6	5.0
Do not know	15.2	4.8	29.5	23.3

Table 6.87 Perception that titles have an impact on their owners' standard of living, per cent

	Santa Bárbara		Ocotepeque	
	1987	1992	1987	1992
Positive	60.7	44.1	63.9	65.0
None	33.0	41.1	27.9	6.7
Negative	3.1	2.2	1.6	1.7
Do not know	3.1	12.4	6.6	26.7

Table 6.88 What others think of titles, per cent, Santa Bárbara, 1992 only

	Santa Bárbara, 1992
Good idea, little value	57.0
Previous system as good or better	10.2
Sign of progress	12.4
Security/protection for farmers	22.6
Increases value of land	9.7
Do not know	19.4

Note: Respondents could name two, therefore totals may be greater than 100 per cent.

Table 6.89 Conflicts over land rights, per cent

	Ocotepeque, 1992
Yes	11.3
No	88.7

Table 6.90 Owner would like to have an INA title, per cent

	Ocotepeque, 1992
Yes	65.0
No	11.7
Do not know	23.3

Table 6.91 If yes, why, per cent

	Ocotepeque, 1992
Obtain credit	40.0
Legalise situation	38.3
Increase land value	1.7
Facilitate sale	3.3
More security	48.3
Bequeath to children	3.3
Do not know	20.0

Note: Respondents could name three, therefore totals may be greater than 100 per cent.

Perception of Economic Situation

Table 6.92 This year's economic situation compared to last year's, per cent

	Santa Bárbara			Ocotepeque		
	1982	1987	1992	1982	1987	1992
Better	9.4	16.8	7.0	8.2	16.4	11.7
Same	6.3	33.5	32.8	23.0	54.1	43.3
Worse	82.7	43.5	55.9	68.9	29.5	43.3
Do not know	1.6	6.3	4.3	0.0	0.0	1.7

Table 6.93 Prediction of next year's economic situation, per cent

	Santa Bárbara			Ocotepeque		
	1982	1987	1992	1982	1987	1992
Better	42.4	34.0	12.4	14.8	32.8	13.3
Same	6.3	17.3	25.8	9.8	13.1	10.0
Worse	27.7	20.4	44.6	23.0	11.5	20.0
Do not know	23.6	28.3	17.2	52.5	42.6	56.7

Table 6.94 Prediction of children's economic future, per cent

	Santa Bárbara			Ocotepeque		
	1982	1987	1992	1982	1987	1992
Better	42.4	34.6	15.1	18.0	52.5	28.3
Same	4.7	10.5	17.2	3.3	3.3	1.7
Worse	18.8	10.5	28.5	4.9	1.6	8.3
Do not know	34.0	44.5	39.2	73.8	42.6	61.7

Table 6.95 How the family would spend 150 Lps (15 pounds) a week, per cent, [Could list two]

	Santa Bárbara			Ocotepeque		
	1982	1987	1992	1982	1987	1992
Buy food	42.9	63.4	58.6	27.9	62.3	31.7
Invest in farm	51.8	46.1	44.1	42.6	41.0	40.0
Buy land	9.9	3.7	8.1	14.8	3.3	13.3
Improve home	1.0	3.1	3.7	0.0	4.9	13.3
Invest in business	11.5	7.3	7.0	8.2	9.8	18.3
Save it	5.2	42.9	4.8	6.6	49.2	15.0
Buy medicine	1.6	0.0	4.3	0.0	0.0	6.7
Clothes	1.6	0.0	3.8	0.0	0.0	5.0
Education	0.0	0.0	1.6	1.6	0.0	0.0
Parties	0.0	0.0	0.0	1.6	0.0	3.3
Do not know	1.6	1.6	1.6	3.3	3.3	5.0

CHAPTER SEVEN

ECONOMETRIC ANALYSIS OF SURVEY DATA

I. Introduction

As noted in chapter four, the *Proyecto de Titulación de Tierras* (PTT) had many goals and objectives. This chapter will use the data gathered from Santa Bárbara (a department that has been titled) and Ocotepique (the control department) in 1983, 1988 and 1993 (for the previous agricultural year) to determine to what extent these goals have been met. One of the basic objectives was to increase the farmers' access to formal credit by enabling them to use the land as collateral. This, in combination with enhanced security, was hoped to lead to greater investment on the farm, and therefore greater production and income. It was also expected that this credit would enable farmers to acquire more land. The project paper also foresaw two possible effects on land sales. First, as formal titles facilitate sales, the rate of sales could increase. However, the increased investment in the land could be an incentive not to sell. This chapter will evaluate these goals in light of an analysis of the survey data. It will examine the effects of titling on the factors that influence the technical efficiency and productivity of these farmers.

Of the 252 farms surveyed in 1983, 1988 and 1993, there are complete data on 240 farms, 181 from Santa Bárbara and 59 from Ocotepique. Of the 240 farms for which I have complete data, only 143 reported crop production in all three years. In 1993, many stated that they had no output because of the coffee diseases. It is also possible

that farmers, in any given year, were reluctant to report production because they feared the interviewers would relay the information to the local tax authorities. Before using these 143 farms to estimate individual technical efficiency scores, several variables from the 1992 data (mean farm size, use of credit and use of inputs) will be examined to determine if this sub-sample differs significantly from the group as a whole.

Surprisingly, those who reported farm production for all three years had a smaller mean farm size than those who did not have production in at least one year (Table 7.1). However, as the t-test shows, the difference is not statistically significant. Farmers reporting production in all three years were more likely to receive credit and to use fertiliser, but again the differences are not statistically significant. Therefore, these farms can be considered representative of the whole sample when estimating technical efficiency and the factors that affect this efficiency.

Table 7.1. Difference of sub-sample

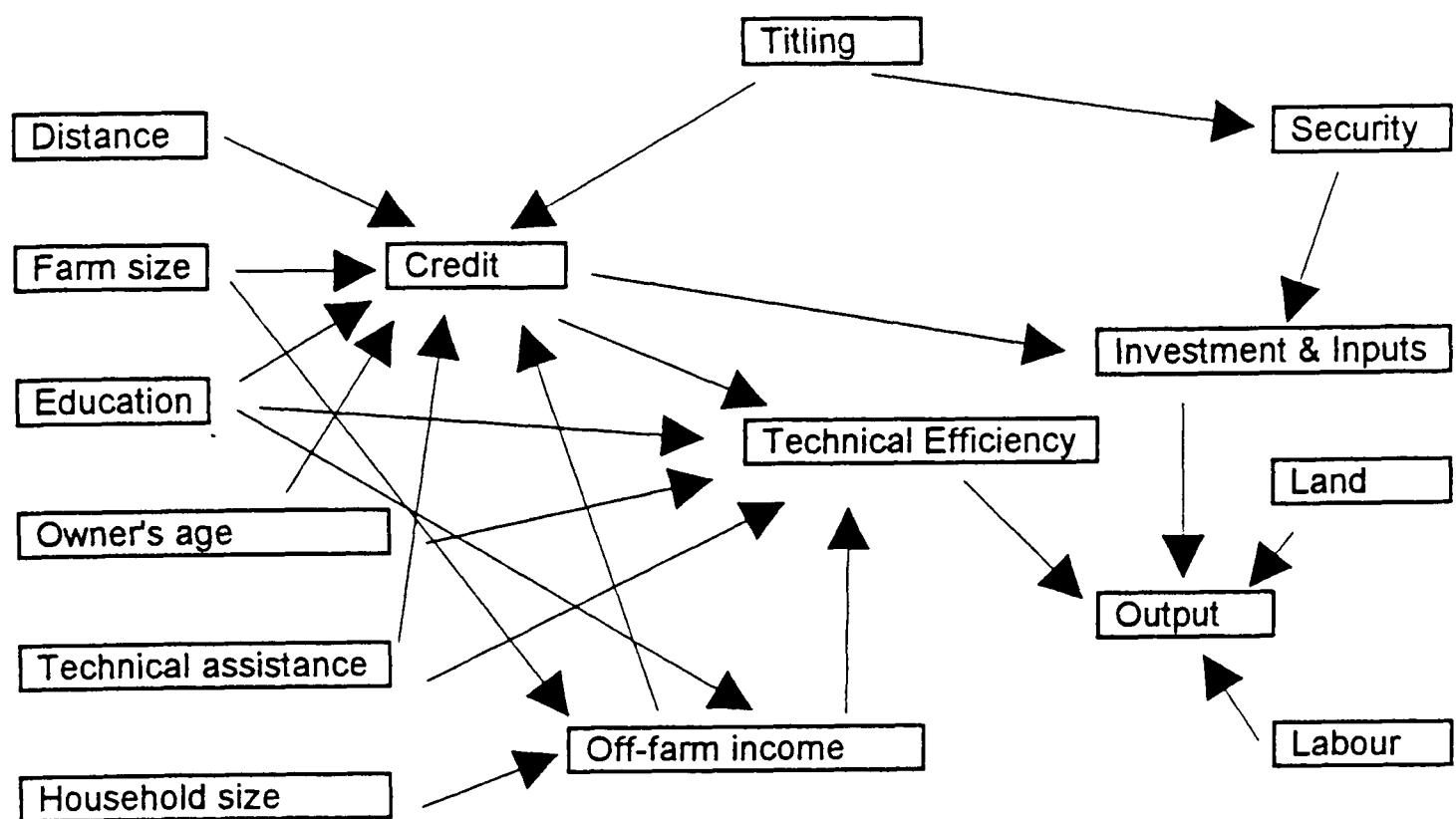
	In sub-sample	Not in sub-sample	Significance
Farm size (mz)	14.02 (S.D. 30.12)	17.47 (S.D. 33.53)	0.407 (t-test)
Credit (%)	32.4	28.6	0.528 (Pearson χ^2)
Fertiliser (%)	49.3	44.9	0.502 (Pearson χ^2)

II. The Model

The flow diagram (Figure 7.1) is a schematic depiction of the model which was formulated for understanding the complex set of variables involved in this study and

the interrelationships among them. Later in this chapter the relevant variables will be embedded in a formal set of equations which will be subjected to various statistical tests.

The diagram illustrates my hypotheses about how various endogenous and exogenous factors combine to affect access to credit, technical efficiency and eventually farm production. Variables directly affecting farm production include labour, land, inputs and investments, as well as technical efficiency. Technical efficiency, in turn, is affected by the farmer's education and age, access to credit and technical assistance and off-farm income. Use of credit is, in turn, influenced by titling, education, farm size, the owner's age, distance to services, technical assistance and off-farm income, and off-farm income is determined by education, farm size and household size. The exogenous factors in this model, in addition to titling, are the owner's education, farm size, the age of the owner, distance from services, household size and access to technical assistance. These are listed on the left side of the diagram. The following section will examine technical efficiency and the factors that influence it, while a discussion of the use of credit, inputs and investments and land sales will follow.



III. Technical efficiency

The analysis of technical efficiency is not a new topic. The goal of estimating technical efficiency first for industries as a whole and then for individual firms has been pursued for many years (Farrell 1957, Timmer 1971). Measuring technical efficiency basically entails evaluating the use of resources; technical inefficiency being the failure to produce the maximum possible output given a set of inputs. This is distinguished from allocative efficiency, which involves the choice of the combination of inputs, given a set of prices. Once it is determined that some firms produce more than others using the same inputs, it is important to determine what causes this difference.

In 1957, Farrell developed the idea of using a frontier production function to estimate technical efficiency for an industry, but it was not until 1977 that a more satisfactory means of estimating technical efficiency was created. In that year, both Aigner *et al.* (1977) and Meeusen and van den Broeck (1977) developed a frontier production function with a composed error disturbance term. The error term consists of two components, one of which is systematically distributed and accounts for events outside the farmer's control, measurement error and other 'statistical noise'. The second component is non-negative and represents the firm's technical inefficiency. This model was used for several years to estimate industry-wide technical efficiency, but it was not until 1982 that Jondrow *et al.* (1982) made it possible to estimate technical efficiency for each individual firm or farm. To my best knowledge, this technique has not before been used for farms of any type in Latin America.

The following section gives an explanation of the measurement of technical efficiency for the individual firm using a stochastic frontier production function. Then, this technical efficiency-estimating technique is applied to data gathered from the 143 small farmers to estimate their mean and individual technical efficiencies and then identify qualitative factors, such as education, age of the farmer, technical assistance, use of credit, off-farm income and so on, that affect technical efficiency. Instrumental variable equations are used to take into account the relationships among these factors and others which in turn affect technical efficiency and production. Policy implications of the results are discussed in the following chapter.

A. MEASUREMENT OF TECHNICAL EFFICIENCY

1. The stochastic frontier production function

The most widely-used method to estimate technical efficiency incorporates a stochastic frontier production function with a composed error disturbance term, developed independently by Aigner *et al.* (1977) and Meeusen and van den Broeck (1977).

Consider the stochastic production function of the form

$$Y_{it} = X_{it}B + \epsilon_{it}, \quad (1)$$

where

$$\epsilon_{it} = v_{it} - u_i. \quad (2)$$

Y_{it} represents the production for the i th farm in the t th time period; X_{it} is a vector of the inputs for the i th farm in the t th time period (the first element is usually unity to account for the constant term); B is a vector of the coefficients for these independent variables; ϵ_{it} is the composed error term, consisting of v_{it} , the usual error term that is assumed to be independent and identically distributed with a normal distribution $N(0, \sigma_v^2)$, and u_i , which represents systematic variations in Y due to factors specific to the farm or its owner. u_i is assumed to be non-negative, independent and identically distributed with a half-normal distribution (Aigner *et al.* 1977).

2. Farm technical efficiency

The primary advantage of a stochastic frontier production function is that it enables one to estimate u_i and therefore also to estimate an index of technical efficiency for each farm. The half-normal model to estimate u_i conditional on ϵ_i is (Jondrow *et al.* 1982)

$$E(u_i | \epsilon_i) = \sigma_u \sigma_v / \sigma [\phi(\epsilon \lambda / \sigma) / \{1 - \Phi(\epsilon \lambda / \sigma)\} - \epsilon \lambda / \sigma] \quad (3)$$

where ϕ represents the standard normal density function, Φ represents the cumulative density function and λ denotes the ratio of the error of u to the error of v , i.e. σ_u/σ_v . If output were measured in the original units, $1 - u_i$ would also be the measure of technical efficiency. However, as Battese and Coelli (1988) point out, when output is measured in logarithms the appropriate measure of technical efficiency is

$$TE_i = \exp(-u_i) \quad (4)$$

They also explain that this measure of technical efficiency is equivalent to the ratio of the production for the i th farm in period t ,

$$\exp(Y_{it}) = \exp(X_{it}\beta + v_{it} - u_i), \quad (5)$$

to the corresponding production value if the firm effect u_i were zero,

$$\exp(Y_{it}) = \exp(X_{it}\beta + v_{it}). \quad (6)$$

This technical efficiency measure is not dependent on the level of the factor inputs for the given farm.

It is generally assumed that a farmer's technical efficiency remains constant over time (Battese and Coelli 1988; Dawson *et al.* 1991; Kalirajan and Shand 1989; Lingard *et al.* 1983). As Dawson and Lingard (1989) note, those who use today's technology more efficiently will likely use tomorrow's more efficiently as well. However, it seems likely that the farmer would learn and improve his or her efficiency through education or technical assistance¹. Indices of technical efficiency for each farm were calculated using data from each year and also using the panel data. The results show that the changes in technical efficiency between the years were statistically significant both while considering each year's data separately and with the panel data.

¹ Pitt and Lee (1981) found that technical efficiency does change with time.

B. EMPIRICAL RESULTS

1. Methodology

In order to estimate u_i and therefore farm-level technical efficiency, a stochastic frontier production function was used to regress the value of total farm production on measures of land, labour, fertilizer and new coffee trees, the latter being considered to be a type of investment. The frontier production function is specified as

$$Q_{it} = \beta_0 + \beta_1 LD_{it} + \beta_2 L_{it} + \beta_3 F_{it} + \beta_4 NCT_{it} + v_{it} - u_i \quad (7)$$

where the subscript i ($i = 1, 2, \dots, N$) represents the i th sample farm and the subscript t ($t = 1, 2, 3$) represents the year. Q represents the total value of crop production (coffee, cocoa, bananas, fruits, maize, red beans, rice, sugar cane and vegetables) for the year for each farm, in logarithms and in 1992 prices; LD denotes the area of land in *manzanas* devoted to crops, in logarithms; L represents an estimate of farm labour input in logarithms based on family size and time spent working off the farm; F is a dummy variable for the use of fertiliser, and NCT is the logarithm of the number of new coffee trees planted per *manzana* of coffee in the previous five years². The random variables v and u are assumed to have the properties explained above³. Dummy variables for the use of pesticides and genetically improved or treated seeds or seedlings were dropped because they were not statistically significant even at 10 per cent. The estimates were derived by maximum likelihood rather than ordinary least squares (Aigner, Lovell and Schmidt 1977, Battese and Corra 1977, Førsund *et al.* 1980, Kalirajan and Shand 1989, Meeusen and van den Broeck 1977). Because the

² Because coffee is a perennial, NCT represents the quality of the coffee stock. Other studies (Childress 1991) have found that many Honduran farmers rarely replant and so have old trees with low production.

³ Exponential and truncated distributions of u were also tried, but the half-normal distribution produced the best fit.

signs of some of the coefficients were not in line with *a priori* economic criteria and because the variances of their coefficients were quite large compared to their estimated coefficients, the explanatory variables were also tested for collinearity but none was found.

In order to determine why some farms had a higher level of production while using similar inputs, a function was then fitted to estimate the relationship between farm level technical efficiency and personal factors. The function was estimated as

$$-u_i = A_0 + A_1E_i + A_2OA_i + A_4TA_i + A_5CR_i + A_6OFI_i + e_i \quad (8)$$

where $-u$ denotes the estimate of $-u$ (the logarithm of the technical efficiency index) using the panel data results;

E = the years of formal education the farmer has received;

OA = the logarithm of the owner's age;

TA = a dummy variable for the farmer having been visited by an agronomist;

CR = the logarithm of the amount of credit (in 1992 Lempiras) the farmer received in the previous two years and

OFI = the logarithm of off-farm income received during the year (in 1992 Lempiras).

Dummy variables for the slope of the land were tested and removed as they were not statistically significant, even at 10 per cent. A variable measuring on-farm investment was also removed as it was found to be highly correlated to credit⁴. A dummy variable for whether the farm had been purchased (as opposed to inherited) was

⁴ The partial correlation coefficient for the actual values was 0.34 but for the instrumental variables was 0.81.

dropped because it was not statistically significant at 10 per cent.

It was hypothesised *a priori* that more education and visits of agronomists should enable farmers to use their inputs more efficiently. The farmer's age was included to determine if older farmers, although more experienced, would be less likely to adopt new techniques. Agricultural credit should enable farmers to take better advantage of inputs and investments, thereby enhancing technical efficiency. On the other hand, off-farm income could replace credit as a source of funds for the farm, or conversely, it could reduce the farmer's need or ability (because of time spent off the farm) to fully utilise farm resources.

Other researchers have found some of these factors to significantly affect technical efficiency. Lingard *et al.* (1983) found in their research of rice producers in the Philippines that soil type, credit, education and land tenure all affected farmers' technical efficiency. Kalirajan and Shand (1989) discovered that Indian farmers' technical efficiency was affected by education, credit, technical assistance and experience. Family size, education, credit and the degree of fragmentation were found to be significant in Pakistan (Parikh and Shah 1994). Belbase and Grabowski (1985) found that education, nutrition and family income were significant factors affecting technical efficiency in Nepal. In a study of the effect of education on technical efficiency in Western Kenya, Moock (1981) found that one to three years of education had a negative effect on technical efficiency while four years or more had a positive effect and that education and technical assistance seemed to substitute for rather than complement each other.

As cross-sectional data were used, the questions of heteroscedastic residuals arose. Using the Glesjer test, it was discovered that the variance of the residuals was not constant. The form of the heteroscedasticity was examined and was determined to be additive. Therefore, the variables were transformed by dividing all the observations by the estimate of the standard deviation of the error term to correct the problem.

Finally, instrumental variables were used to identify the variables that determine off-farm income and credit. Consider the system:

$$CR_i = \gamma_{10} + \gamma_{11}T_i + \gamma_{12}E_i + \gamma_{13}FS_i + \gamma_{14}OA_i + \gamma_{15}D_i + \gamma_{16}TA_i + \beta_{11}OFI_i + u_1 \quad (9)$$

$$\text{and } OFI_i = \gamma_{20} + \gamma_{21}E_i + \gamma_{22}FS_i + \gamma_{23}HH_i + u_2 \quad (10)$$

where

T = a dummy variable for titling

FS = logarithm of the size of the farm in manzanas

D = logarithm of the time it takes (in minutes) to reach the nearest town

HH = logarithm of the number of people in the household.

The remaining variables are as defined above.

The variable for credit measures both the demand for and the supply of credit. While some factors affect only one or the other, most affect both. T was included to test the hypothesis that titling has had a significant impact on the access to credit, which was one of the primary goals of the titling project. In addition, if the titles increased

the farmer's feeling of security on the farm, this would encourage investment and therefore the demand for credit. More educated farmers should be more likely to solicit and receive credit, and farmers with more land, and therefore more collateral, should also be more likely to receive credit. The anticipated effect of age on access to credit was uncertain. Older farmers may be considered more credit worthy, but younger farmers may be more likely to solicit credit. Farmers further from services, and therefore banks, should be less likely to solicit credit, while the advice given with technical assistance could encourage farmers to apply for credit to finance the purchase of inputs. Finally, off-farm income could serve as a substitute for credit, or, conversely, it could make the farmer more credit worthy by supplying a source of income to pay back the loan.

In the regression for off-farm income it was hypothesised that more educated farmers should have better prospects for off-farm employment and income, while farmers with more land should have less need to seek supplemental employment. In addition, households with more members should have more off-farm income as they have more labourers.

Again the residuals were found to be heteroscedastic, and the equations were corrected as before.

2. Results and analysis

a. Frontier production function

The mean values used in the frontier production function for the panel data and each

of the years' regressions are shown in Table 7.2. Note that the real value of total farm production remained nearly constant from 1982 to 1992, as did the area of land in cultivation. Labour use decreased in 1992 as more farmers were involved in off-farm employment. The use of fertiliser increased between 1982 and 1987, then levelled off between 1987 and 1992. The number of coffee trees planted per *manzana* in the previous five years was not available for 1982, but it increased greatly between 1987 and 1992.

Table 7.3 shows the coefficients and t-ratios for the corresponding regressions. Land is the only factor for which the coefficient is statistically significant (at one per cent) in all three time periods, although the coefficient for fertiliser is statistically significant at one per cent for 1987 and 1992 and is nearly significant at five per cent for 1982. In addition, the coefficient for new coffee trees is significant for 1987 and 1992, the only years for which data are available. The coefficient for labour is not statistically significant for 1982 or 1987 (it is positive for 1982 and negative for 1987), while it is positive and statistically significant at five per cent for 1992. γ , the ratio of the variance of technical efficiency to that of total variance, is 0.7175 for 1982, meaning that nearly 72 per cent of the variation in output could be explained by the variance of technical efficiency. For 1987 this figure is 0.4393 while it is 0.5516 for 1992.

With the panel data, it should be noted that the coefficients for land and fertiliser are positive and statistically significant at the one per cent level and that the coefficient for labour is significant at five per cent. The coefficient for new coffee trees is not

statistically significant at five per cent (although it is at 10 per cent), probably because the data are missing for 1982. It should also be noted that factors particular to the farm or farmer are held constant in the panel data regression, making the variation of u (representing technical efficiency), and therefore γ , in this regression much smaller than it is in any of the year regressions.⁵

Table 7.2 Mean values of yield and inputs

Variable	Unit	1982	1987	1992	Panel
		Means (SD in brackets)			
Production	Lempiras ⁶	6,417.87 (8,894.16)	5,238.63 (12,247.88)	6,180.49 (22,367.06)	5,945.66 (10,975.65)
Land	Manzanas	5.13 (8.74)	3.80 (4.46)	5.16 (7.77)	4.70 (4.95)
Labour	Persons	4.67 (1.96)	4.67 (2.27)	3.90 (1.98)	4.41 (1.62)
Fertilizer	Dummy	0.31	0.49	0.50	0.43
New trees	Trees/ mz.	na	140.773 (442.102)	573.808 (874.969)	238.19 (352.67)

⁵ The computer print-outs for the regressions with the panel data are given in Appendix E, and the data used are listed in Appendix F.

⁶ In 1992 Lempiras; one Lempira equals approximately £0.11.

Table 7.3 Frontier production function variables, coefficients and significance

Variable	1982	1987	1992	Panel
	Coefficient (t-ratio in brackets)			
Constant	7.4415 (28.596)**	7.0773 (16.082)**	6.7854 (24.371)**	6.9685 (54.646)**
Land (log)	0.9025 (11.851)**	0.7497 (9.456)**	0.6954 (12.248)**	0.76278 (18.139)**
Labour (log)	0.4586 (1.180)	-0.0630 (-0.423)	0.2007 (1.739)*	0.14417 (1.998)*
Fertilizer	0.2394 (1.566)	0.8279 (4.396)**	0.7848 (5.125)**	0.52120 (5.438)**
New trees (log)	na	0.0913 (2.182)**	0.0641 (2.765)**	0.029820 (1.805)
$\gamma = \sigma_u^2/\sigma^2$	0.7175	0.4393	0.5516	0.2938
σ_u/σ_v	1.5937 (2.461)	0.8852 (1.477)	1.1091 (1.587)	0.41594 (2.909)
σ_v^2 ML estimate	0.38042	0.86545	0.48663	0.80700
σ_u^2 ML estimate	0.96627	0.67816	0.59857	0.33566
Log likelihood	-179.2432	-210.4159	-177.4650	-638.1794

* denotes one-tailed significance at 5 per cent

** at 1 per cent

b. Technical efficiency

The three time periods show a slight increase in mean technical efficiency scores over the ten years, being 0.48 in 1982, 0.53 in 1987 and 0.56 in 1992. A paired t-test showed the changes for the farms as a whole to be statistically significant at one per cent between 1982 and 1987 and between 1982 and 1992 (the change between technical efficiency scores in 1987 and 1992 is significant at seven per cent). These results show the assumption of constant technical efficiency over the years to be invalid. A calculation of one technical efficiency score for each farm using the panel data was also attempted, but because of limitations⁷ with the software package, was not possible.

The technical efficiency scores in the two regions diverged over the ten-year period. For 1982 the mean score for Santa Bárbara (the region to be titled) is 0.48, while for Ocotepaque (the control region) it is 0.50. For 1987 the mean scores are 0.53 in Santa Bárbara and 0.55 in Ocotepaque, while for 1992 they are 0.54 and 0.61, respectively. While the difference between the mean technical efficiency of the two regions is not statistically significant for 1982, for 1992 it is significant at five per cent. A paired t-test shows the increase in technical efficiency scores from 1982 to 1992 in both regions to be statistically significant, at one per cent in Santa Bárbara and at five per cent in Ocotepaque, showing that technical efficiency did increase over the ten-year period in both regions, albeit to a higher degree in Ocotepaque, the untitled region.

⁷ The creator of the programme was contacted, and he too was unable to solve the problem.

The frequency distribution results (Table 7.4 and Figure 7.2) show a roughly normal distribution of technical efficiency scores for each year as well as an increase over the years. For 1982, 23 farms, or 16 per cent of the sample, are in the lowest three categories, with technical efficiency scores of less than 0.30. For 1987 and 1992 only six farms, or 4.2 per cent of the sample, are in these categories. At the other end of the scale, for 1982 and 1987, only 41 farms and 37 farms, respectively, have technical efficiency scores of greater than 0.60, while for 1992, this number is 54, again showing that overall technical efficiency improved over the ten-year period.

Table 7.5 shows the mean values and standard deviations of the personal factors used to explain technical efficiency. As new and younger farmers entered the sample, the mean years of education increased between 1982 and 1992 (from 1.58 to 1.99 years) while the mean age of the farmers increased from 48.50 to 53.76 years. The percentage of farmers receiving technical assistance increased from 20.3 per cent in 1982 to 38.5 per cent in 1992. Mean amounts of credit (in 1992 Lempiras) increased from Lps.1,400 in 1982 to Lps.2,724 in 1992 while real off-farm income increased from Lps.802 in 1982 to Lps.1,782 in 1992.

Table 7.6 shows the coefficients and their significance for the technical efficiency regressions. None of the variables for 1982 or 1987 are statistically significant at five per cent, and for 1992, only the constant and off-farm income are statistically significant. However, with the panel data, the coefficient for credit is positive and significant at one per cent. For a number of reasons these results were not considered satisfactory. The following sub-section explores this equation further,

taking into account the simultaneity among some of the factors and using time dummy variables.

Table 7.4 Frequency distribution of technical efficiency indices

<u>TE Index</u>	1982			1987			1992		
	<u>Farms</u>	<u>%</u>	<u>(Cum %)</u>	<u>Farms</u>	<u>%</u>	<u>(Cum %)</u>	<u>Farms</u>	<u>%</u>	<u>(Cum %)</u>
0.00-0.09	1	0.7	(0.7)	0	0.0	(0.0)	0	0.0	(0.0)
0.10-0.19	9	6.3	(7.0)	0	0.0	(0.0)	1	0.7	(0.7)
0.20-0.29	13	9.1	(16.1)	6	4.2	(4.2)	5	3.5	(4.2)
0.30-0.39	26	18.2	(34.3)	10	7.0	(11.2)	14	9.8	(14.0)
0.40-0.49	24	16.8	(51.1)	30	21.0	(32.2)	21	14.7	(28.7)
0.50-0.59	29	20.3	(71.4)	60	42.0	(74.2)	48	33.6	(62.3)
0.60-0.69	28	19.6	(91.0)	32	22.4	(96.6)	36	25.2	(87.5)
0.70-0.79	13	9.1	(100.0)	4	2.8	(99.4)	17	11.9	(99.4)
0.80-0.89	0	0.0		1	0.7	(100.0)	1	0.7	(100.0)
0.90-0.99	0	0.0		0	0.0		0	0.0	

Graph 1
Frequency Distribution of T.E. Indices

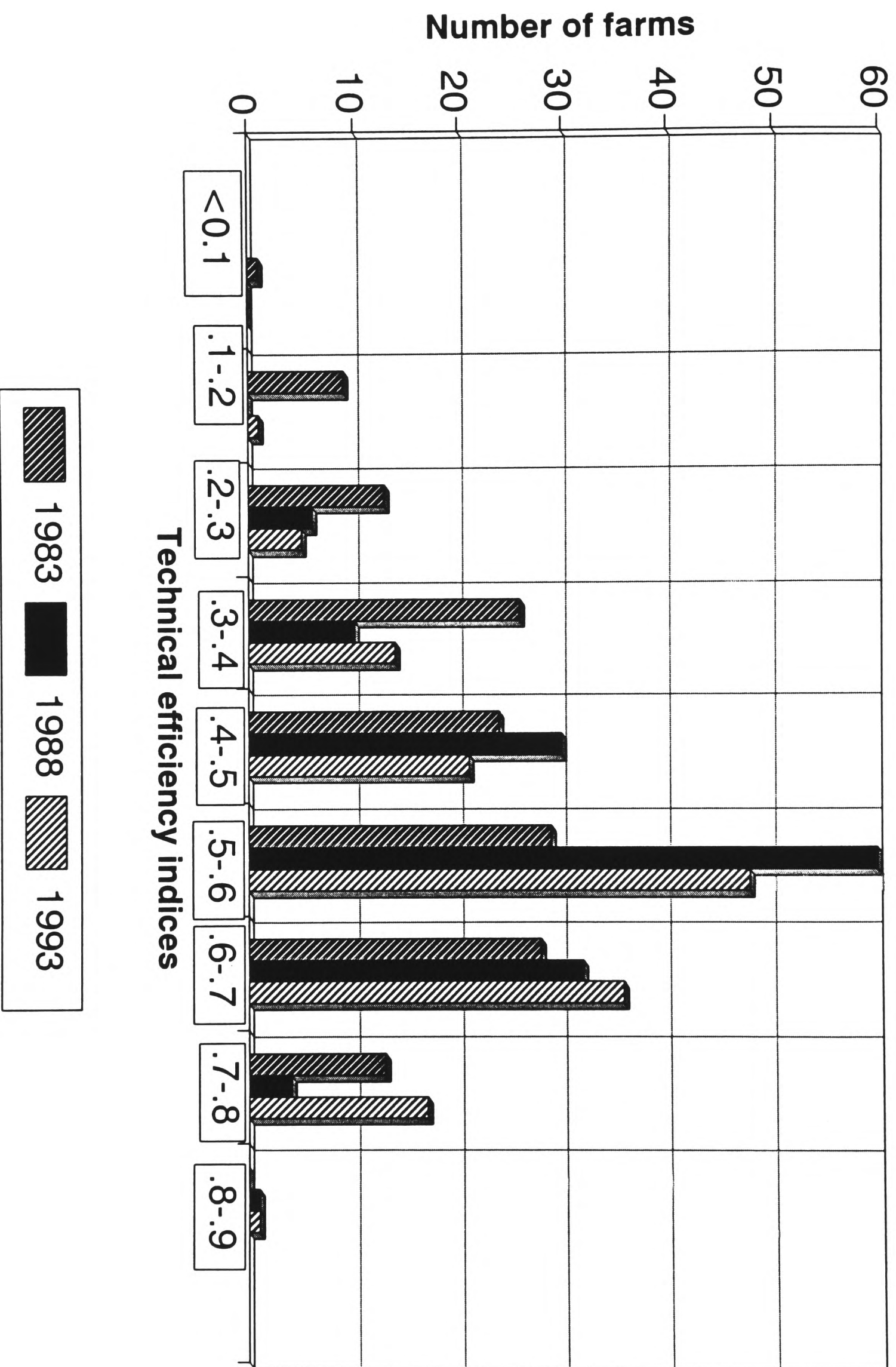


Table 7.5 Mean values of personal factors

Variable	Units	1982	1987	1992	Panel
		Mean (SD in brackets)			
Technical efficiency	Index	0.4842 (0.1705)	0.5321 (0.1133)	0.5577 (0.1283)	0.7699 (0.0479)
Education	Years	1.58 (2.32)	1.76 (2.31)	1.99 (2.60)	1.78 (2.05)
Age	Years	48.50 (15.74)	51.54 (16.12)	53.76 (15.65)	51.24 (13.97)
Technical assistance	Dummy	.203	.224	.385	0.47
Credit	Lps*	1,399.62 (4,831.93)	1,804.34 (5,189.53)	2,723.94 (12,229.94)	1,976.24 (5,248.97)
Off-farm income	Lps*	802.26 (4,542.18)	1,085.76 (3,685.78)	1,781.55 (5,444.73)	1,223.19 (3,223.37)

* In 1992 Lempiras

Table 7.6 Variables, coefficients and significance for technical efficiency

Variable	1982	1987	1992	Panel
	Coefficient (t-ratio in brackets)			
Constant	-0.5458 (-1.219)	-0.2486 (-0.705)	-0.8189 (-2.282)*	-0.2166 (-5.497)**
Education	0.0083 (0.586)	0.0096 (0.691)	-0.0084 (-0.938)	0.0007 (0.588)
Age (log)	-0.0775 (-0.668)	-0.1217 (-1.414)	0.0617 (0.712)	-0.0136 (-1.362)
TA	0.0855 (1.073)	0.0748 (1.169)	0.0148 (0.256)	0.0121 (1.810)
Credit	0.0035 (0.328)	0.0063 (1.047)	0.0093 (1.262)	0.0023 (2.615)**
Off-farm income	0.0065 (0.480)	-0.0023 (-0.218)	-0.0147 (-2.189)*	-0.0017 (-1.889)
Adjusted R ²	0.0466	0.4974	0.2771	0.0380

* denotes two-tailed significance at 5 per cent, ** at 1 per cent

c. Instrumental variable equations

Taking into account the simultaneity between credit and off-farm income, estimation proceeded using the panel data and instrumental variables. First, instrumental variables for the endogenous variables were created by regressing each endogenous variable (credit and off-farm income) on all exogenous variables.

The estimated second stage equation for technical efficiency is: (t-ratios in brackets)

$$\begin{aligned} \text{TE} = & -0.1963 + 0.0006E - 0.0108OA + 0.0078\overset{\wedge}{\text{CR}} - 0.0154\overset{\wedge}{\text{OFI}} \\ & (-3.689)^{**} \quad (0.339) \quad (-0.885) \quad (2.331)^* \quad (-1.542) \\ & - 0.0228D87 - 0.0005D92 \\ & (-2.689)^{**} \quad (-0.025) \end{aligned}$$

where D87 and D92 are dummy variables for 1987 and 1992, respectively. The adjusted R^2 for this equation is 0.6107. The dummy variable for technical assistance had to be dropped as it was found to be highly correlated to credit (with a partial correlation of 0.70). Education (E) and credit (CR) are also positively correlated, which accounts for the coefficient for education not being significant.⁸ The coefficient for credit is positive and statistically significant at one per cent, while the constant and D87 are negative and statistically significant at one per cent. The constant term includes the effect of the dummy for 1982 which was omitted to avoid the effect of singularity. The dummy variables for 1987 and 1992 were used to reflect changes in qualitative factors unaccounted for in the regression, including factors, such as the weather, that could affect technical efficiency for the group as a whole.

⁸ When the equation was run omitting credit, the coefficient for education had a t-ratio of 3.240.

The coefficient for credit in the above equation represents the instrumental variable obtained by regressing credit on all exogenous variables, i.e.,

$$\begin{aligned} \hat{CR} = & -3.4308 - 0.2454T + 0.1589E + 0.3744FS + 0.8593OA - 0.1814D \\ & (-1.239) \quad (-0.489) \quad (2.158)^* \quad (2.785)^{**} \quad (1.441) \quad (-0.981) \\ & + 1.7115TA + 0.3984D87 + 1.2606D92 + 0.4690HH \\ & (4.925)^{**} \quad (0.706) \quad (2.153)^* \quad (1.474) \end{aligned}$$

This equation shows that while credit is a significant factor in improving technical efficiency, other factors, *i.e.* education, farm size and especially technical assistance, are important in explaining technical efficiency through their effect on credit. The second stage regression for credit using an instrumental variable for off-farm income (OFI) yielded similar results to the previous regression creating the instrumental variable for credit, *i.e.*,

$$\begin{aligned} CR = & -3.3668 - 0.2289T + 0.1081E + 0.5914FS + 0.6217OA - 0.1086D \\ & (-1.364) \quad (-0.592) \quad (1.375) \quad (4.192)^{**} \quad (1.178) \quad (-0.573) \\ & + 1.6331TA + 0.7108OFI \\ & (4.767)^{**} \quad (2.610)^{**} \end{aligned}$$

The adjusted R^2 for this equation is 0.1215. The coefficients for technical assistance (TA), farm size (FS) and off-farm income (OFI) are all positive and statistically significant at one per cent. It is noteworthy that the coefficient for titling (T) is non-significant.⁹

⁹ Because increasing access to credit was a basic goal of the PTT, the regression for credit above was used with the larger sample size of $N=240$, as panel data. The resulting equation is:

$$\begin{aligned} CR = & -2.4386 + 0.0019T + 0.1605E + 0.2554FS + 0.6034OA + 0.1407D \\ & (-1.415) \quad (0.007) \quad (2.710) \quad (2.721) \quad (1.403) \quad (2.091) \\ & + 2.7155TA - 0.0370OFI. \\ & (7.942) \quad (-1.207) \end{aligned}$$

The adjusted R^2 was 0.1756. With this larger sample size, the coefficients for education, farms size, distance from services and technical assistance were statistically significant. Again, this shows titling has had no affect on the access to credit.

Finally, the regression for off-farm income is:

$$\begin{aligned} \text{OFI} = & 1.4046 + 0.0883E - 0.2515FS + 0.2890HH + 0.2995D87 \\ & (2.225)^* \quad (1.320) \quad (-2.017)^* \quad (0.938) \quad (0.750) \\ & 1.7442D92 \\ & (4.356)^{**} \end{aligned}$$

The adjusted R^2 for this equation is 0.0477. As expected, the coefficient for farm size (FS) is negative and significant at five per cent. The constant, which among other factors, includes the effect of 1982, is positive and significant at five per cent and the coefficient for the dummy variable for 1992 (D92) is positive and significant at one per cent.¹⁰

In summary, titling was found to have no effect on access to credit, and therefore no effect on technical efficiency. Other factors, specifically, education and technical assistance, were found to enhance technical efficiency. Investments, inputs and land sales are explored further in the following sections.

IV. Investments and Inputs

The titling project, through enhanced feelings of security and access to formal credit, was also expected to increase on-farm investment and the use of inputs. The planting of new coffee trees (NCT) is used to represent on-farm investment. In addition, new

¹⁰ The instrumental variable for off-farm income was estimated as:

$$\begin{aligned} \hat{\text{OFI}} = & 1.2128 + 0.3026T + 0.0800E - 0.2689FS + 0.1857OA - 0.1090D \\ & (0.433) \quad (0.597) \quad (1.073) \quad (-1.981) \quad (0.308) \quad (-0.583) \\ & - 0.0595TA + 0.0558D87 + 1.4597D92 + 0.3018HH. \\ & (-0.169) \quad (0.098) \quad (2.467) \quad (0.939) \end{aligned}$$

coffee trees and the use of fertiliser were found to be statistically significant and positive in the frontier production function (eq. 7 and Table 7.3) The function for the planting of new coffee tree was estimated as

$$\begin{aligned} \text{NCT}_i = & \Psi_{10} + \Psi_{11}T + \Psi_{12}E + \Psi_{13}CR + \Psi_{14}TA + \Psi_{15}\text{OFI} + \\ & \Psi_{16}\text{OA} + u \end{aligned} \quad (14)$$

where the variables are the same as before. Titling (T) was meant to increase on-farm investment, such as the planting of coffee trees, by enhancing long-term security. It was also hypothesised that education (E) and technical assistance (TA) would promote the use of new varieties, and that credit (CR) or off-farm income (OFI) could enable the financing of this investment. Conversely, farmers with sufficient off-farm income may not be interested in investing on the farm, or may not have time for this investment. It was expected that older farmers (OA) might be more hesitant to try the new varieties while those with more experience would be more likely to invest.

This equation was estimated with panel data from 1987 and 1992. The estimated equation is (t-ratios in ())

$$\begin{aligned} \text{NCT} = & - 0.1060 + 1.2943T + 0.1239E + 0.1534CR + 0.4248TA \\ & (-0.047) \quad (4.550)^{**} \quad (1.950)^* \quad (2.931)^{**} \quad (1.159) \\ & + 0.0162\text{OFI} + 0.0618\text{OA}. \\ & (0.414) \quad (0.113) \end{aligned}$$

The coefficients for having a title, credit and education are all positive and statistically significant, the first two at one per cent and the latter at five per cent (with a one-tailed t-test). The adjusted R^2 was only 0.0778. Although it seems titling has had a positive influence, the effect of titling in this equation can not be separated

from that of the Small Farmer Coffee Project, which was mentioned in chapter five and will be discussed further in the following chapter. Again, education and credit are shown to be beneficial.

A probit model was used to estimate the factors that determined the use of fertiliser, pesticide and improved or treated seeds or plants. The functions were estimated as follows:

$$F_i = \Psi_{20} + \Psi_{21}CR_i + \Psi_{22}OA_i + \Psi_{23}TA_i + \Psi_{24}E_i + \Psi_{25}T_i + \Psi_{26}OFI_i + u_{15} \quad (15)$$

$$P_i = \Psi_{30} + \Psi_{31}CR_i + \Psi_{32}OA_i + \Psi_{33}TA_i + \Psi_{34}E_i + \Psi_{35}T_i + \Psi_{36}OFI_i + u_{16} \quad (16)$$

$$SP_i = \Psi_{40} + \Psi_{41}CR_i + \Psi_{42}OA_i + \Psi_{43}TA_i + \Psi_{44}E_i + \Psi_{45}T_i + \Psi_{46}OFI_i + u_{17} \quad (17)$$

where F_i , P_i , and SP_i are dummy variables representing the use of fertiliser, pesticide and improved or treated seeds or plants, respectively. Again, titles (T), credit (CR), education (E) and technical assistance (TA) were expected to increase the use of inputs while the anticipated effect of off-farm income (OFI) and the owner's age (OA) could be either positive or negative.

The estimated equation for fertiliser use is

$$F_i = - 2.3203 + 0.1116CR + 0.4261OA + 0.5342TA + 0.1114E - 0.1695T - 0.0220OFI.$$

(-3.200)** (6.069)** (2.363)** (4.912)** (5.200)** (-1.658)
(-1.609)

The log likelihood is -390.4411. Rho, the autocorrelation between the years, has a

coefficient of 0.5708 and t-ratio of 8.974.

The estimated equation for pesticide use is

$$\begin{aligned}
 P_i = & -1.6023 + 0.0795CR + 0.17672A + 0.5260TA + 0.1006E - 0.0109T \\
 & (-2.143)^* (4.927)^{**} (0.936) (4.441)^{**} (5.116)^{**} (-0.094) \\
 & - 0.0273OFI. \\
 & (-1.910)^*
 \end{aligned}$$

The log likelihood is -390.2620, and rho has a coefficient of 0.3372 and t-ratio of 3.072.

The estimated equation for the use of improved or treated seeds or plants is

$$\begin{aligned}
 SP_i = & -1.9004 + 0.0640CR + 0.1593OA + 0.5665TA + 0.0955E \\
 & (-2.567)^{**} (4.035)^{**} (0.857) (4.578)^{**} (4.324)^{**} \\
 & + 0.0157T + 0.0041OFI. \\
 & (0.142) (0.269)
 \end{aligned}$$

The log likelihood is -338.6674, and the estimate for rho is less than 0.00001.

It is noteworthy that the coefficients for credit, technical assistance and education are positive and statistically significant (at one per cent) for all three probit models, but that the coefficient for tilling is non-significant in all cases. The coefficient for the owner's age is positive and statistically significant at one per cent in the model for the use of fertiliser, while the coefficient for off-farm income is negative and statistically significant for pesticide use. Rho, the indicator of autocorrelation between the years, is positive and highly significant for both fertiliser and pesticide use, indicating that farmers who use (or do not use) these inputs in one year are likely (or unlikely) to use them the following year.

V. Technical Assistance

A further goal of the titling project was to increase access to technical assistance for those who received titles. The mechanisms for this increase were not made clear as the titling project had no provisions for technical assistance. A probit regression of the following form was fitted:

$$TA_i = \Psi_{50} + \Psi_{51}T_i + \Psi_{52}E_i + \Psi_{53}D_i + \Psi_{54}FS_i + u_{18}. \quad (18)$$

Titling (T) was included in the equation as increased technical assistance was one of the project's goals. Education (E) was included because it was thought that agronomists may be more likely to return to farmers that were more responsive to their advice, as better educated farmers may be, or conversely, education may substitute for technical assistance. The variable for distance (D) was included because those offering technical assistance would be less-likely to visit remote farms, and farm size (FS) was included to determine if larger farms were favoured with more technical assistance.

The fitted equation is

$$TA = -0.9650 + 0.0663T + 0.0745E + 0.0168D + 0.0673FS.$$

(-6.272)** (0.675) (3.741)** (0.515) (2.021)*

The log-likelihood is -403.2732 and the coefficient for rho is 0.4882 and its t-ratio is 6.289. As can be seen, the owner's education and the size of the farm positively affect the likelihood of receiving technical assistance, while the coefficient for titling is non-significant. As rho is positive and highly significant, it shows that agronomists return to the same farms year after year.

VI. Land Sales

It was feared that titling would encourage small farmers to sell their land, both by facilitating sales to those outside the community and by increasing the value of the land and therefore making a sale more enticing. However, as previously noted, there was the converse possibility that increased investment in land could act as an incentive to retain this land. A logistic regression for land sales between 1987 and 1992 was used to estimate what factors prompted farmers to sell their land. The equation was estimated as

$$S_i = \Psi_{60} + \Psi_{61}T_i + \Psi_{62}FS_i + \Psi_{63}YRS_i + \Psi_{64}B_i + u_{19} \quad (19)$$

where S is a dummy variable denoting a sale and B is a dummy variable for the land having been purchased (rather than inherited). The titling (T) variable was included to determine if titling increases sales, because of the reasons stated above, or decreases sales, because with secure property rights, the owner feels more tied to the land. The variable for farm size (FS) was included to determine if small farmers were more likely to sell their land, possibly indicating distress sales. Variables for years of ownership (YRS) and means of acquisition (B) were included to ascertain if farmers were more reluctant to sell land that they had held for a number of years or that had been inherited. The fitted equation for land sales is (level of significance in %)

$$S = -1.8448 - 0.2006T - 0.1987FS + 0.2268YRS + 0.1648B.$$

(.0076)	(.6244)	(.1180)	(.3442)	(.6627)
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As can be seen, none of the factors are statistically significant at 10 per cent (*i.e.* less than 0.10), though farm size is significant at 12 per cent.

It was also thought that small farmers would be bought out by larger neighbours, or

those outside the community. Comparing the buyers and sellers of land, it was found that of the land sold from 1982 to 1987, sellers had mean size of 12.28 mz. and buyers a mean size of 13.08 mz. A t-test showed that this difference was not statistically significant even at ten per cent. Of land sold from 1988 to 1992, sellers had mean size of 8.36 mz and buyers a mean of 6.78 mz. This difference is found to be statistically significant at one per cent, but contrary to what had been expected, the buyers had the smaller mean farm size.

VII. Conclusion

This chapter has used a stochastic frontier production function to estimate the technical efficiency scores for 143 small farmers in Honduras, using data from 1982, 1987 and 1992. These scores show great potential for increases in production as the mean scores for each year were only 0.48, 0.53 and 0.56, respectively. This indicates that for 1992, actual output on average was 44 per cent ($1.00 - 0.56$) lower than it could be with the existing technology. The results show that mean technical efficiency increased over the time period. This increase can be explained, at least in part, by the increase in education and technical assistance over the ten-year period. The apparent paradox that efficiency increase was greater in Ocotopeque, the untitled region, can be explained by the differences between the regions in the levels of the explanatory variables, such as education, credit and off-farm income.

Of the factors affecting technical efficiency positively, credit is fundamental. The results show that the amount of credit is, in its turn, affected positively by technical assistance. However, titling appears to have no effect on access to credit, with either

the smaller or larger sample, and therefore no effect on technical efficiency.

The coefficient for titling is positive and significant only in the regression for the planting of new coffee trees, reflecting on-farm investment, but other factors are likely to be involved. Contrary to what had been expected by the PTT project paper, titling has not encouraged the use of inputs nor has it facilitated access to technical assistance. It also appears that titling has not affected land sales, neither encouraging nor discouraging farmers to sell their land. Although it seems land titling has failed to meet the goals set out for it by this project, further analysis and discussion in the next chapter will take into consideration other factors that would affect policy decisions in Honduras.

CHAPTER EIGHT

DISCUSSION, POLICY IMPLICATIONS AND CONCLUSIONS

I. Discussion

This discussion of the results of the analysis of the previous chapter will focus on the effects of titling on *campesinos'* access to credit, investments and use of inputs as well as technical efficiency. Farm income and involvement in the land market will also be examined. In addition to data gathered in the field and analyzed in chapter seven, this chapter will consider information from other interviews and studies to complement the analysis.

A. CREDIT

As credit has been shown to be fundamental to enhancing technical efficiency and since increasing access to credit was one of the primary goals of the titling project, it will be examined in greater detail. As noted in chapter six, the use of credit increased in both regions from 1982 to 1992. However, the increase was greater in Ocotepaque, and by 1992 the difference between the two regions was statistically significant, meaning it can be said that farmers in Ocotepaque, the untitled region, are now more likely to receive credit than farmers in Santa Bárbara, the titled region.

Although more farmers received credit in 1991 and 1992 and the mean loan amounts increased in nominal terms, they decreased in real terms in both departments from 1982 to 1992. The sources of the loans also varied across time and between the

regions (Table 6.38, p.154). Ocotepeque started in 1982 with a higher rate of loans from private banks, but by 1992, farmers in the two regions received nearly the same percentage of loans from private banks. When evaluating credit, it must be remembered that the USAID/IHCAFE (the government office for coffee production) programme, the Small Farmer Coffee Project, ran from 1981 to 1991 and provided technical and financial assistance, including loan guarantees, to small coffee farmers, including some of those in Santa Bárbara but none in Ocotepeque. Using the terms of the loans (interest rates and duration), it is possible to deduce which of the reported loans came from this project. It seems that of the loans reported in Santa Bárbara in 1983, two were financed by this project, as were seven in 1988 and 11 in 1993. These account for roughly 8 per cent, 17 per cent and 21 per cent of the loans in each year, respectively. As the survey only asked about credit in the previous two years, only data for half of the years covered by the Coffee Project are available, and it is not possible to determine which farmers may have received credit from this project in the other years.

Discussions with farmers and a bank loan officer¹, indicate that having a title is not a critical factor in receiving a loan. Banks accept registered *escritura publicas*, public titles, as well as formal titles, for collateral. Even if the farmer has no documentation for his or her land, a co-signer may be used. Because of this, the bank officer said that titling has not affected his bank's loan policies and agricultural loans to titling beneficiaries have not increased.

¹ Personal interview with Edgardo Puerto O., Loan Officer at BANCAFE, Santa Bárbara, 29 January 1992.

Perversely, some farmers have lost access to credit following the titling project. Those who received a title but fell behind in their payments, or paid nothing, now have a poor credit record and find it impossible to obtain bank loans.

Finally, the analysis of chapter seven showed that having a title is not a significant factor in determining access to credit, while farm size, technical assistance and off-farm income are. These results show that the PTT has not achieved one of its primary goals, that of increasing farmers' access to credit.

B. INVESTMENT AND INPUTS

As is shown in Table 6.50 (p.160), replanting of coffee trees was much more common in Santa Bárbara than it was in Ocotepaque, especially from 1987 to 1992. However, these data have to be considered in light of the Small Farmer Coffee Project, the effects of which cannot be separated from titling. As noted before, this project encouraged and helped finance the renewal of coffee lands. It is therefore impossible to speculate which farmers would have planted coffee trees in the absence of this project. The analysis is further complicated by the fact that neighbours of those involved in the project often adopted practices recommended by the project, even when they were not beneficiaries themselves. Nuñez and Canales (1988), in a study of small coffee producers in Santa Bárbara who were not beneficiaries of the project found that roughly 40 per cent had changed coffee producing practices, the most common change being the planting of improved varieties of trees. An increase

in the use of fertiliser was also common. This in effect makes it impossible to determine the effect of titling on these variables. It can be said, based on the analysis of chapter seven, that either the Coffee Project, land titling, or the two in combination, did lead to increased investment in new coffee trees in Santa Bárbara. That analysis also found that education and technical assistance promote the planting of new coffee trees. Fandino *et al.* (1986) were told in interviews in Colinas that having a title did not affect the farmers' decisions to invest, as they had felt they had secure tenure even before receiving titles.

The descriptive statistics in chapter six (Table 6.53, p.163) show that the use of various inputs increased in both regions from 1982 to 1992. The probit regressions in chapter seven explore the possible explanations for these increases. Titling did not directly encourage the use of these inputs, as the coefficient for the variable for titling is non-significant in all of the models. The use of credit, technical assistance and education, however, did lead to the use of these inputs, while older farmers were more likely to use fertiliser. Greater off-farm income had a negative effect on the use of pesticides, probably indicating that those with off-farm employment had less time to dedicate to their farms or that with sufficient income, they were less concerned about increasing production on their farms.

C. TECHNICAL EFFICIENCY

Although there is no theoretical basis for assuming titling should enhance technical efficiency directly, titling could affect efficiency through enabling farmers to receive formal credit. In the analysis in the previous chapter, it was found that the use of

credit improves technical efficiency, but titling was not a significant factor in determining access to credit. The project also intended that titling should increase farmers' access to technical assistance, which also improves technical efficiency, though again the analysis of chapter seven shows that this goal was not met. These results show that land titling in Honduras had no effect, either directly or indirectly, on technical efficiency.

D. INCOME

Through increased credit, investment, use of inputs and finally farm production, the titling project was expected to raise farm incomes. As shown in chapter six, real farm income increased between 1982 and 1992 by more than 70 per cent in Ocotepeque while it declined by more than 40 per cent in Santa Bárbara. As the analysis of technical efficiency shows that farmers in Ocotepeque became more efficient than those in Santa Bárbara from 1983 to 1993, the increase in Ocotepeque is not surprising, but the real decrease in Santa Bárbara is difficult to explain.

Because more farmers in Santa Bárbara turned to off-farm employment, real total income in that department did increase from 1983 to 1993. Total income increased in Santa Bárbara by 16 per cent, while it more than doubled in Ocotepeque. Again as noted in chapter six, by 1992, some 80 per cent of these farmers in Santa Bárbara were living below the poverty level, as were two-thirds of those in Ocotepeque, showing that poverty is still a very serious problem in both regions.

E. LAND SALES AND PURCHASES

One of the main arguments against the titling project before it was implemented was that having legal title to the land would facilitate sales and eventually lead to greater land concentration. It was believed that because the land could more easily be used as collateral after titling and that because the ownership of the land would be guaranteed, titled land would be more attractive to buyers. An expert on land tenure has stated "The fastest way to separate a peasant from his land is to give him a title."²

It was also theorised that titling could have the opposite effect. By stimulating investment on the farm through enhanced security and improved access to credit, the titling project would in effect tie the farmers to the future productivity of the land and thereby reduce sales. Because there were very few conflicts over land before the project was implemented or in regions outside of the project, it does not seem likely that titling has significantly affected feelings of security and investment. Another theory was that as titling increased the cost of sales by enhancing the role of the State, sales would decline because of these higher transaction costs.

Although Table 6.25 (p.149) shows that sales did increase substantially in Santa Bárbara, these data should be treated with caution, as Coles (1988) found in his study that 16.6 per cent of these farms were transferred between 1983 and 1988. Using Coles's estimate, the rate of transfers in Santa Bárbara declined slightly over the ten-year period. From these data, it seems that titling has not affected land sales, neither

² Anonymous quote in Nesman and Seligson (1988:13).

encouraging nor discouraging them. This is also supported by Coles review of land sales noted in chapter six, that found no change in the overall pattern of land sales in Santa Bárbara from 1964 to the late 1980s.

The regression used in chapter seven (eq. 19) found that neither titling, farm size, years of ownership nor means of acquisition were significant in determining whether or not a plot was sold. According to table 6.28 (p.150), the most common reasons for transferring land in both departments was the owner's death, age or illness, meaning that these transfers would have taken place with or without titling and that titling has neither encouraged nor discouraged the sale of land. In addition, the analysis of chapter seven found that the buyers of these parcels were owners of farms of roughly the same size or smaller than those of the sellers, meaning that the concentration of land ownership has not increased because of the project.

As noted in chapter six, the low rate of registration of transfers has serious implications for the long-term viability of the titling project. Nearly 80 per cent of the transfers in Santa Bárbara were not registered in the municipal land offices (Table 6.31, p.151). If three per cent of the parcels were sold each year (Table 6.25, p.149), that would mean 30 per cent of the parcels had changed hands by 1993. If 80 per cent of these transactions were not registered, 24 per cent of the titles would have been invalid by 1993, just ten years after the start of the project. As stated in chapter six, Coles (1988) and Fandino *et al.* (1986) found that most farmers placed higher value on traditional forms of documentation than they did on formal land titles. If the government of Honduras intends INA titles to be recognised and wants to

prevent the invalidation of titles by unregistered transfers, these cultural biases against titles must be addressed.

Another goal of the project was that it would, through enhanced access to credit, enable farmers to buy land on the market. The first and most obvious obstacle to this objective is that most rural banks in Honduras have a policy of not making loans for the purchase of land because it is considered to be too risky (personal interview)³. As noted in chapter three, this lack of long-term financing means that *campesinos* have to save for years before buying land or have the purchase financed by the seller. It will be recalled that Salgado *et al.* (1994) found that three-fourths of land purchases were financed by the buyer's own resources while one-fifth were financed through informal loans.

In addition to limited financing, which reduces effective demand, the ability of *campesinos* to buy land is limited because land markets in Honduras function poorly - both land and information are limited. As noted in chapter three, because most land is in large holdings (see Table 3.5, p.50), the availability of small parcels is limited. In addition, the market for these large plots is limited because there are so few potential buyers. Although these plots could be subdivided and sold, there is little tradition of this in Honduras. There is also limited exchange of information about the sale of these large farms (Instituto Nacional Agrario and Centro de Tenencia de la Tierra 1990). Estate agents are rarely used in rural areas, so prospective buyers and

³ Personal interview with Edgardo Puerto O., Loan Officer at BANCAFE, Santa Bárbara, 29 January 1992.

sellers of land have to rely on informal means such as word of mouth to exchange information about land sales. In addition, the cost and complexity of legal procedures surrounding the sale of land further depress the market for land.

It will be recalled that Salgado *et al.* (1994) found that some farmers are able to accumulate land, but that those who start with the least amount of land are unable to do so. They also found a positive correlation between titling and the land price, meaning that titles may be seen to improve the value of the land, probably by reducing risk to the buyer and by providing a potential source of collateral. They also discovered higher prices per *manzana* for smaller plots, even when land quality was held constant. They noted evidence of a segmented market as small farmers buy land from other small farmers and large farmers from other large farmers. These limitations make it likely that, as Carter *et al.* (1992) found, the land market will not be an effective means of land distribution in Honduras.

II. Policy Implications

The lack of tenure security was probably not a serious problem in rural Honduras before the PTT. As Lemel (1988) notes, the absence or presence of a formal title *per se* is not an absolute indicator of tenure security. The fact that investments were made on farms on *ejidal* and national land, including the planting of permanent crops, and that these farms were bought and sold, indicates a fairly high degree of security. Other studies in Honduras (Wachter 1989; Fandino *et al.* 1986) found that farmers in Honduras had secure property rights under traditional forms of tenure. This security, however, was higher on *ejidal* than national lands, which did not have the

community documentation of *ejidal* lands. In addition, conflicts over land ownership rights were rare.

As has been suggested before (Instituto Nacional Agrario and Ministerio de Recursos Naturales 1987), titling projects, if implemented, should be complemented with technical assistance, credit and education. The Agricultural Modernisation and Development Law (passed in 1992) does provide financial assistance for the purchase of inputs, that farmers should receive each year in the first three years after receiving title. In addition, the rural banks authorised by this law could facilitate the access to credit for small farmers in remote areas. However, as of November 1993 the finances for these projects had not been found.

From the data analysis, the conclusion is that titling is not significant in increasing access to credit, the use of inputs or farm technical efficiency and income, nor does it facilitate the ability of poor people to buy land. It is positively associated with the plantings of new coffee trees, but this effect is almost certainly due to the Small Farmer Coffee Project, carried out in the same region at the same time. Although it seems titling has had no negative effects on those who have received titles, (*i.e.* the rate of land sales has not increased), it has had no measurable positive effects either. As the project cost nearly \$17 million, it seems these funds could have been put to more productive use in the types of programmes that were found to be effective *i.e.* increased access to technical assistance, education and credit, if the latter is found to be profitable given the circumstances of individual *campesinos*.

III. Conclusion

In Honduras, as well as the rest of Latin America and the developing world, the system of land tenure continues to be fundamental in determining access to other resources -- economic, social and political. Currently, market mechanisms for the distribution of land, including land titling, are in vogue with international development agencies. Honduras, with its history of State-owned land and sometimes conflicting land laws, was a prime candidate for the privatisation and clarification of land rights. When coffee rust threatened coffee producers in Honduras, many of whom cultivate small farms on State-owned lands, it seemed these farmers needed formal title to their lands in order for them to receive the credit necessary to finance the expensive process of technification required to combat this disease.

Ten years later it is possible to examine the effects of this titling project. As noted above, titling has not facilitated access to credit or technical assistance, nor has it encouraged the use of inputs. It is correlated with an increase in the planting of new coffee trees, but it is impossible to claim that titling, rather than the Small Farmer Coffee Improvement Project, brought about this increase. Factors that do enhance technical efficiency and the use of inputs, and through these production and farm income, are education, technical assistance and credit.

For most of the 181 titled farmers interviewed in Santa Bárbara, the lack of a formal title was not the factor limiting their ability to increase production and improve their standards of living. Most are illiterate and live on small farms, without easy access to services such as technical assistance and credit. Although they expressed interest

in having titles to their land, these titles have not fulfilled the expectations created by the titling project. The results of my study show that in Honduras, land titling was neither necessary nor sufficient for increased technical efficiency, production and farm income.

APPENDIX A

EJIDAL LAND GRANT

Translated from the title in the National Archives of Land Titles, Tegucigalpa, Honduras

(To) Administrator of Incomes, Santa Bárbara

We, Alberto Hernández and Enrique Pineda, of the age of majority, married, workers, of this area, residents in the villages of Laguna Colorada and Piedra Grande, respectively, both of this *municipio*, in our offices as Assistant Mayors of the villages of our residences,¹ as confirmed by the certificates included, before you, Administrator of Income, respectfully come to manifest and request the following: the villages that we represent are some of the most populated of the *municipio*, whose residents are completely dedicated to the cultivation of the land. The increase of the population and the high cost of living and the fact that the authorizations of the previous years were not sufficiently foresighted to prevent the land being left in the hands of the few who could enclose it for their benefit, making life difficult, as we lack command of sufficient land to dedicate to the planting of grains of primary necessity, and they have privatised the sources of wood for construction and other materials of the same class and facing this scarcity, we see ourselves in difficulty, not only in generating our subsistence, but also in completing our obligations as citizens.

¹ Each *municipio* has one mayor, based in the largest town. Each village within the *municipio* elects an 'assistant mayor.'

Adjacent to our villages is found a strip of national land consisting of three or four *caballerías* (one *caballería* equals 45.0 hectares) which is adjacent to the communal lands of "Lagunas y Pacayal," "La Misión" (of the *municipio* of Colinas) and in particular to "Rivera" or "La Galera," also in this *municipio*. This strip of land is found entirely within this *municipio* and, in the majority, is idle, as there are only some small cultivations of some people who are using it without any rights.

Under the rights given us by the law and the Justice and making use of Article 35 of the Code of Agricultural Procedures, before you, Departmental Administrator of Incomes, we come to have indicated as *ejidos* of the villages that we represent the strip of national land to which we have referred. We request that you allow us the present solicitation, take the process required by the law, and we will take the liberty to propose, for the practice of the measurement referred to in Article 37 of the mentioned Code, Mr. Abraham Bueso, who has offered to do the job under favourable conditions.

Colinas, 21 May 1942

Requested by Mr. Alberto Hernández and Mr. Enrique Pineda who do not know how to sign their names.

.....

On the 23rd of the same month this solicitation was admitted for publication in the Gazette, the newspaper La Luz and communication was sent to the Receiver of Income in Colinas in order to obtain the information of the witnesses who could verify the facts of the claim.

In June of the same year in Colinas, in the same Department, they verified the extremes of the claim, returning the communication the 29th of the same month.

The fourth of September the Assistant Mayor of Piedra Grande desisted the claim that he made jointly with the Assistant Mayor of Laguna Colorada, because they did not have sufficient funds. The 10th of September the solicitation of Assistant Mayor Enrique Pineda on behalf of the village of Piedra Grande was admitted. It was added to the formalities and the Administrator enacted resolution which was followed by the formalities for the claim in favour of the village of Laguna Colorada, notifying the Assistant Mayor of the village of Piedra Grande.

The 11th of the same month the Administrator drew communication to the Mayor of Colinas to find out if the village of Laguna Colorada had the school house required by the law and the number of inhabitants in this village and if they had previous *ejidos*.

The 18th of the same month the Mayor of Colinas gave all the information requested by the Administrator of Incomes and his report manifested that this village had 617 inhabitants; had no *ejidos* to work and had two school houses for the children,

fulfilling the legal requisites.

The 21st of October of the same year, ... the proceedings were added and, as there had been no opposition, the village of Laguna Colorada was declared to have the rights to acquire *ejidos* of the extension of 16 kilometres square of national land; and that they should be measured in the strip indicated and Mr. Abraham Bueso was commissioned to measure this land.

Mr. Abraham Bueso was notified by the Receiver of Incomes of Colinas, ...the 10th of March of 1943 he accepted, took the oath of law and received the formalities.

On the same date an agrarian commission was constituted and named as secretary Mr. Gustavo A. Funes, who accepted, took the oath of law and incorporated the agrarian commission, the date was given to start the agrarian operations in agreement with the interested parties, the Municipal Trustee of Colinas, adjacent to the lands "Lagunas y Pacayal" and "La Misión" and Mr. Gerardo Rivera, principal co-owner and holder of title for the land called "La Galera"; of Mr. Teodosio Muñoz Castellanos co-owner and holder of title of the land "Los Naranjos," of common agreement they convened to start the day selected for the inspection. On the same date the Trustee of Colinas presented the title of the lands "Lagunas y Pacayal" and "La Misión," of which were copied the relevant parts of each title.

The 11th of the same month Mr. Gerardo Rivera presented the title of the land "La Galera" and copied the significant parts of it. Mr. Teodosio Muñoz also presented

the title of his land "Los Naranjos" on the same date, from which was copied the significant parts of this title. The land of "Los Naranjos" was divided in 1928 by Mr. Daniel R. Bográn, therefore Mr. Hipólito Muñoz presented the testament of the *escritura publica* of the adjudication of his lot, copying from this document the corresponding measurements.

On the same date the representative of the Municipio of Colinas presented the title of the land "Cerro del Tule," from which was copied the significant parts, verifying that the measurement was done by triangulation, deducing the course and distances. The representative of Colinas also presented the titles of the lands "San Antonio de Nombre de Dios de Tamagazapa" and that of "San Juan Jicatullo," which they reviewed, but did not copy because it seemed these lands did not lie adjacent to the national land claimed by the interested party. He also presented the title of the land called "El Zapotal," from which was copied the significant parts. It was written down that the representative of the *municipio* of Colinas is the Second town councillor, Mr. Daniel Paz Zaldivar, in substitution of the Trustee who was ill, who sent the title of the land "El Caposito" of which he is the principal co-owner and from which he copied the significant parts.

The 14th of March of the same year, it was written that on the 11th, 12th, 13th and 14th the inspection was carried out and the corners of the claimed national land verified, that accompanying the inspector were Mr. Francisco Perdomo Muñoz, Assistant Mayor of Laguna Colorada; Mr. Daniel Paz Z., representative of the Trustees of Colinas; Mr. Gerardo Rivera, Messrs Teodosio and Luis Muñoz and Mr.

Pedro Alba, Assistant Mayor of Piedra Grande, as well as the Muñoz brothers and Salomón Castellanos whose respective lands lay adjacent, from which it could be deduced that the national land was measured adjacent to, on the north, the land "Lagunas y Pacayal," pertaining to the *municipio* of Colinas; on the south to the land "La Galera" of Mr. Gerardo Rivera and co-owners, to the land "El Casposito" of the descendants of Hipólito Muñoz and "La Misión" of Colinas; on the east to the land "Lagunas y Pacayal," the land "Cerro del Tule" and "Las Lajitas" pertaining to Colinas and the land "La Galera" of Mr. Gerardo Rivera and on the west to the lands "Los Naranjos" of various co-owners, "La Misión" of Colinas and "El Casposito" of various co-owners. The Inspector explained that the inspection had to be done in separate acts, each day and for each landmark or neighbour, but the description was so clear that it was accepted as it was, taking as given the lands adjacent.

From the inspection, the land was defined from the landmark "La Ceñidura del Chupadero Grande", (unable to translate) to the "Pie del Volcán de Piedra Grande," (the foot of the volcano of the big rock) following the voices of the title of "La Galera" that lies adjacent. The landmark "Ceñidura del Chupadero Grande" is a common corner the measured land; that of "La Galera" and that of "Casposito" and the landmark "Pie del Volcán de Piedra Grande," share corners with the claimed land; "La Galera," "Las Lajitas," "Cerro del Tule" and "Lagunas y Pacayal," from which are derived the rights to the *ejidos* of "Lagunas y Pacayal" and the land comes to the landmark "Portillo del Cerro de los Naranjos" (Pass of the Hill of the Oranges) that shares a corner with the claimed lot, for "Lagunas y Pacayal," "El Zapotal" and for "Los Naranjos," from here continue the line on the right of the land of "Los

Naranjos" until you arrive at the corner of the title of "La Misión" that is called "Ultimo Picachito de Los Naranjos" (Last Mountain Peak of the Oranges) and that today is called "Mojón de la Puerta del Mango" (Landmark of the Door of the Mango) and that shares a corner with the claimed land, the land "Los Naranjos" and the land "La Misión," from this juncture with "La Misión" until you arrive at the landmark of "La Misión," "El Picacho Grande" (the Big Mountain Peak) and that of the land "El Casposito" called "Picacho Grande" or "Agua Buena" (Good Water); this is a common corner with the claimed land at "Casposito" and "La Misión," from here going to the right the junction with "Casposito" you arrive at the "Ceñidura del Comendero Grande," initial landmark, all, the corners were recognised and accepted by the neighbours, having given the respective landmarks the corresponding references.

As the title of "La Galera" says that it goes to "Chupadero Grande" and to "Chupadero Hediondo," it was presumed that although this is in the general direction of the line to "Pie del Volcán de la Piedra Grande," it would be necessary to locate these points, therefore, they went down to "Chupadero Grande" marked by a fig tree and a cedar tree with crosses and the owner of the land "La Galera" Mr. Gerardo Rivera and the Assistant Mayor of Laguna Colorada, recognised this point, as the landmark corner of both lands, they went from the points of "Agua Amarilla" to "Piedra Grande" until they arrived at "Chupadero Hediondo" where was the source of the water used in the village and the neighbours recognised it as correct and continued the line until arriving at the landmark "Pie del Volcán de Piedra Grande," which was recognised and the rest of the landmarks and junctions were described

without any opposition, finishing here the inspection and recognition of landmarks and borders of land and their neighbours.

The 18th of March of the same year, it was written that during the days of the 15th to the 18th topographical boundaries of the claimed land, being present the owners of adjacent land, the line from "Ceñidura" to "Chupadero Grande" was measured, taking the measurement and distance and adjacent lands and topographic details, the same was done with the line from this point to "Chupadero Hediondo" and there the next line was made to the landmark "Pie del Volcán de Piedra Grande," always describing the adjacent lands at each point in the line, from here it went to the landmark "Portillo del Cerro de los Naranjos" passing through the village at 2035 meters, having put this line here as with the other linear landmarks that are specified in the descriptions of the lines, from this point it went to the landmark that the title of "La Misión" calls "El ultimo Picachito de los Naranjos," that of "Los Naranjos" calls "Cuchilla de los Sesesmiles" and today is called "Puerta del Mango," from this landmark it went to "Copo del Picacho Grande" or "Agua Buena," from this point it went to the landmark "La Ceñidura del Comedero Grande" where the measurement began without any opposition.

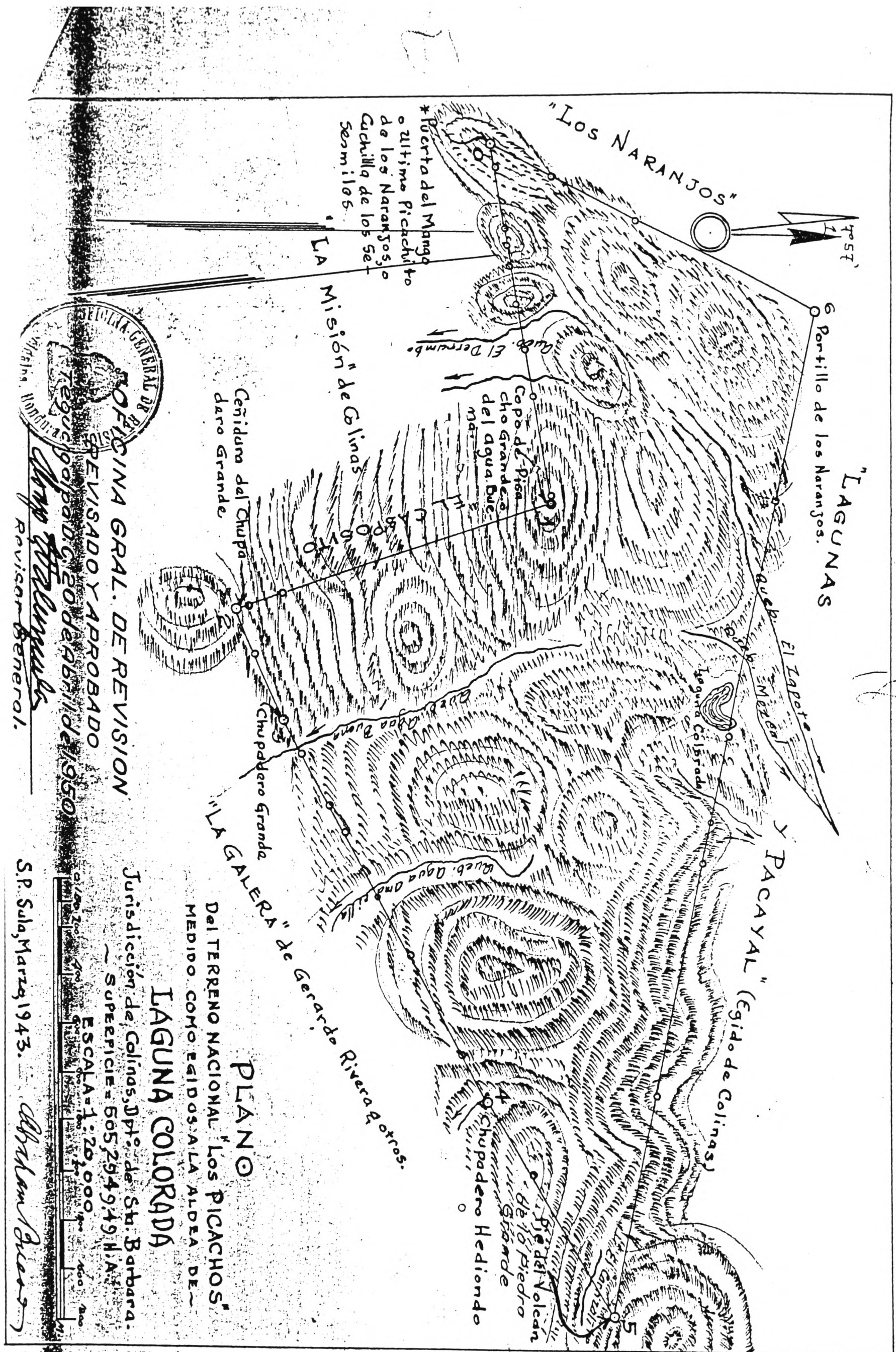
The 26th of March of the same year the calculations regarding the data taken in the field were made, from which was calculated an area of 505 Has. and 2949.49 m², the magnetic decline obtained by direct observation of the sun, according to the specification of the accompanying calculation, is 7 degrees and 57 minutes east and a map of this land was made, Mr. Bueso gave his report, where the error of 0.19%

and the details of the measurement were explained, this report contained all that required by the law, having it written that this land is occupied by residents of the village, as part of the houses of the village are on this land and the others on "Lagunas y Pacayal" *ejidos* of Colinas, without any opposition on the part of the owners of the adjacent land and the interested parties, returning the process to the Administrator, who in the same year, in September, sent it to the Minister of Agricultural for his opinion and that which was received on the 24th of the same month, the Inspector who requested the corresponding paper and from Santa Bárbara received a sheet of paper without knowing from whom, but it is a fact that until the Political Governor of Santa Bárbara, Daniel R. Bográn took interest in the issue and provided the corresponding paper and that the Assistant Mayor from Laguna Colorada never answered the telegrams from this office.

By all of this expressed, the process being in legal form, having carried out the measurements in accord with the technical-legal principles, the calculations and maps were elaborated in accord with the data taken in the field and are correct; the error of the closing does not exceed the limits of tolerance established by the law; the adjacent lands were cited and their owners present; the formal correspondences are extended and authorised in conformance with the prescriptions established by the law; the documents required by the law are included; there are no substantial omissions; the calculations of the magnetic decline are correct, there is no opposition and the Agrarian Commission has legal faculty to measure, consequently, this General Office of Inspection (Auditing) approves the measurement and is of the opinion that the Supreme Executive Power will give his approval to this procedure and grant the title

in favour of the interested parties, which will be accompanied by the map elaborated and approved by this office.

Signed in Tegucigalpa 20 April 1950



"LAGUNAS"

"Y PACAYAL" (Egido de Colinas)

"LA Misión" de Colinas

"LA GALERA" de Gerardo Rivera y otros.

LAGUNA COLORADA

DEL TERRENO NACIONAL "LOS PICACHOS"
MEDIDO COMO EGIDOS A LA ALDEA DE-

Jurisdicción de Colinas, Dpto. de Sta. Barbara.
SUPERFICIE = 505,294,949 H.A.

ESCALA = 1:20,000



REVISADO Y APROBADO
el día 30 de Abril de 1950
Comis. General de Revisión
Revisor General.

S.P. Sula, Marzo 1943.

Abraham Guera

APPENDIX B

THE NATIONAL CADASTER

The National Cadaster Program

In 1963, the Central American countries met and resolved to establish multipurpose cadasters (Moquete in Stanfield *et al.* 1986). In Honduras, this procedure did not start until nearly ten years later. In September of 1972 Decree Number 1327, the 'Cadastral Demonstration Project' was implemented, funded by a grant from USAID (Project No. 522-15-72). The goals of the project, in addition to the delineation of parcel boundaries, included the identification of owners and/or possessors of the land and the description of the uses of the land. The pilot project, intended to prepare personnel and make recommendations for the National Cadaster Program (PCN), surveyed the departments of Choluteca and Valle.

The PCN itself was created in 1974 by the Government of Honduras to collect and analyze data on land tenure and natural resources. The PCN's ultimate responsibility was to provide services and data to national planners and tax administrators, not to be an action program for development. It was meant to produce data that would eventually be employed by other government agencies whose task it was to develop and implement such programs. The PCN has established a multipurpose cadaster to conduct agricultural resources inventories. It also provides information regarding property tax administration, land titling and property registry activities. The support functions to realise these activities include aerial photography, property boundary identification, cartographic processing, soils analysis, land use classification and

automatic data processing (USAID 1982). The project was funded primarily by AID loan 522-T-124, approved 4 February 1975 by Decree No. 186.

In July 1980, the Military Junta issued Decree Number 933 which altered the Cadaster Law. This decree created the Executive Direction of Cadaster as a sub-department of the Technical Secretariat of the Superior Council of Economic Planning. It gave the Executive Direction exclusive authority for surveying as well as organising and updating the cadaster. The decree states: "That the Multiple Purpose National Cadaster is a general inventory of the country's real estate, surveyed through the employment of aerial photographic procedures, topographic maps and other types of maps, registries and studies which permit the determination 'in a clear and precise form of' the location, nature, form, area, boundaries, natural resources, fiscal value and identification of owners or possessors, and knowledge of the juridical situation of the properties." (Cadaster law p.7, in Stanfield *et al.* 1986).

The decree also emphasises the role of the Cadaster in legally organising titling and giving greater import to the property title in order to increase tenure security and thereby stimulate investment and development. However, as of 1986, there was little coordination between INA and the Cadaster, meaning that the fulfilment of these goals has been limited.

APPENDIX C
EARLY LAND TITLES

Santa Bárbara

Colinas:

<u>Owner</u>	<u>Area in Ha</u>	<u>Year</u>	<u>Farm name</u>
Timoteo Rivera	557.0	1897	Agua Escondida
Ejido	1,757.6	1857	Aguagua
Francisco and Crisóstoma Sevillón	832.5	1871	Azacualpa Montaña del Naranjal Regadillos
Lorenzo Pineda España	1,305.0	1870	Camolotal y Cecesmil
Cándido Carrasco, Nicolás Sabillón, Luicía Pas widow of Paredes and Laureano Paz	102.9	1848	Campechano y Quijo
Ejido (El Corozal)	725	1896	Carretal y Guija
Transferred to Juan Guzmán from Eustaquio Fernández	953.9	1911	Casposito
Transferred to the municipio of Colinas from Juan Guzmán	265.4	1915	Cerro de el Tule
Transferred to Pedro de Paz from Indalecio Leiva (1885)	1,800.0	1888	Colirio y Tejutal
Pedro Paz	443.0	1888	Complemento
Benigno Rivera	135	1886	Chorrera
Marcelino Castellanos	1,035	1889	Deseo
Lic. Juan R. Orellana	693.8	1893	Embocadero
Liberato Rivera	371.6	1897	Empresa
Liberato Rivera	450	1889	Esperanza

<u>Owner</u>	<u>Area in Ha</u>	<u>Year</u>	<u>Farm name</u>
Lucio and Benigno Rivera	521.3	1890	Jardin
Ejido (Colinas)	505.3	1943	Laguna Clorada y Piedra Grande
Juan J. Guzmán, Pablo Paz, Sebastián Rodríguez, Martín Zaldivar, Daniel Rápala and others	300.0	1915	Laguna Seca y Jicaral
Pedro de Paz	360	1889	Lagunetillas
Venancio Rivera	89.7	1898	Lomas (Las)
Nicomedes Toro	895.6	1893	Naranjas (las)
Ejido (Naranjito)	no size	1838	Naranjito (el)
Juan Marcelo Castellanos	45	1852	Naranjos
Casimiro Pineda	540	1846	Ocotes Secos
Crescencio Zelaya	180	1843	Ocotillo
Luis Bográn	5,310	1883	Pacayal y Yamala
Pablo Nuila	1,980	1889	Palma Real
Pedro de Paz	520.9	1843	Palmira
Norberto Barahona	270	1843	Palo Verde
Luis Sabillón	157.5	1866	Panal
Ejido (Colinas)	90	1869	Perdomos y Castellanos
Ejido (Colinas)	660	1892	Picapica
Sabino Castellanos	585	1887	Piñelas Lomas del Callejon
Ejido (Colinas)	180	1875	Planes (los)
Francisco Martínez	197.5	1901	Planitos (los)
Miguel Inés Inestroza	18.1	1897	Portillo de el Cerron
Ejido (Celilac)	123.8	1866	Quebrada Grande

<u>Owner</u>	<u>Area in Ha</u>	<u>Year</u>	<u>Farm name</u>
Celestino Sabillón	374	1915	Rancho de el Ocote
Felícito Vidaurreta	67.5	1883	Rincon de Erazo
Cerfino Amaya	297.6	1892	Salitre (el)
Hilario Rodriguez	0.2	1892	San Francisco
Isabel, Andrés and Irene Toro	911.1	1898	San Isidro
Nicolas and Lorenzo Sarmiento and others	135	1783	San Jose de Atima
Mariano Leiva	887.7	1898	San Juanillo
Antio del Valle	90	1713	San Nicolas
Ejido (San Nicolas)	1,035	1838	San Nicolas
Vicente Paredes, Matías and Casimiro Castellanos and Francisco Gomez	349	1922	San Vincente
Ejido (Las Lajas and El Corozal)	958.0	1890	Sitio la Laja
Teodoro Fúnes	1,305	1883	Tablon de la Cebadillo
Gregorio Rodriguez	2,565	1886	Tatoca
Pedro Leiva	135	1845	Tierra Colorada
Albino Pineda	135	1844	Tular
J. Francisco Gómez	23.4	1928	Triangulo (El)
Regino Perdomo and Aureliano Pineda	420.4	1898	Union (La)
Ejido (El Pinel)	816	1926	Union (La)
Isaac Escalón	90	1863	Vega (La)
Cándida Carrasco	50	1868	Vega (La)
Pablo Jose and Francisco Paz, Jerónimo and Augusto T. Banegas	426.1	1912	Volcan (El)
José María Pineda	1,834.3	1898	Vueltas (Las)
Mariano Rivera	135	1842	Zapotat

San Luis:

<u>Owner</u>	<u>Area in Ha</u>	<u>Year</u>	<u>Farm name</u>
Juan J. Guzmán	5,138.4	1928	Cedro de el Joconal
Matías Castellanos	638.2	1915	Cerro Negro
Casmiro Castellanos "claimed by J. Cruz Martínez and auctioned to Casmiro Castellanos"	243.2	1914	Encanto
Francisco Gómez	1,878	1925	Fonograto a los Planes
Ejido (Pajón)	1,736	1894	Palmicha
J. Cruz Martinez	810	1921	Piedra de Agua
José Francisco Gomez "claimed by J. Cruz Martínez and sold to José F. Gomez"	1,968.5	1915	Planes (los) Ofonografo
No name	1,094	1916	Porvenir (el)
Ejido (Quebrada del Sitio)	3,389.6	1911	Quebrada del Sitio
Timoteo Rivera	135	1927	Santo Grandioso
Crúz Flores and Florentino Martinez	1,942.1	1916	San Miguelito Arco Iris
Francisco Daniel Tobías and Francisco H. Rivera	303	1912	Tensua
Transferred to Liberato de Rivera and others from Inocente and Francisco Sabillón	63.2	1909	Vega del Sarro

Azaculapa:

<u>Owner</u>	<u>Area in Ha</u>	<u>Year</u>	<u>Farm name</u>
Gonzalo Mejia Nolaso; Felipe Bardales; Paula, Amelia and Gregorio Acosta	673.7	1935	Azacualpa
Ejido (Macuelizo)	1,581.6	1950	Faldas de Eslabon
Luis Ortega	886.2	1914	Teosintal

Quimistán:

<u>Owner</u>	<u>Area in Ha</u>	<u>Year</u>	<u>Farm name</u>
Dr. Miguel Paz	1,230.0	1892	Anonal
Luis Paz	2,021.1	1921	Aposentillos
Lucio Ortega and N.E. Alger (in Qimistán and Macualizo)	3,969.5	1914	Arena Blanca y el Venado
Inocente Rodriguez	405	1872	Cuchilla
Manuel Recante	6,660	1873	Chumagua
Ejido (Petoa)	1,215	1871	Encinal
Juan Angel Suazo	270	1852	Eslabon
Miguel Valderramos	950.4	1919	Esperanza
Empresa de Vapores, SA	1,186.6	1954	Hacienda de Sula los Dragos y Cerro Nieto
Arnal C. Bueso	561.7	1951	Joya de la Laguna
Miguel Paz	616.0	1903	Magdalena la Sta. Cruz de la Enea
Inocente Rodriguez	34	1872	Monos
Leandro Fajardo	225	1844	Naranjos
Inocente Rodriguez	315	1868	Ojos de Agua
Dr. Miguel Paz "claimed by Lic. Anronio Madrid and auctioned to Dr. Miguel Paz."	357	1922	Pela Nariz y Ojos de Agua
Desiderío de Paz	180	1973	Petoa
Miguel Paz	2,165	1918	Piedra Blanca
Inocente Rodriguez	2,250	1851	Piladero
Próspero Vidaurreta "claimed by Luis Bográn and auctioned to Próspero Vidaurreta"	675	1886	Plan de Guamiles

<u>Owner</u>	<u>Area in Ha</u>	<u>Year</u>	<u>Farm name</u>
Isidoro and Manuel Ortega and others	990	1741	Quimistán
Benito Ortega and others	'fragment of an amparo' ¹	1780	Quimistán
<p>"Title of 252 caballerías (11,347.0 ha) of which 990.6 ha were measured in 1741 in favour of Señores Isidro and Manuel Ortega and other co-owners, confirmed in favour of Angel Ortega, for having paid for the 10,356.4 ha. in excess." 1843</p>			
Ejido (Quimistán)	3,486.2	1858	Quimistan
Lic. José María Cobos	225	1848	Quita Sueño
Inocente Rodriguez	135	1868	Regadillo
Transferred to Luis Bográn from Desiderio de Paz	360	1869	Remolino
Saturnino Bográn	427.5	1868	Rio Arriba
Inocente Rodriguez	697.5	1868	Rio Blanco
Saturnino Bográn	1,575	1868	Rosario (el)
Pedro Borjas	360	1868	Rosario de Tras Cerros
Bernadino Leiva	135	1875	Sanchez (la)
Juana de Ortega	450	1751	Santa Barbara
Ejido (San Marcos)	3,482	1890	Sitio y Fronton
Decendents of Desiderio de Paz	322.9	1890	Tacalazines
Inocente Rodriguez	450	1868	Tapesquillos
Ejido (Macuelizo)	540	1875	Tarros y Oro
Leandro Rodríguez	315	1869	Tecomasuches
Desiderio de Paz	45	1814	Trapiche de Morel

¹ The area of an amparo could not be found.

<u>Owner</u>	<u>Area in Ha</u>	<u>Year</u>	<u>Farm name</u>
Desiderio de Paz and Cándido Carrasco	2,075.6	1856	Torres
José Luis Osorio	137.7	1958	Triangulo del Pital
Sebastián de los Ríos, Paulino Castro and others	12,825	1780	Valle de Sula
Desiderio de Paz	350.7	1892	Vegas de Vado Hondo y Coyolapa
Jerónimo Castellanos	135	1877	Vegas del Zapote
Leandro José Rodríguez	135	1869	Zapotal

In Santa Bárbara, but with no municipio listed

Luis Bográn	1,260	1869	Valladolid
Desderio de Paz and Luis Bográn	2,115	1887	Valladolid

Ocotepeque

Sensenti

<u>Owner</u>	<u>Area in Ha</u>	<u>Year</u>	<u>Farm name</u>
Transferred to Procopio Villamil from Alejandro Mejia, 1743	382.5	1839	Agua Blanca
Miguel Castejón	337.5	1842	Agua Caliente
Ejido (Lucerna)	138.2	1889	Agua Caliente y Las Barranquitas
Gregorio Mejía and others	342	1867	Agua Caliente y Río Hondo
Teodora Pineda, Joaquín Rodezno, and others	382.5	1878	Aguacate

<u>Owner</u>	<u>Area in Ha</u>	<u>Year</u>	<u>Farm name</u>
José Mejía	189	1778	Aguacate
Macos Aguilar	112.5	1837	Aposentos
Cupertino Escalón and neighbours	752.3	1915	Azacualpa
Ejido (el Transito)	960	1903	Brea (la) San Jeronimo
Ejido (Sensenti)	1,462.5	1836	Cajon
Casimiro de Jesús Transferred to Cesario Rivera and others	333	1775 1874	Carrizal changed to Carrizal de Jesús
Doroteo and Félix Ardón and others	1,324.1	1896	Carrizal de Jesús
Luis Castejón	765	1834	Censo (El)
Jesús María Rodriguez	195	1918	Cerro Grande y Yuroconte
Jesús María Rodriguez	22	1834	Cerro Redondo
Antonio Ramírez	297	1733	Cololteca
Manuel Mejía	90	1888	Colopeca
Bartolomé Mejía	157.5	1737	Concaste
Transferred to Miguel Castejón from Francisco Avilés 1776	234	1842	Concaste
"Measured (and decided) in favour of Lorenzo Santos in 1743, declared part of the ejidos of its owners 1806."	112.5 ha.		
Eleuterio, Dolores and Catarina Ramírez	208	1878	Cuajo Seco
Ejido (San Marcos, Sensenti)	990	1887	Cruce y Santa Teresa
The residents of la Esperanza	955	1874	Curaren
José Peraza, Bernadino de la Fuente and Vicente de Santa María	360	1775	Dolores (Nuestra Señora de los)

<u>Owner</u>	<u>Area in Ha</u>	<u>Year</u>	<u>Farm name</u>
Diego de Valenzuela	414	1737	Enea (La)
Pablo José Rivera	164.7	1836	Escalones
Constantino Guirst	72	1875	Golondrina y Plan de Real
Agustín Rodezno and Francisco Aguilar	225	1874	Gualcha (Boca del Monte de)
José Antonio Orellana	360	1865	Gualcha (Boca de Monte de)
Jesús Rodezno	17.5	1926	Guerguerenche
Juan Bautista Collart	382.5	1876	Joconal (Montaña del)
Juana Pineda widow of Antonio Mejia	1,710	1741	Joyas (Las)
Guillermo Cruz	270	1744	Joyas (Las)
Juan de Dios Navarro	1,250.5	1896	Joyas (Las)
Rosa Erazo	90.9	1888	Limoncito (El)
Constantino Guirst	202.5	1873	Marquetao
General Fransisco Argeñal	31.8	1918	Marqueto
Teresa Arceo	29.7	1889	Marquetao o Maragua
Dr. Juan Lindo	832.5	1837	Matazano y Santa Teresa
Crúz, Pablo and Petrona Maldonado, Juan Mejía and Cirilo Rivas	185.9	1884	Mecedero
Miguel and Angela Castejón	1125	1838	Pacayas y Planes
General Eusebio Toro	247.5	1856	Pacayas y Pacayitas
Matías Portillo	225	1740	Pedral (El)

<u>Owner</u>	<u>Area in Ha</u>	<u>Year</u>	<u>Farm name</u>
Constatino Guirst	270	1869	Plan de Real
Faustino Trejo and others	298	1866	Planes (Los)
Jerónimo Castejón	49	1864	Quebrachique
Venancio Cuestas	157.5	1866	Rio Chiquito
Norberto Serrano	990	1766	San Juan
Jacobito Fuentes and Juan Climaco	450	1836	San Juan
Juan Manuel Milla	no size	1786	San Lorenzo
Disputed by Juan Manuel de la Milla and Juan Jorge Carbajal	1,890	1789	San Lorenzo
Litigation between the same		1795	San Lorenzo
Francisco Santos	90	1731	San Marcos
Juan Serrano	45	1714	San Pablo
Pedro de la Fuente	112.5	1733	Santa Efigenia
Mateo Ramírez and Ana María de la Fuente	45	1743	Santa Efigenia
José and Simón de la Fuente	135	1721	Santa Rosa
Miguel Castejón	3,690	1836	Sta. Teresa de Cimarron
Ejidos (Chucuyuco)	no size	1875	Sta. Teresita
Jerónima Castejón	180	1869	Santiago
Francisco Betancourt	135	1741	Sasalapa
Matías Portillo	225	1741	Sauce
Solicitation of common land of Sensenti, over the extension of ejidos, with prejudice against the common lands of Fco. de Chucuyuco		1737	Sensenti y Cucuyuco

La Labor

<u>Owner</u>	<u>Area in Ha</u>	<u>Year</u>	<u>Farm name</u>
Gregorio Valle	542.7	1887	Anisillo
Ejido (La Fraternidad)	1,710	1873	Camalote y Peñitas Sixe y Chimises
General Eusebío, Luis Perez, and others	450	1860	Cruces (las)
Manuel Mejía	79.5	1917	Esperanza (La)
Ejido (La Labor)	405	1873	Guisayote
Manuel Solis	no size	1811	No name
Ejido (La Labor)	1,350	1838	La Labor
Catarino Hernández	910.4	1874	Morillo y Cerro Negro
Guadalupe Garza	405	1845	Planes (Los)
Ejido (La Labor)	1,158.8	1839	San Juan
"Title of the execution of the Royal Free Audience in favour of José Manuel Mejía, in the dispute that followed with Manuel Molina over the propriety of these lands in 1792 and renewed as ejidos in favour of the municipality of La Labor"			
	135	1858	Santa Lucia

San Francisco Del Valle

<u>Owner</u>	<u>Area in Ha</u>	<u>Year</u>	<u>Farm name</u>
The Agricultural and Livestock Society, known as "Francisco Aregeñal y Cía."	no size	1908	Buenvista
Juan de Dios Navarro	614.4	1916	Encuentos
Manuel Pineda	.01	1889	Lomas del Ranchuelo
Ejido	3,701	1894	San Fco. del Valle
Ejido (Cunce, Carrizalito and Zarza)	no size	1793	San Fco. del Valle
Ejidos	4,725	1803	Sta. Teresa de Chucuyuco

San Marcos

<u>Owner</u>	<u>Area in Ha</u>	<u>Year</u>	<u>Farm name</u>
Purificación Carbajal, Yanuario and Sotero Rivera	1,873	1917	Cipresal (El)
Benjamín Chapeta	170	1898	Descanso
Silvestre Murcia	92.5	1928	Guamiles
Rafael Posadas, Perfecto Flores, Jacinto Fuentes, Teófilo Linares and Eligio Santos María, from Felipe Henriquez	39.4	1817	Llanos de Horcon
Ejido (San Marcos)	2,790	1859	Pacayones y Yuscaran
Presbítero Juan B. López	235	1915	Planes (Los)
Agustín Rodezno	765	1888	San Agustín del Generico
Santos Flores	917.4	1927	San Juan
Ponciano Mejía	no size	1922	Tierra Blanca
Miguel Espinoza, Juan B. López, Amalia Chapeta de Casco and her children	256.22	1927	Triangulo (El)

APPENDIX D

SUMMARY OF QUESTIONNAIRE

Identifying owner

Name of owner

Sex of owner

Municipio

Map number

Village

Parcel number

Land sales

Are you still owner of the parcel?

If not, when did you sell/give the parcel?

Why did you sell the parcel?

How did you dispose of the parcel? (Sale or otherwise)

Name of new owner

Sex of new owner

Was the transfer registered by a lawyer?

Did you register the new title at the National Registry?

Where does the previous owner live? (if not previously located)

With whom was the interview (owner, family member)?

Land tenure

How long have you owned the parcel?

How did you obtain the parcel?

What was the value of purchase?/ From whom did you inherit it?

Do you have an INA title for the parcel?

What type of INA title do you have? (Family Agricultural Unit or Full Dominion)

In what year did you receive the title?

What was the property value assigned by INA?

How much have you paid?

Where do you have the title? (home, bank, lawyer)

Do you have documentation in addition to the INA title?

What type?

Have you registered improvements?

If not, why not?

What is the area of the parcel, in *manzanas*?

What is the slope of the parcel?

How is the productivity of the parcel?

Coffee plantings

Have you planted new area to coffee in the past five years?

How many trees, in how much area, in what year?

Have you replanted coffee trees in the past five years?

How many trees, in how much area, in what year?

Other parcels

How many other parcels do you have?

Where are they?

Are they titled?

How long have you had them?

What is the area and what crops do you have planted on them?

Production on parcel

How much of each crop did you produce, keep for seed, consume in the home and sell?

What was the price of the product?

Land use

What is the total area in production this year?

What is the total area fallow this year?

What is the total area in scrub brush this year?

What is the total area in forest?

How much land do you own, in total?

Do you rent land from others? How much?

Do you rent any of your land to others? How much?

How much total land (owned and rented) are you cultivating this year?

Livestock

What animals do you have?

How many have you bought, sold and consumed this year?

Income

What is your annual income from this parcel?

What is your total annual income?

(Calculate what percent of income comes from the parcel)

Soil conservation

Are there techniques that a farmer can use to conserve or improve his soil?

What are they?

Use of inputs

What inputs do you use?

(Asked about improved seeds or plants, treated or fumigated seeds or plants, veterinary services, fertilizers, insecticides, herbicides and fungicides)

On-farm investments

What improvements does your farm have?

(Asked about irrigation pump, fumigation pump, grainery, oxen, tractor, coffee pruner, fences, well with or without pump, corrals, stone walls, terraces, wind breaks (trees), concrete patio to dry coffee, coffee depulper (manual or with motor), storage rooms, dirt silo, silo, coffee fermenter,

plumbing (for irrigation), planter (manual, oxen or mechanical))

Credit

Have you received advice about agricultural credit in the last two years? From whom?

How was the advice?

Have you solicited agricultural credit in the last two years?

Did you receive it?

What was the source of the loan?

What were the amount, the repayment period and the interest rate?

Did you use the loan for inputs or capital purchases?

How did you guarantee the loan?

Have you received credit for other purposes?

How was this loan guaranteed?

Off-farm income

What is the off-farm income of you and your family?

How many weeks does each member work off the farm?

What is their weekly wage?

Is there other income? (family-owned store)

Attitude to titles

What are three advantages of having a title?

What are three disadvantages?

In addition to a title, are there other services necessary to help farmers increase their production?

What are they?

Do you believe the title gives you better access to government services?

Has the title had an affect on your standard of living?

What do your neighbours think of the titles?

If you were to buy a parcel, would you register it in the National Registry?

Do most of your neighbours register the transfer when they buy land?

Do you think the title gives you more security in the possession of your land?

In Ocotepeque only:

Have you had conflicts over your land?

Would you like to have an INA title for your land?

Why?/Why not?

Technical assistance

Have you been visited by agronomists?

From what institution?

How frequently?

How did you find their advice?

Personal information

How long have you lived in this village?

How long have you lived in this department?

Where were you born?

Are you married?

Do you live with your spouse?

How old is your spouse?

How old are you?

How many years of schooling do you have?

Have you participated in any other courses?

Do you have children?

How many people live in your home?

Standard of living

How do you light your home? (candle, gas lamps, electricity)

Do you have a radio?

.... a sewing machine?

.... a refrigerator?

.... a television?

Do you have sanitation? (toilet, latrine or nothing)

Do you have a car or motorbike?

Do you have a horse or mule?

Access to services

How much time does it take to get to the location where you sell your produce?

How do you get there?

How much time does it take to get to the nearest elementary school?

How do you get there?

How much time does it take to get to the nearest doctor?

How do you get there?

How much time does it take to get to the nearest store?

How do you get there?

Perception of economic situation

Do you think your economic situation now is better, worse or the same as that of a year ago?

Do you think your economic situation in one year will be better, worse or the same as it is now?

Do you think your children will live better, worse or the same as you do now?

What would you do if you earned 15 pounds more each week?

(The average daily wage is one pound.)

To be filled in by the interviewer:

Degree of cooperation

Validity of responses

Roof of the home was made of:

The walls were made of:

The floor was:

The house is divided, or is only one room?

General standard of living

Duration of interview

Name of interviewer

APPENDIX E

COMPUTER PRINT-OUTS

FRONTIER PRODUCTION FUNCTION

Limited Dependent Variable Model - FRONTIER regression

Maximum Likelihood Estimates

Log-Likelihood..... -638.1794

Frontier model estimated with PANEL data.

Variance components: $\sigma^2(v)=$ 0.80700, $\sigma^2(u)=$ 0.33566

N[0,1] used for significance levels.

Variable	Coefficnt	Std. Error	t-ratio	Prob t ≥x	Mean X	Std.Dev.of X
Constant	6.9685	0.1275	54.646	0.00000		
LAND	0.76278	0.4205E-01	18.139	0.00000	0.98072	1.0534
LAB	0.14417	0.7215E-01	1.998	0.04570	1.3419	0.58794
FERT	0.52120	0.9585E-01	5.438	0.00000	0.43124	0.49583
NEW	0.29820E-01	0.1652E-01	1.805	0.07105	1.6258	2.8070
σ^2u/σ^2v	0.41594	0.1430	2.909	0.00363		
$\sigma^2(v)$	0.80700	0.6690E-01	12.063	0.00000		

INSTRUMENTAL VARIABLE: CREDIT

MODEL COMMAND:

REGRESS;OUTPUT=5;KEEP=CRED;LHS=CREDIT;RHS=ONE,X\$

Ordinary least squares regression.	Dep. Variable	=	CREDIT			
Observations = 429	Weights	=	ONE			
Mean of LHS = 0.1936434E+01	Std.Dev of LHS	=	0.3585165E+01			
StdDev of residuals= 0.3345557E+01	Sum of squares	=	0.4689762E+04			
R-squared = 0.1475111E+00	Adjusted R-squared=		0.1291999E+00			
F[9, 419] = 0.8055776E+01	Prob value		0.0000000E+00			
Log-likelihood = -0.1121740E+04	Restr.(β=0) Log-l	=	-0.1155973E+04			
Amemiya Pr. Criter.= 0.5276177E+01	Akaike Info.Crit. =		0.1145365E+02			
ANOVA Source	Variation	Degrees of Freedom	Mean Square			
Regression	0.8114965E+03	9.	0.9016628E+02			
Residual	0.4689762E+04	419.	0.1119275E+02			
Total	0.5501259E+04	428.	0.1285341E+02			
Durbin-Watson stat.= 1.6612211	Autocorrelation	=	0.1693895			
Variable	Coefficnt	Std. Error	t-ratio	Prob t ≥x	Mean X	Std.Dev.of X

Constant	-3.4308	2.770	-1.239	0.21618		
TITLE	-0.24535	0.5018	-0.489	0.62514	0.51282	0.50042
ED	0.15891	0.7380E-01	2.153	0.03188	1.7762	2.4132
SIZE	0.37435	0.1344	2.785	0.00559	1.8240	1.3301
AGE	0.85931	0.5964	1.441	0.15039	3.8880	0.31572
DIST	-0.18143	0.1849	-0.981	0.32696	4.2300	0.97901
TA	1.7115	0.3475	4.925	0.00000	0.35897	0.48026
'87	0.39842	0.5646	0.706	0.48080	0.33333	0.47195
'92	1.2606	0.5856	2.153	0.03191	0.33333	0.47195
HH	0.46901	0.3182	1.474	0.14120	1.6779	0.54041

INSTRUMENTAL VARIABLE: OFF-FARM INCOME

MODEL COMMAND:
REGRESS;OUTPUT=5;KEEP=OINC;LHS=INC;RHS=ONE,X\$

Ordinary least squares regression.	Dep. Variable	=	INC
Observations = 429	Weights	=	ONE
Mean of LHS = 0.2270769E+01	Std.Dev of LHS	=	0.3453390E+01
StdDev of residuals= 0.3380136E+01	Sum of squares	=	0.4787208E+04
R-squared = 0.6211993E-01	Adjusted R-squared=		0.4197454E-01
F[9, 419] = 0.3083580E+01	Prob value		0.1349248E-02
Log-likelihood = -0.1126151E+04	Restr.(β=0) Log-l	=	-0.1139908E+04
Amemiya Pr. Criter.= 0.5296743E+01	Akaike Info.Crit.	=	0.1169164E+02
ANOVA Source Variation Degrees of Freedom Mean Square			
Regression 0.3170779E+03 9. 0.3523088E+02			
Residual 0.4787208E+04 419. 0.1142532E+02			
Total 0.5104286E+04 428. 0.1192590E+02			
Durbin-Watson stat.= 1.8337528	Autocorrelation	=	0.0831236
Variable Coefficient Std. Error t-ratio Prob t ≥x Mean X Std.Dev.of X			

Constant 1.2128 2.798 0.433 0.66497			
TITLE 0.30256 0.5070 0.597 0.55097 0.51282 0.50042			
ED 0.79993E-01 0.7457E-01 1.073 0.28400 1.7762 2.4132			
SIZE -0.26894 0.1358 -1.981 0.04829 1.8240 1.3301			
AGE 0.18571 0.6026 0.308 0.75808 3.8880 0.31572			
DIST -0.10898 0.1868 -0.583 0.55989 4.2300 0.97901			
TA -0.59503E-01 0.3511 -0.169 0.86550 0.35897 0.48026			
'87 0.55784E-01 0.5705 0.098 0.92215 0.33333 0.47195			
'92 1.4597 0.5916 2.467 0.01402 0.33333 0.47195			
HH 0.30184 0.3214 0.939 0.34828 1.6779 0.54041			

TECHNICAL EFFICIENCY, WITH INSTRUMENTAL VARIABLES

MODEL COMMAND:
REGRESS;LHS=U2;RHS=INC2,CRED2,A,AGE2,ED2,B88,B93\$

Ordinary least squares regression.	Dep. Variable	=	TE
Observations = 429	Weights	=	ONE
Mean of LHS = -0.2924868E+00	Std.Dev of LHS	=	0.1248278E+00
StdDev of residuals= 0.7788378E-01	Sum of squares	=	0.2559803E+01
R-squared = 0.6161691E+00	Adjusted R-squared=		0.6107118E+00
F[6, 422] = 0.1129071E+03	Prob value		0.1545810E-83
Log-likelihood = 0.4898428E+03	Restr.(β=0) Log-l	=	0.2844477E+03
Amemiya Pr. Criter.= -0.2251016E+01	Akaike Info.Crit.	=	0.6164861E-02
ANOVA Source Variation Degrees of Freedom Mean Square			
Regression 0.4109288E+01 6. 0.6848813E+00			
Residual 0.2559803E+01 422. 0.6065884E-02			
Total 0.6669091E+01 428. 0.1558199E-01			
Durbin-Watson stat.= 1.8171252	Autocorrelation	=	0.0914374
Variable Coefficient Std. Error t-ratio Prob t ≥x Mean X Std.Dev.of X			

INC -0.15364E-01 0.9966E-02 -1.542 0.12391 2.5624 1.3549			
CRED 0.77569E-02 0.3328E-02 2.331 0.02023 2.2697 2.1010			
CONS -0.19634 0.5322E-01 -3.689 0.00025 1.1016 0.36438			
AGE -0.10754E-01 0.1215E-01 -0.885 0.37664 4.3641 1.6790			
ED 0.57138E-03 0.1685E-02 0.339 0.73476 2.1514 3.6873			
B87 -0.22812E-01 0.8483E-02 -2.689 0.00745 0.39108 0.56575			
B92 -0.50431E-03 0.1991E-01 -0.025 0.97980 0.37842 0.58099			

CREDIT, WITH INSTRUMENTAL VARIABLE

MODEL COMMAND:

REGRESS;LHS=C3;RHS=AG2, INC2, CONS2, T2, ED2, FS2, AGE2, TIME2\$

Ordinary least squares regression. Dep. Variable = CR
 Observations = 429 Weights = ONE
 Mean of LHS = 0.2017194E+01 Std.Dev of LHS = 0.3759145E+01
 StdDev of residuals= 0.3523454E+01 Sum of squares = 0.5226602E+04
 R-squared = 0.1358335E+00 Adjusted R-squared= 0.1214649E+00
 F[7, 421] = 0.9453518E+01 Prob value = 0.0000000E+00
 Log-likelihood = -0.1144987E+04 Restr.(β=0) Log-l = -0.1176302E+04
 Amemiya Pr. Criter.= 0.5375233E+01 Akaike Info.Crit. = 0.1264624E+02

ANOVA Source	Variation	Degrees of Freedom	Mean Square
Regression	0.8215402E+03	7.	0.1173629E+03
Residual	0.5226602E+04	421.	0.1241473E+02
Total	0.6048142E+04	428.	0.1413117E+02

Durbin-Watson stat.= 1.6598416 Autocorrelation = 0.1700792

Variable	Coefficnt	Std. Error	t-ratio	Prob t ≥x	Mean X	Std.Dev.of X
TA	1.6331	0.3426	4.767	0.00000	0.38021	0.51115
OFI	0.71081	0.2724	2.610	0.00938	2.3803	0.90322
CONS	-3.3668	2.468	-1.364	0.17330	1.0666	0.17866
T	-0.22893	0.3868	-0.592	0.55427	0.55869	0.56221
ED	0.10808	0.7858E-01	1.375	0.16977	1.8181	2.4437
FS	0.59139	0.1411	4.192	0.00003	1.9481	1.4440
AGE	0.62171	0.5279	1.178	0.23962	4.1422	0.73306
DIST	-0.10857	0.1894	-0.573	0.56671	4.5559	1.4892

OFF-FARM INCOME

MODEL COMMAND:

REGRESS;LHS=OFFINC;RHS=CONS2, ED2, SIZE2, B88, B93, HH\$

Ordinary least squares regression. Dep. Variable = OFFINC
 Observations = 429 Weights = ONE
 Mean of LHS = 0.2264653E+01 Std.Dev of LHS = 0.3455254E+01
 StdDev of residuals= 0.3371790E+01 Sum of squares = 0.4809073E+04
 R-squared = 0.5885281E-01 Adjusted R-squared= 0.4772814E-01
 F[5, 423] = 0.5290296E+01 Prob value = 0.9986827E-04
 Log-likelihood = -0.1127129E+04 Restr.(β=0) Log-l = -0.1140139E+04
 Amemiya Pr. Criter.= 0.5282652E+01 Akaike Info.Crit. = 0.1152797E+02

ANOVA Source	Variation	Degrees of Freedom	Mean Square
Regression	0.3007260E+03	5.	0.6014520E+02
Residual	0.4809073E+04	423.	0.1136897E+02
Total	0.5109799E+04	428.	0.1193878E+02

Durbin-Watson stat.= 1.8311992 Autocorrelation = 0.0844004

Variable	Coefficnt	Std. Error	t-ratio	Prob t ≥x	Mean X	Std.Dev.of X
CONS	1.4046	0.6312	2.225	0.02659	1.0003	0.28058E-01
ED	0.88308E-01	0.6691E-01	1.320	0.18760	1.8092	2.4914
FS	-0.25153	0.1247	-2.017	0.04432	1.8564	1.3702
B87	0.29954	0.3992	0.750	0.45343	0.32968	0.46699
B92	1.7442	0.4004	4.356	0.00002	0.33370	0.47263
HH	0.28903	0.3083	0.938	0.34897	1.6779	0.54041

MODEL COMMAND:

REGRESS;LHS=NEW;RHS=ONE,TITLE,ED,CREDIT,AGRON,OFFINC,AGE;PDS
=2\$

Ordinary least squares regression.	Dep. Variable	=	NEW
Observations = 480	Weights	=	ONE
Mean of LHS = 0.1828792E+01	Std.Dev of LHS	=	0.2911617E+01
StdDev of residuals= 0.2796041E+01	Sum of squares	=	0.3697841E+04
R-squared = 0.8936519E-01	Adjusted R-squared=		0.7781379E-01
F[6, 473] = 0.7736313E+01	Prob value		0.5978494E-07
Log-likelihood = -0.1171103E+04	Restr.($\beta=0$) Log-l	=	-0.1193570E+04
Amemiya Pr. Criter.= 0.4908762E+01	Akaike Info.Crit.	=	0.7931855E+01

ANOVA	Source	Variation	Degrees of Freedom	Mean Square
	Regression	0.3628877E+03	6.	0.6048129E+02
	Residual	0.3697841E+04	473.	0.7817845E+01
	Total	0.4060728E+04	479.	0.8477512E+01

Durbin-Watson stat.= 2.0607223 Autocorrelation = -0.0303612

Variable	Coefficnt	Std. Error	t-ratio	Prob t ≥x	Mean X	Std.Dev.of X
Constant	-0.10595	1.904	-0.056	0.95564		
TITLE	1.2943	0.3078	4.205	0.00003	0.75417	0.43103
ED	0.12386	0.5367E-01	2.308	0.02144	1.8813	2.5945
CREDIT	0.15340	0.3982E-01	3.852	0.00013	1.9832	3.5557
AGRON	0.42476	0.3068	1.384	0.16689	0.30417	0.46053
OFFINC	0.16227E-01	0.3394E-01	0.478	0.63283	3.0482	3.7861
AGE	0.61786E-01	0.4605	0.134	0.89333	3.9281	0.29643

Autocorrelation consistent covariance matrix computed for lags of 2 periods.

N[0,1] used for significance levels.

Variable	Coefficnt	Std. Error	t-ratio	Prob t ≥x	Mean X	Std.Dev.of X
Constant	-0.10595	2.239	-0.047	0.96225		
TITLE	1.2943	0.2845	4.550	0.00001	0.75417	0.43103
ED	0.12386	0.6351E-01	1.950	0.05114	1.8813	2.5945
CREDIT	0.15340	0.5233E-01	2.931	0.00337	1.9832	3.5557
AGRON	0.42476	0.3665	1.159	0.24645	0.30417	0.46053
OFFINC	0.16227E-01	0.3921E-01	0.414	0.67901	3.0482	3.7861
AGE	0.61786E-01	0.5450	0.113	0.90974	3.9281	0.29643

MODEL COMMAND:

REGRESS;LHS=CREDIT;RHS=ONE,TITLE,ED,SIZE,AGE,TIME,AGRON,OFFINC;PDS=3\$

Ordinary least squares regression. Dep. Variable = CREDIT
 Observations = 720 Weights = ONE
 Mean of LHS = 0.1753382E+01 Std.Dev of LHS = 0.3428120E+01
 StdDev of residuals= 0.3112558E+01 Sum of squares = 0.6897870E+04
 R-squared = 0.1836545E+00 Adjusted R-squared= 0.1756286E+00
 F[7, 712] = 0.2288281E+02 Prob value = 0.3217295E-13
 Log-likelihood = -0.1835134E+04 Restr.(β=0) Log-l = -0.1908184E+04
 Amemiya Pr. Criter.= 0.5119816E+01 Akaike Info.Crit. = 0.9795664E+01
 ANOVA Source Variation Degrees of Freedom Mean Square
 Regression 0.1551824E+04 7. 0.2216891E+03
 Residual 0.6897870E+04 712. 0.9688019E+01
 Total 0.8449694E+04 719. 0.1175201E+02
 Durbin-Watson stat.= 1.6357704 Autocorrelation = 0.1821148

N[0,1] used for significance levels.

Variable	Coefficnt	Std. Error	t-ratio	Prob t ≥x	Mean X	Std.Dev.of X
Constant	-2.4386	1.620	-1.505	0.13230		
TITLE	0.19226E-02	0.2398	0.008	0.99360	0.50278	0.50034
ED	0.16046	0.5168E-01	3.105	0.00190	1.7444	2.4298
SIZE	0.25538	0.8419E-01	3.033	0.00242	1.7828	1.4798
AGE	0.60340	0.4022	1.500	0.13355	3.8997	0.30741
TIME	0.14065	0.6684E-01	2.104	0.03536	3.2806	1.8105
AGRON	2.7155	0.2671	10.167	0.00000	0.27083	0.44470
OFFINC	-0.37015E-01	0.3350E-01	-1.105	0.26912	2.5414	3.5911

Autocorrelation consistent covariance matrix computed for lags of 3 periods.

N[0,1] used for significance levels.

Variable	Coefficnt	Std. Error	t-ratio	Prob t ≥x	Mean X	Std.Dev.of X
Constant	-2.4386	1.723	-1.415	0.15698		
TITLE	0.19226E-02	0.2566	0.007	0.99402	0.50278	0.50034
ED	0.16046	0.5922E-01	2.710	0.00674	1.7444	2.4298
SIZE	0.25538	0.9387E-01	2.721	0.00652	1.7828	1.4798
AGE	0.60340	0.4301	1.403	0.16069	3.8997	0.30741
TIME	0.14065	0.6725E-01	2.091	0.03650	3.2806	1.8105
AGRON	2.7155	0.3419	7.942	0.00000	0.27083	0.44470
OFFINC	-0.37015E-01	0.3067E-01	-1.207	0.22744	2.5414	3.5911

MODEL COMMAND:
 PROBIT;LHS=FERT;RHS=ONE,CREDIT,AGE,AGRON,ED,TITLE,OFFINC;PDS
 =3\$
 Dependent variable is binary, y=0 or y not equal 0

Binomial Probit Model

Maximum Likelihood Estimates

Log-Likelihood..... -399.6962
 Restricted (Slopes=0) Log-L. -485.3678
 Chi-Squared (6)..... 171.3432
 Significance Level..... 0.0000000

N[0,1] used for significance levels.

Variable	Coefficnt	Std. Error	t-ratio	Prob t ≥x	Mean X	Std.Dev.of X
Constant	-2.3344	0.6858	-3.404	0.00066		
CREDIT	0.11357	0.1638E-01	6.933	0.00000	1.7534	3.4281
AGE	0.45580	0.1725	2.642	0.00824	3.8997	0.30741
AGRON	0.59906	0.1217	4.922	0.00000	0.27083	0.44470
ED	0.10388	0.2197E-01	4.728	0.00000	1.7444	2.4298
TITLE	-0.35891	0.1035	-3.467	0.00053	0.50278	0.50034
OFFINC	-0.26536E-01	0.1462E-01	-1.815	0.06955	2.5414	3.5911

Reestimated RANDOM EFFECTS Probit Model

Maximum Likelihood Estimates

Log-Likelihood..... -390.4411
 Restricted (Slopes=0) Log-L. -399.6962
 Chi-Squared (1)..... 18.51021
 Significance Level..... 0.1689898E-04

Sample is 3 periods and 240 individuals.

N[0,1] used for significance levels.

Variable	Coefficnt	Std. Error	t-ratio	Prob t ≥x	Mean X	Std.Dev.of X
Constant	-2.3203	0.7251	-3.200	0.00137		
CREDIT	0.11164	0.1839E-01	6.069	0.00000	1.7534	3.4281
AGE	0.42607	0.1803	2.363	0.01812	3.8997	0.30741
AGRON	0.53421	0.1087	4.912	0.00000	0.27083	0.44470
ED	0.11136	0.2142E-01	5.200	0.00000	1.7444	2.4298
TITLE	-0.16949	0.1022	-1.658	0.09730	0.50278	0.50034
OFFINC	-0.21979E-01	0.1366E-01	-1.609	0.10758	2.5414	3.5911
Rho	0.57075	0.6360E-01	8.974	0.00000		

Frequencies of actual & predicted outcomes
 Predicted outcome has maximum probability.

Actual	Predicted		TOTAL
	0	1	
0	380	50	430
1	143	147	290
TOTAL	523	197	720

MODEL COMMAND:
 PROBIT;LHS=PEST;RHS=ONE,CREDIT,AGE,AGRON,ED,TITLE,OFFINC;PDS
 =3\$
 Dependent variable is binary, y=0 or y not equal 0

Binomial Probit Model

Maximum Likelihood Estimates

Log-Likelihood..... -391.5282
 Restricted (Slopes=0) Log-L. -447.9674
 Chi-Squared (6)..... 112.8785
 Significance Level..... 0.0000000
 N[0,1] used for significance levels.

Variable	Coefficient	Std. Error	t-ratio	Prob t ≥x	Mean X	Std.Dev.of X
Constant	-1.5369	0.7000	-2.195	0.02813		
CREDIT	0.80153E-01	0.1545E-01	5.189	0.00000	1.7534	3.4281
AGE	0.16315	0.1761	0.927	0.35407	3.8997	0.30741
AGRON	0.53090	0.1201	4.422	0.00001	0.27083	0.44470
ED	0.98744E-01	0.2152E-01	4.588	0.00000	1.7444	2.4298
TITLE	-0.33292E-01	0.1041	-0.320	0.74910	0.50278	0.50034
OFFINC	-0.28317E-01	0.1467E-01	-1.931	0.05352	2.5414	3.5911

Reestimated RANDOM EFFECTS Probit Model

Maximum Likelihood Estimates

Log-Likelihood..... -390.2620
 Restricted (Slopes=0) Log-L. -391.5282
 Chi-Squared (1)..... 2.532294
 Significance Level..... 0.1115380
 Sample is 3 periods and 240 individuals.
 N[0,1] used for significance levels.

Variable	Coefficient	Std. Error	t-ratio	Prob t ≥x	Mean X	Std.Dev.of X
Constant	-1.6023	0.7477	-2.143	0.03211		
CREDIT	0.79528E-01	0.1614E-01	4.927	0.00000	1.7534	3.4281
AGE	0.17618	0.1883	0.936	0.34949	3.8997	0.30741
AGRON	0.52603	0.1185	4.441	0.00001	0.27083	0.44470
ED	0.10056	0.1966E-01	5.116	0.00000	1.7444	2.4298
TITLE	-0.10907E-01	0.1163	-0.094	0.92526	0.50278	0.50034
OFFINC	-0.27344E-01	0.1432E-01	-1.910	0.05617	2.5414	3.5911
Rho	0.33721	0.1097	3.073	0.00212		

Frequencies of actual & predicted outcomes
 Predicted outcome has maximum probability.

Actual	Predicted		TOTAL
	0	1	
0	452	42	494
1	150	76	226
TOTAL	602	118	720

MODEL COMMAND:
 PROBIT;LHS=SEED;RHS=ONE,CREDIT,AGE,AGRON,ED,TITLE,OFFINC;PDS
 =3\$
 Dependent variable is binary, y=0 or y not equal 0

Binomial Probit Model

Maximum Likelihood Estimates

Log-Likelihood..... -338.6674
 Restricted (Slopes=0) Log-L. -385.1108
 Chi-Squared (6)..... 92.88672
 Significance Level..... 0.0000000
 N[0,1] used for significance levels.

Variable	Coefficnt	Std. Error	t-ratio	Prob t ≥x	Mean X	Std.Dev.of X
Constant	-1.9002	0.7404	-2.566	0.01028		
CREDIT	0.63907E-01	0.1584E-01	4.036	0.00005	1.7534	3.4281
AGE	0.15921	0.1858	0.857	0.39144	3.8997	0.30741
AGRON	0.56649	0.1238	4.578	0.00000	0.27083	0.44470
ED	0.95479E-01	0.2208E-01	4.324	0.00002	1.7444	2.4298
TITLE	0.15622E-01	0.1105	0.141	0.88759	0.50278	0.50034
OFFINC	0.40810E-02	0.1515E-01	0.269	0.78765	2.5414	3.5911

Reestimated RANDOM EFFECTS Probit Model

Maximum Likelihood Estimates

Log-Likelihood..... -338.6674
 Sample is 3 periods and 240 individuals.
 NOTE: Estimate of RHO is ≤ .00001.
 Results are unchanged from PROBIT estimates.
 N[0,1] used for significance levels.

Variable	Coefficnt	Std. Error	t-ratio	Prob t ≥x	Mean X	Std.Dev.of X
Constant	-1.9004	0.7404	-2.567	0.01027		
CREDIT	0.63900E-01	0.1584E-01	4.035	0.00005	1.7534	3.4281
AGE	0.15925	0.1858	0.857	0.39133	3.8997	0.30741
AGRON	0.56651	0.1238	4.578	0.00000	0.27083	0.44470
ED	0.95469E-01	0.2208E-01	4.324	0.00002	1.7444	2.4298
TITLE	0.15664E-01	0.1105	0.142	0.88729	0.50278	0.50034
OFFINC	0.40783E-02	0.1515E-01	0.269	0.78778	2.5414	3.5911

Frequencies of actual & predicted outcomes
 Predicted outcome has maximum probability.

Actual	Predicted		TOTAL
	0	1	
0	533	24	557
1	125	38	163
TOTAL	658	62	720

MODEL COMMAND:
 PROBIT;LHS=AGRON;RHS=ONE,TITLE,ED,TIME,SIZE;PDS=3\$
 Dependent variable is binary, y=0 or y not equal 0

Binomial Probit Model

Maximum Likelihood Estimates

Log-Likelihood..... -409.0060
 Restricted (Slopes=0) Log-L. -420.5419
 Chi-Squared (4)..... 23.07176
 Significance Level..... 0.1225137E-03

N[0,1] used for significance levels.

Variable	Coefficnt	Std. Error	t-ratio	Prob t ≥x	Mean X	Std.Dev.of X
Constant	-0.94524	0.1311	-7.212	0.00000		
TITLE	0.27750E-01	0.1033	0.269	0.78824	0.50278	0.50034
ED	0.79878E-01	0.2024E-01	3.946	0.00008	1.7444	2.4298
TIME	0.11235E-01	0.2922E-01	0.385	0.70059	3.2806	1.8105
SIZE	0.72236E-01	0.3486E-01	2.072	0.03826	1.7828	1.4798

Reestimated RANDOM EFFECTS Probit Model

Maximum Likelihood Estimates

Log-Likelihood..... -403.2732
 Restricted (Slopes=0) Log-L. -409.0060
 Chi-Squared (1)..... 11.46568
 Significance Level..... 0.7089313E-03

Sample is 3 periods and 240 individuals.

N[0,1] used for significance levels.

Variable	Coefficnt	Std. Error	t-ratio	Prob t ≥x	Mean X	Std.Dev.of X
Constant	-0.96496	0.1539	-6.272	0.00000		
TITLE	0.66251E-01	0.9820E-01	0.675	0.49990	0.50278	0.50034
ED	0.74516E-01	0.1992E-01	3.741	0.00018	1.7444	2.4298
TIME	0.16833E-01	0.3266E-01	0.515	0.60629	3.2806	1.8105
SIZE	0.67274E-01	0.3328E-01	2.021	0.04326	1.7828	1.4798
Rho	0.48822	0.7763E-01	6.289	0.00000		

Frequencies of actual & predicted outcomes
 Predicted outcome has maximum probability.

Actual	Predicted		TOTAL
	0	1	
0	515	10	525
1	190	5	195
TOTAL	705	15	720

423 0 logistic regression sold92 with title,sizeb,yrsb,botb.

Total number of cases: 240 (Unweighted)
 Number of selected cases: 240
 Number of unselected cases: 0

Number of selected cases: 240
 Number rejected because of missing data: 3
 Number of cases included in the analysis: 237

Dependent Variable.. SOLD92

Beginning Block Number 0. Initial Log Likelihood Function

-2 Log Likelihood 205.32563

* Constant is included in the model.

Beginning Block Number 1. Method: Enter

Variable(s) Entered on Step Number

1.. TITLE
 SIZEB
 YRSB
 BOTB

Estimation terminated at iteration number 4 because
 Log Likelihood decreased by less than .01 percent.

	Chi-Square	df	Significance
-2 Log Likelihood	200.832	232	.9314
Model Chi-Square	4.494	4	.3433
Improvement	4.494	4	.3433
Goodness of Fit	239.113	232	.3603

Classification Table for SOLD93

		Predicted		Percent Correct
		.00	1.00	
		0	1	
Observed	.00	200	0	100.00%
	1.00	37	0	.00%
Overall				84.39%

----- Variables in the Equation -----

Variable	B	S.E.	Wald	df	Sig	R	Exp(B)
TITLE	-.2006	.4097	.2397	1	.6244	.0000	.8182
SIZEB	-.1987	.1271	2.4431	1	.1180	-.0465	.8198
YRSB	.2268	.2398	.8948	1	.3442	.0000	1.2546
BOTB	.1648	.3778	.1903	1	.6627	.0000	1.1792
Constant	-1.8448	.6916	7.1142	1	.0076		

- - - t-tests for paired samples - - -

Variable	Number of Cases	Mean	Standard Deviation	Standard Error
F6	TOTAL MZ. DE TIERRA	12.2800	21.045	4.706
	20	13.0760	15.178	3.394
RF6	Total numero de manzanas			

(Difference) Mean	Standard Deviation	Standard Error	2-tail Corr. Prob.	t Value	Degrees of Freedom	2-tail Prob.
-.7960	25.966	5.806	-.002 .995	-.14	19	.892

- - - t-tests for paired samples - - -

Variable	Number of Cases	Mean	Standard Deviation	Standard Error
RF6	Total numero de manzanas	8.3643	9.615	1.560
	38	6.7803	6.696	1.086
JF6	Total land owned (mz)			

(Difference) Mean	Standard Deviation	Standard Error	2-tail Corr. Prob.	t Value	Degrees of Freedom	2-tail Prob.
1.5840	7.359	1.194	.646 .000	1.33	37	.193

APPENDIX F

THE DATA

The variables are listed in the following order: (1982, 1987, 1992)

CASENO TITLE SOLD LGTPROD LGLAND LGLAB FERT SEEDS PEST NEW
ED AGE TA CREDIT OFI DISTANCE FARMSIZE

CASENO: 1 .00 .00 .00 .69 2.08 1.00 1.00 1.00
.00 3.0 4.17 1.00 .00 .00 3.00 3.91

CASENO: 1 1.00 .00 .71 -2.30 2.08 1.00 1.00 1.00
.00 6 3.93 1.00 9.41 .00 5.01 3.94

CASENO: 1 1.00 .00 9.55 1.79 2.01 1.00 1.00 1.00
.00 5 4.01 1.00 10.46 .00 5.19 4.68

CASENO: 3 .00 .00 7.22 .69 1.39 1.00 .00 1.00
.00 2.0 4.13 .00 .00 .00 4.79 2.48

CASENO: 3 1.00 1.00 .71 -2.30 1.95 .00 1.00 .00
.00 2 3.81 .00 .00 .00 .00 3.61

CASENO: 3 1.00 .00 6.11 1.10 1.10 .00 .00 .00
.00 2 4.25 .00 .00 .00 3.69 3.08

CASENO: 4 .00 .00 8.26 .69 1.61 .00 .00 1.00
.00 .0 3.64 .00 .00 .00 .00 2.48

CASENO: 4 1.00 .00 7.85 .69 1.79 .00 .00 .00
.00 2 3.74 .00 .00 .00 2.20 2.86

CASENO: 4 1.00 .00 5.70 .22 1.91 .00 .00 1.00
.00 0 3.87 .00 .00 .00 4.09 .47

CASENO: 5 .00 .00 8.61 1.95 2.48 .00 .00 .00
.00 .0 3.99 .00 .00 .00 3.81 3.26

CASENO: 5 1.00 .00 .71 .41 1.95 .00 1.00 1.00
.00 0 4.09 .00 .00 .00 2.64 3.22

CASENO: 5 1.00 .00 8.64 2.41 .81 1.00 .00 1.00
.00 0 4.16 4.00 .00 .00 3.69 3.58

CASENO: 6 .00 .00 5.49 -.69 1.79 .00 .00 .00
.00 2.0 3.37 .00 .00 .00 4.79 1.61

CASENO: 6 1.00 .00 6.14 .00 2.20 .00 .00 .00
.00 1 3.47 .00 .00 .00 .00 1.01

CASENO:	6	1.00	.00	6.91	.41	1.61	1.00	.00		
	1.00	.00	1	3.64	.00	.00	7.83	3.81	1.39	
CASENO:	7	.00	.00	6.87	.92	1.79	.00	1.00	.00	
	.00	2.0	3.95	.00	.00	.00	4.79	3.00		
CASENO:	7	1.00	.00	.71	2.08	1.79	.00	.00	.00	
	.00	0	3.61	.00	.00	.00	5.19	3.43		
CASENO:	7	1.00	.00	6.91	1.61	.70	.00	.00	.00	
	.00	0	3.91	.00	.00	6.80	2.30	2.89		
CASENO:	8	.00	.00	7.28	2.48	1.61	.00	.00	.00	
	.00	.0	4.25	.00	.00	.00	4.50	2.48		
CASENO:	8	1.00	.00	.71	-2.30	2.08	.00	.00	.00	
	.00	0	3.95	.00	.00	.00	5.48	3.33		
CASENO:	8	1.00	1.00	9.04	1.61	1.25	1.00	1.00	1.00	
	.00	12	3.64	.00	.00	9.30	2.71	1.61		
CASENO:	9	.00	.00	7.24	.59	.69	.00	.00	.00	
	.00	.0	3.97	.00	.00	.00	3.31	2.40		
CASENO:	9	1.00	.00	7.66	.92	.61	1.00	.00	1.00	
	.00	0	4.06	.00	.00	6.19	4.50	2.40		
CASENO:	9	1.00	.00	.00	1.10	1.50	.00	.00	.00	
	.00	0	4.14	.00	.00	.00	3.00	2.47		
CASENO:	10	.00	.00	9.03	1.25	2.48	.00	.00	.00	
	.00	.0	4.06	.00	.00	.00	4.79	2.08		
CASENO:	10	1.00	.00	.71	-2.30	2.48	1.00	.00	1.00	
	.00	0	4.09	.00	.00	.00	.00	3.69		
CASENO:	10	1.00	.00	8.18	1.61	2.11	.00	.00	1.00	
	.00	0	4.19	.00	.00	.00	4.79	3.66		
CASENO:	11	.00	.00	7.97	.92	2.30	.00	1.00	.00	
	.00	.0	3.56	.00	.00	.00	3.40	3.56		
CASENO:	11	1.00	.00	.71	-2.30	2.48	.00	.00	.00	
	.00	2	3.69	1.00	8.31	.00	.00	3.02		
CASENO:	11	1.00	1.00	8.17	1.61	1.79	1.00	.00	1.00	
	.00	6	3.04	4.00	.00	.00	3.40	1.70		
CASENO:	12	.00	.00	7.15	.69	1.73	.00	.00	.00	
	.00	.0	4.22	.00	.00	7.42	.00	1.61		

CASENO:	12	1.00	.00	.71	-2.30	.77	.00	.00	.00
	.00	0	4.16	.00	.00	8.68	.00	.00	1.95
CASENO:	12	1.00	.00	.00	-.69	2.35	.00	.00	.00
	.00	0	4.23	.00	.00	.00	4.79	.00	1.61
CASENO:	13	.00	.00	6.37	.00	1.79	.00	.00	.00
	.00	.0	3.81	.00	.00	.00	.00	.00	.69
CASENO:	13	1.00	.00	6.24	.00	1.39	.00	.00	.00
	.00	0	4.08	.00	.00	.00	.00	4.87	3.09
CASENO:	13	1.00	.00	8.41	1.61	1.99	1.00	.00	.00
	.00	0	4.16	.00	.00	8.01	.00	2.30	2.53
CASENO:	14	.00	.00	6.59	.69	.69	.00	.00	.00
	.00	5.0	3.37	.00	.00	.00	.00	4.50	.69
CASENO:	14	1.00	.00	.71	-2.30	1.33	.00	.00	.00
	.00	6	3.50	.00	.00	7.29	.00	5.48	2.58
CASENO:	14	1.00	.00	5.94	-.16	1.71	.00	.00	1.00
	7.20	8	3.66	.00	.00	8.05	.00	4.79	1.25
CASENO:	15	.00	.00	8.15	2.08	2.20	.00	1.00	.00
	.00	.0	3.89	.00	.00	.00	.00	4.50	2.30
CASENO:	15	1.00	.00	.71	-2.30	2.56	.00	.00	1.00
	.00	0	3.97	.00	.00	8.02	.00	2.64	2.40
CASENO:	15	1.00	.00	7.94	1.61	1.79	.00	.00	1.00
	.00	0	4.08	.00	.00	6.55	.00	3.81	2.56
CASENO:	16	.00	.00	7.89	1.61	2.48	1.00	1.00	.00
	.00	2.0	3.91	.00	.00	.00	.00	3.22	2.77
CASENO:	16	1.00	.00	7.09	1.16	2.29	.00	.00	.00
	.00	0	3.99	.00	.00	.00	.00	8.41	4.50
CASENO:	16	1.00	.00	7.50	1.39	1.79	.00	.00	1.00
	.00	0	4.09	.00	.00	.00	.00	4.61	3.40
CASENO:	17	.00	.00	8.50	2.30	2.08	1.00	.00	.00
	.00	3.0	4.51	.00	.00	.00	.00	7.93	3.56
CASENO:	17	1.00	.00	7.11	1.61	1.12	.00	.00	.00
	.00	3	4.55	1.00	.00	.00	.00	7.98	2.48
CASENO:	17	1.00	.00	9.19	2.56	1.10	1.00	1.00	1.00
	.00	3	3.99	2.00	.00	.00	.00	2.30	3.47

CASENO:	18	.00	.00	.00	1.10	2.08	.00	.00	.00
	.00	.0	4.28	.00	.00	.00	2.30		3.09
CASENO:	18	1.00	.00	.71	.69	1.10	.00	.00	.00
	.00	0	4.33	.00	.00	.00	2.64		3.00
CASENO:	18	1.00	1.00	.00	-2.30	1.99	.00	.00	.00
	.00	0	4.09	.00	.00	9.95	2.30		3.14
CASENO:	19	.00	.00	8.99	2.81	2.08	.00	.00	.00
	.00	.0	4.19	1.00	10.01	.00	5.19		3.80
CASENO:	19	1.00	.00	7.04	2.48	2.30	1.00	.00	.00
	.00	0	4.29	.00	10.39	.00	5.48		3.69
CASENO:	19	1.00	.00	9.06	1.84	.57	1.00	1.00	1.00
	7.06	0	4.30	.00	9.68	7.31	4.79		3.81
CASENO:	20	.00	.00	5.97	.69	1.95	.00	.00	.00
	.00	.0	3.33	.00	.00	.00	5.70		.69
CASENO:	20	1.00	.00	7.04	.69	2.48	.00	.00	.00
	.00	0	3.64	.00	.00	.00	5.19		1.39
CASENO:	20	1.00	.00	4.61	.00	1.62	.00	.00	.00
	.00	0	3.64	.00	.00	7.82	2.30		.18
CASENO:	21	.00	.00	7.13	.00	2.30	.00	.00	.00
	.00	2.0	3.33	.00	.00	.00	.00		.00
CASENO:	21	1.00	.00	7.88	1.10	2.48	1.00	1.00	1.00
	7.53	2	3.83	1.00	9.12	.00	3.81		1.61
CASENO:	21	1.00	.00	.00	-2.30	2.01	.00	.00	.00
	.00	2	3.64	.00	.00	2.08	4.09		.99
CASENO:	22	.00	.00	8.81	2.21	2.30	1.00	.00	1.00
	.00	.0	3.89	.00	9.03	.00	4.79		3.50
CASENO:	22	1.00	.00	.71	-2.30	2.29	.00	.00	.00
	.00	1	3.97	.00	.00	6.88	4.79		3.40
CASENO:	22	1.00	.00	7.89	1.61	1.50	1.00	.00	1.00
	.00	0	4.01	2.00	6.68	.00	4.09		2.95
CASENO:	23	.00	.00	6.87	.69	1.95	.00	.00	.00
	.00	1.0	3.69	.00	.00	.00	5.48		.92
CASENO:	23	1.00	.00	7.71	.00	2.20	.00	.00	.00
	7.82	0	3.76	.00	.00	.00	4.79		1.61

CASENO:	23	1.00	.00	9.07	1.39	1.91	.00	.00	1.00
8.01	0	3.89		.00	.00	.00	4.79		1.95
CASENO:	24	.00	.00	7.43	1.25	1.61	.00	.00	.00
.00	.0	3.81		.00	.00	.00	4.79		3.09
CASENO:	24	1.00	.00	6.06	.69	2.08	.00	.00	.00
.00	0	3.89	1.00	.00		.00	.00		3.00
CASENO:	24	1.00	.00	.00	2.40	1.32	.00	.00	.00
.00	0	3.91	.00		.00	.00	4.79		3.43
CASENO:	25	.00	.00	9.35	3.37	2.20	.00	.00	.00
.00	.0	3.81	.00	.00	.00	.00	5.48		3.69
CASENO:	25	1.00	.00	7.69	1.61	2.48	.00	.00	.00
.00	0	3.93	.00	.00	.00	.00	5.48		3.00
CASENO:	25	1.00	.00	8.99	1.39	2.28	.00	.00	1.00
8.01	0	4.01		.00	.00	8.99	4.79		2.71
CASENO:	26	.00	.00	7.89	1.10	1.39	.00	.00	.00
.00	.0	3.56	.00	.00	.00	.00	4.09		1.70
CASENO:	26	1.00	.00	5.33	.69	1.60	.00	.00	.00
.00	0	3.74	.00	.00	.00	4.81	.00		1.32
CASENO:	26	1.00	.00	8.70	.69	.41	.00	.00	.00
5.01	0	3.56	.00	.00	.00	.00	4.79		1.39
CASENO:	27	.00	.00	8.52	1.50	2.56	.00	.00	.00
.00	2.0	3.76	1.00	.00	.00	.00	5.19		3.33
CASENO:	27	1.00	.00	7.28	.69	2.20	1.00	.00	.00
.00	2	3.93	1.00	.00	.00	.00	5.48		3.33
CASENO:	27	1.00	.00	7.66	1.61	1.46	.00	.00	.00
5.30	2	3.95	.00	.00	.00	8.01	5.70		3.18
CASENO:	28	.00	.00	8.50	1.70	1.79	.00	.00	.00
.00	2.0	3.71	.00	.00	.00	.00	5.19		3.26
CASENO:	28	1.00	.00	8.51	2.40	2.20	.00	.00	.00
.00	2	3.83	.00	9.23		.00	4.79		3.31
CASENO:	28	1.00	.00	7.38	1.39	1.91	.00	.00	1.00
7.38	2	3.91	.00	9.90	.00	.00	4.79		3.00
CASENO:	30	.00	.00	5.64	.96	1.61	.00	.00	.00
.00	.0	4.09	.00	.00	.00	.00	5.19		1.39

CASENO:	30	1.00	.00	5.65	-.69	.79	.00	.00	.00
	.00	0	4.26	.00	.00	8.86	3.00		-.69
CASENO:	30	1.00	.00	.00	-1.39	.41	.00	.00	.00
	.00	2	4.33	.00	.00	2.08	3.87		-.11
CASENO:	31	.00	.00	8.47	.64	1.39	.00	.00	.00
	.00	1.0	3.40	.00	.00	.00	4.79		2.08
CASENO:	31	1.00	.00	9.32	1.34	2.08	1.00	.00	.00
	.00	1	3.56	.00	.00	.00	5.19		1.75
CASENO:	31	1.00	.00	.00	2.44	2.11	1.00	.0	1.00
	.00	0	3.76	.00	8.52	.00	3.00		2.44
CASENO:	32	.00	.00	7.92	2.20	2.56	.00	.00	.00
	.00	2.0	3.97	.00	.00	.00	5.48		3.56
CASENO:	32	1.00	.00	.71	2.08	2.12	.00	.00	.00
	.00	2	3.99	.00	6.01	8.21	.00		3.81
CASENO:	32	1.00	.00	7.33	1.39	1.66	.00	.00	.00
	.00	1	4.22	.00	8.01	.00	5.01		3.95
CASENO:	33	.00	.00	8.27	2.08	1.10	.00	.00	.00
	.00	.0	3.91	.00	.00	.00	6.17		2.64
CASENO:	33	1.00	.00	7.54	1.39	1.10	.00	.00	.00
	.00	0	3.99	.00	7.62	.00	4.79		2.30
CASENO:	33	1.00	.00	8.56	2.30	.81	.00	.00	.00
	5.59	0	4.06	.00	.00	.00	5.19		3.00
CASENO:	34	.00	.00	7.57	.92	1.94	.00	.00	.00
	.00	1.0	3.47	.00	.00	5.34	5.48		1.61
CASENO:	34	1.00	.00	5.91	.59	2.08	.00	.00	.00
	.00	0	3.81	.00	.00	.00	4.79		-.92
CASENO:	34	1.00	.00	7.79	1.25	1.32	.00	.00	.00
	6.21	2	4.01	.00	.00	.00	5.19		2.43
CASENO:	35	.00	.00	8.98	1.99	1.95	1.00	.00	.00
	.00	.0	3.69	.00	8.72	.00	6.58		3.97
CASENO:	35	1.00	.00	7.92	1.79	2.30	.00	.00	.00
	5.99	0	3.81	.00	.00	.00	4.79		4.08
CASENO:	35	1.00	.00	7.38	1.79	1.32	.00	.00	.00
	4.38	4	3.91	.00	.00	.00	4.79		4.26

CASENO:	36	.00	.00	6.22	.92	1.92	.00	.00	.00
	.00	.0	3.61	.00	5.81	6.50	5.70		1.50
CASENO:	36	1.00	1.00	5.51	.41	1.23	.00	.00	.00
	.00	0	3.81	.00	.00	7.51	5.19		1.72
CASENO:	36	1.00	1.00	6.87	.69	1.26	.00	.00	.00
	.00	0	3.95	.00	.00	6.58	4.79		1.79
CASENO:	37	.00	.00	7.21	.92	1.61	.00	.00	.00
	.00	2.0	3.33	.00	.00	.00	4.09		1.79
CASENO:	37	1.00	.00	6.70	.69	1.39	.00	.00	.00
	.00	2	3.50	.00	.00	.00	.00		1.83
CASENO:	37	1.00	.00	7.02	.69	1.00	.00	.00	.00
	.00	0	3.64	.00	.00	6.80	4.79		1.96
CASENO:	38	.00	.00	5.35	-.69	.69	.00	.00	.00
	.00	.0	2.94	.00	.00	.00	5.70		.69
CASENO:	38	1.00	.00	.71	-2.30	1.20	.00	.00	.00
	.00	0	3.18	.00	.00	7.70	2.64		1.87
CASENO:	38	1.00	.00	7.90	1.61	1.91	1.00	.00	1.00
	.00	0	4.14	.00	8.29	.00	4.50		3.30
CASENO:	39	.00	.00	7.13	1.67	2.20	.00	.00	.00
	.00	2.0	3.76	.00	.00	.00	5.48		3.18
CASENO:	39	1.00	.00	6.93	1.16	2.26	.00	.00	.00
	.00	2	3.85	.00	.00	7.29	5.89		3.18
CASENO:	39	1.00	.00	6.68	1.39	1.93	.00	.00	.00
	5.65	2	3.95	.00	.00	7.56	4.79		3.27
CASENO:	40	.00	.00	8.38	1.79	1.79	.00	.00	.00
	.00	5.0	3.47	.00	.00	.00	4.79		3.40
CASENO:	40	1.00	.00	.71	1.79	1.79	.00	.00	.00
	.00	5	3.58	.00	.00	.00	5.19		2.77
CASENO:	40	1.00	.00	6.97	1.39	1.60	1.00	.00	.00
	6.21	5	3.69	2.00	8.70	6.80	4.79		3.26
CASENO:	42	.00	.00	8.95	2.28	2.20	1.00	.00	1.00
	.00	2.0	3.69	.00	.00	.00	4.79		3.53
CASENO:	42	1.00	.00	7.76	1.39	2.40	1.00	1.00	1.00
	.00	2	3.83	1.00	.00	.00	5.19		3.26

CASENO:	42	1.00	.00	8.41	1.61	2.20	.00	.00	1.00
	.00	3	3.93	1.00	.00	.00	4.50		3.29
CASENO:	43	.00	.00	7.26	1.28	2.07	.00	1.00	1.00
	.00	.0	3.76	.00	.00	4.02	5.19		.59
CASENO:	43	1.00	.00	6.42	.26	2.30	.00	.00	.00
	.00	0	3.87	.00	.00	.00	2.30		.41
CASENO:	43	1.00	.00	6.86	1.01	1.59	.00	.00	.00
	5.40	0	3.95	.00	.00	8.64	5.19		.56
CASENO:	44	.00	.00	8.85	1.95	2.08	.00	.00	.00
	.00	1.0	3.91	1.00	.00	.00	4.09		2.64
CASENO:	44	1.00	.00	.71	-2.30	2.20	1.00	1.00	1.00
	.00	0	3.99	1.00	9.01	.00	4.09		2.56
CASENO:	44	1.00	.00	9.28	1.95	1.50	.00	.00	.00
	.00	1	4.09	.00	8.39	8.19	4.09		2.83
CASENO:	45	.00	.00	8.47	1.34	1.95	.00	.00	.00
	.00	5.0	3.22	.00	.00	.00	4.09		1.10
CASENO:	45	1.00	.00	7.08	.69	2.20	.00	.00	.00
	.00	4	3.37	.00	.00	.00	3.40		1.39
CASENO:	45	1.00	.00	7.68	1.39	1.58	.00	.00	.00
	6.21	4	3.47	.00	.00	7.09	4.79		1.55
CASENO:	46	.00	.00	9.14	2.68	2.40	.00	.00	.00
	.00	1.0	3.95	1.00	.00	8.11	4.50		3.81
CASENO:	46	1.00	.00	5.66	.00	1.95	.00	.00	.00
	.00	1	4.03	.00	.00	.00	4.09		3.51
CASENO:	46	1.00	.00	.00	.41	2.11	1.00	.00	1.00
	.00	1	4.13	.00	.00	6.91	5.19		3.68
CASENO:	47	.00	.00	9.31	1.67	1.61	.00	.00	.00
	.00	.0	3.30	.00	.00	.00	5.48		3.00
CASENO:	47	1.00	.00	10.56	1.95	1.79	.00	.00	.00
	5.81	1	3.50	.00	.00	.00	5.89		3.00
CASENO:	47	1.00	1.00	8.35	1.25	.02	.00	.00	.00
	5.81	0	3.40	2.00	.00	7.31	5.01		3.34
CASENO:	48	.00	.00	9.51	1.76	1.79	.00	.00	.00
	.00	.0	3.09	.00	.00	.00	5.48		4.50

CASENO:	48	1.00	1.00	.71	-2.30	1.79	.00	.00	.00
	.00	0	3.87	.00	.00	.00	.00	.00	1.95
CASENO:	48	1.00	.00	7.31	1.79	1.46	1.00	.00	1.00
	.00	3	3.76	3.00	.00	9.57	5.35		2.14
CASENO:	49	.00	.00	10.15	2.04	2.48	.00	.00	.00
	.00	2.0	3.69	1.00	.00	.00	5.70		3.64
CASENO:	49	1.00	1.00	7.93	2.08	2.40	.00	.00	.00
	5.52	6	3.04	.00	.00	.00	4.79		2.08
CASENO:	49	1.00	.00	7.82	1.61	1.10	1.00	.00	.00
	.00	3	3.30	3.00	.00	.00	4.09		2.43
CASENO:	50	.00	.00	8.90	1.79	1.95	.00	.00	.00
	.00	1.0	3.93	.00	7.93	.00	5.48		3.71
CASENO:	50	1.00	.00	7.85	3.40	1.79	.00	.00	.00
	.00	1	4.04	.00	.00	.00	5.48		3.79
CASENO:	50	1.00	.00	8.39	1.27	.41	1.00	1.00	1.00
	7.31	0	4.09	1.00	8.70	.00	5.48		3.99
CASENO:	51	.00	.00	8.46	2.14	1.10	.00	.00	1.00
	.00	.0	4.14	.00	.00	.00	5.48		3.85
CASENO:	51	1.00	.00	7.26	1.10	.00	.00	.00	.00
	5.81	0	4.17	.00	.00	.00	2.30		3.74
CASENO:	51	1.00	.00	8.29	1.10	1.50	.00	1.00	1.00
	5.12	0	4.09	.00	.00	.00	5.19		1.10
CASENO:	52	.00	.00	7.28	.69	1.95	1.00	.00	.00
	.00	1.0	3.69	.00	.00	.00	5.70		.69
CASENO:	52	1.00	.00	7.92	1.06	1.95	.00	.00	.00
	.00	0	3.81	.00	.00	.00	3.40		1.10
CASENO:	52	1.00	.00	8.75	1.50	1.32	.00	.00	.00
	5.81	0	3.71	.00	.00	.00	4.09		1.03
CASENO:	53	.00	.00	9.00	2.08	1.95	.00	.00	.00
	.00	2.0	3.61	1.00	.00	.00	5.48		2.08
CASENO:	53	1.00	.00	9.41	2.08	1.95	.00	.00	1.00
	.00	0	3.69	.00	9.01	.00	3.40		2.30
CASENO:	53	1.00	.00	9.90	2.48	1.91	1.00	.00	1.00
	6.68	0	4.14	.00	.00	.00	4.50		2.96

CASENO:	54	.00	.00	9.33	2.53	2.30	.00	.00	.00
	.00	4.0	3.47	.00	.00	.00	5.19	3.22	
CASENO:	54	1.00	.00	9.36	2.40	2.20	.00	1.00	.00
	.00	4	3.58	.00	.00	5.32	5.70	2.56	
CASENO:	54	1.00	1.00	8.47	1.45	.41	1.00	.00	1.00
	5.01	6	3.04	3.00	.00	.00	4.50	2.83	
CASENO:	55	.00	.00	8.42	2.42	2.08	.00	.00	.00
	.00	.0	3.56	.00	.00	.00	5.48	3.04	
CASENO:	55	1.00	.00	6.62	.00	2.30	1.00	1.00	1.00
	.00	6	3.69	1.00	9.70	.00	3.40	1.79	
CASENO:	55	1.00	.00	7.65	.69	1.91	.00	.00	.00
	7.77	7	3.81	.00	.00	.00	4.50	3.01	
CASENO:	56	.00	.00	5.98	.69	.84	.00	.00	.00
	.00	.0	3.30	1.00	.00	8.01	.00	.69	
CASENO:	56	1.00	.00	6.17	.69	1.61	.00	.00	.00
	.00	0	3.43	.00	.00	.00	3.40	.69	
CASENO:	56	1.00	.00	6.75	.69	1.15	.00	.00	.00
	.00	0	3.58	3.00	.00	7.70	4.50	1.25	
CASENO:	57	.00	.00	5.76	-.69	1.61	.00	.00	.00
	.00	.0	3.81	.00	.00	.00	5.89	.41	
CASENO:	57	1.00	.00	6.02	.00	2.20	.00	.00	.00
	.00	0	3.81	.00	.00	.00	4.32	.41	
CASENO:	57	1.00	.00	7.92	.69	1.50	.00	.00	.00
	4.61	0	3.83	.00	.00	.00	4.79	.69	
CASENO:	58	.00	.00	8.57	1.61	.69	.00	.00	.00
	.00	.0	3.95	.00	.00	.00	1.79		
CASENO:	58	1.00	.00	5.51	1.79	2.48	1.00	.00	1.00
	.00	0	4.22	.00	.00	.00	4.50	1.79	
CASENO:	58	1.00	.00	6.40	1.50	.81	.00	.00	
	.00	7.72	0	4.22	.00	.00	6.68	4.50	1.97
CASENO:	59	.00	.00	9.03	1.39	1.79	1.00	.00	1.00
	.00	.0	4.17	.00	.00	.00	4.79	2.08	
CASENO:	59	1.00	.00	7.22	.79	1.53	.00	.00	1.00
	.00	2	4.29	.00	.00	7.29	3.40	2.40	

CASENO: 59 1.00 .00 5.80 .41 -.29 .00 .00 .00
.00 2 4.36 .00 .00 .00 4.50 2.37

CASENO: 60 .00 .00 6.18 -1.20 .96 .00 .00 .00
.00 .0 3.71 .00 .00 7.42 5.48 -.69

CASENO: 60 1.00 .00 6.42 -1.61 1.12 .00 .00 .00
.00 0 3.87 .00 .00 7.98 4.32 -.69

CASENO: 60 1.00 .00 .00 -.36 1.12 .00 .00 .00
.00 0 3.99 .00 .00 7.65 4.79 -.36

CASENO: 61 .00 .00 8.74 1.79 1.95 .00 .00 .00
.00 .0 3.81 .00 .00 .00 4.79 3.00

CASENO: 61 1.00 .00 8.36 1.39 1.95 1.00 1.00 1.00
.00 0 3.97 .00 .00 .00 3.69 3.69

CASENO: 61 1.00 .00 6.40 .69 1.50 1.00 1.00 .00
7.70 0 4.13 2.00 9.21 .00 4.79 2.89

CASENO: 62 .00 .00 7.31 1.81 2.20 .00 .00 .00
.00 .0 4.03 .00 .00 4.20 2.30 2.53

CASENO: 62 1.00 .00 7.79 1.61 2.20 .00 1.00 .00
.00 0 4.11 .00 .00 .00 .00 3.02

CASENO: 62 1.00 .00 .00 1.39 1.91 .00 .00
.00 .00 0 4.16 .00 .00 .00 4.79 2.90

CASENO: 64 .00 .00 .00 1.10 1.61 .00 .00 .00
.00 2.0 4.08 .00 .00 .00 3.40 2.30

CASENO: 64 1.00 .00 4.64 1.87 1.10 .00 .00 .00
.00 0 4.16 .00 .00 .00 .00 2.60

CASENO: 64 1.00 1.00 7.09 1.10 1.10 .00 .00
.00 .00 3 3.26 .00 .00 .00 4.09 2.67

CASENO: 65 .00 .00 6.74 .69 2.30 .00 .00 1.00
.00 .0 3.91 .00 .00 .00 5.89 3.00

CASENO: 65 1.00 .00 .71 -2.30 2.55 .00 1.00 1.00
.00 0 3.99 .00 .00 7.55 2.64 2.98

CASENO: 65 1.00 .00 .00 1.10 1.79 .00 .00
.00 .00 0 4.08 .00 .00 7.56 4.50 2.41

CASENO: 66 .00 .00 .00 .00 1.51 .00 .00 .00
.00 .0 3.66 .00 .00 7.38 .00 .92

CASENO:	66	1.00	.00	.71	-2.30	1.51	.00	.00	1.00
	.00	0	3.83	.00	.00	7.33	2.64	.92	
CASENO:	66	1.00	.00	.00	-2.30	1.32	.00	.00	
	.00	.00	0	3.89	.00	.00	.00	4.50	.41
CASENO:	67	.00	.00	.00	-.22	1.10	.00	.00	.00
	.00	.0	3.97	.00	.00	.00	.00	-.22	
CASENO:	67	1.00	.00	5.42	.00	.93	.00	.00	.00
	5.99	0	4.06	.00	.00	7.29	2.64	.41	
CASENO:	67	1.00	.00	7.27	-.29	.81	.00	.00	
	.00	5.59	0	4.11	.00	.00	.00	4.79	.47
CASENO:	68	.00	.00	5.85	.41	1.95	.00	.00	1.00
	.00	5.0	3.76	.00	.00	.00	.00	4.34	
CASENO:	68	1.00	.00	.71	-2.30	2.20	1.00	.00	1.00
	.00	4	3.87	1.00	.00	.00	3.40	4.29	
CASENO:	68	1.00	.00	.00	-2.30	1.79	.00	.00	
	.00	.00	0	4.09	.00	.00	.00	4.50	.41
CASENO:	69	.00	.00	8.78	1.19	1.79	.00	.00	1.00
	.00	.0	3.66	.00	8.27	.00	5.19	3.43	
CASENO:	69	1.00	.00	6.65	1.03	1.10	.00	1.00	1.00
	.00	1	3.78	.00	.00	.00	5.19	3.44	
CASENO:	69	1.00	.00	6.52	1.50	1.50	.00	.00	
	.00	.00	1	3.85	.00	.00	.00	5.48	1.46
CASENO:	71	.00	.00	.00	1.10	1.91	.00	.00	.00
	.00	.0	4.28	.00	.00	7.42	4.09	2.08	
CASENO:	71	1.00	1.00	5.42	.92	2.15	.00	.00	.00
	.00	2	4.01	.00	.00	7.55	3.40	3.04	
CASENO:	71	1.00	1.00	7.38	.00	2.20	.00	.00	
	.00	.00	0	4.38	.00	.00	.00	3.81	1.95
CASENO:	72	.00	.00	8.18	2.17	2.08	1.00	.00	.00
	.00	.0	4.20	.00	.00	.00	5.48	3.43	
CASENO:	72	1.00	.00	7.90	2.30	2.08	.00	.00	.00
	.00	6	3.58	.00	.00	.00	5.19	2.83	
CASENO:	72	1.00	.00	.00	.92	1.88	.00	.00	
	.00	.00	2	3.56	.00	.00	8.78	3.87	.92

CASENO:	73	.00	.00	9.14	1.25	1.95	1.00	.00	1.00
	.00	2.0	3.47	.00	.00	.00	4.79	3.40	
CASENO:	73	1.00	.00	.71	-2.30	2.20	1.00	.00	1.00
	.00	2	3.61	.00	.00	.00	4.79	3.33	
CASENO:	73	1.00	.00	.00	-1.39	2.14	1.00	.00	
	.00	.00	2	3.71	.00	.00	6.62	4.50	3.45
CASENO:	74	.00	.00	7.98	1.03	2.20	.00	.00	1.00
	.00	3.0	3.76	.00	.00	.00	.00	3.50	
CASENO:	74	1.00	.00	8.70	2.64	1.62	.00	1.00	1.00
	6.62	3	3.89	.00	.00	7.80	3.40	3.26	
CASENO:	74	1.00	.00	8.30	2.89	1.10	1.00	.00	
	1.00	.00	3	3.97	.00	.00	.00	4.79	2.97
CASENO:	75	.00	.00	.00	-2.30	1.95	1.00	.00	1.00
	.00	4.0	3.95	1.00	.00	.00	6.04	3.58	
CASENO:	75	1.00	.00	.71	-2.30	2.00	1.00	1.00	1.00
	.00	4	4.06	1.00	.00	7.51	4.79	4.14	
CASENO:	75	1.00	.00	8.92	1.39	1.50	1.00	.00	
	1.00	7.72	6	4.13	2.00	8.52	.00	4.50	4.50
CASENO:	76	.00	.00	7.83	.41	2.19	.00	.00	.00
	.00	.0	3.61	.00	.00	4.83	3.69	.41	
CASENO:	76	1.00	.00	7.51	1.39	1.80	.00	.00	.00
	.00	0	3.85	.00	.00	3.42	.00	1.25	
CASENO:	76	1.00	.00	5.95	1.18	1.47	.00	1.00	
	.00	4.38	0	3.93	.00	.00	8.35	5.19	1.39
CASENO:	77	.00	.00	7.32	1.10	1.57	.00	.00	.00
	.00	.0	3.47	.00	.00	6.73	4.09	1.10	
CASENO:	77	1.00	.00	6.42	.69	1.79	.00	.00	.00
	.00	0	3.61	.00	.00	.00	4.09	1.18	
CASENO:	77	1.00	.00	6.79	.56	1.24	.00	.00	
	.00	5.52	0	3.50	.00	.00	7.02	4.09	2.16
CASENO:	78	.00	.00	.00	1.70	1.89	.00	.00	.00
	.00	3.0	3.58	1.00	.00	7.42	4.50	2.14	
CASENO:	78	1.00	.00	9.42	2.12	2.08	.00	.00	.00
	7.05	3	3.71	.00	.00	.00	3.40	3.67	

CASENO:	78	1.00	.00	7.68	1.95	1.50	.00	1.00		
	1.00	5.20	3	3.87	.00	.00	.00	3.81	3.47	
CASENO:	79	.00	.00	5.49	-1.20	1.95	.00	.00	.00	.00
	.00	5.0	3.89	.00	.00	.00	4.09	.69		
CASENO:	79	1.00	.00	.71	.10	2.08	.00	.00	.00	.00
	.00	5	3.99	.00	.00	.00	3.00	1.61		
CASENO:	79	1.00	1.00	6.17	1.61	1.26	.00	.00		
	.00	6.50	2	3.74	3.00	.00	6.58	4.09	2.05	
CASENO:	80	.00	.00	5.49	.41	1.10	.00	.00	.00	.00
	.00	.0	3.76	.00	.00	8.38	3.40	.41		
CASENO:	80	1.00	.00	5.33	2.08	2.95	.00	.00	.00	.00
	3.44	0	3.85	.00	.00	9.25	5.89	.69		
CASENO:	80	1.00	.00	6.55	.00	1.60	.00	.00		
	.00	.00	0	3.99	.00	.00	8.07	4.09	1.31	
CASENO:	81	.00	.00	7.71	.69	1.10	.00	.00	.00	.00
	.00	.0	3.37	1.00	.00	.00	4.09	.69		
CASENO:	81	1.00	.00	6.93	.69	1.61	.00	.00	.00	.00
	.00	0	3.50	.00	.00	.00	.00	.81		
CASENO:	81	1.00	1.00	6.66	.22	1.48	.00	.00		
	.00	.00	3	3.43	.00	.00	5.52	5.19	1.92	
CASENO:	82	.00	.00	8.34	.41	1.03	.00	.00	.00	.00
	.00	3.0	3.40	.00	.00	6.73	4.50	2.71		
CASENO:	82	1.00	.00	5.46	.00	1.59	.00	.00	.00	.00
	.00	3	3.50	1.00	.00	5.39	.00	.00		
CASENO:	82	1.00	.00	5.16	-.29	1.40	.00	.00		
	.00	.00	3	3.64	.00	.00	7.43	4.09	.47	
CASENO:	83	.00	.00	10.09	2.71	1.61	1.00	.00	1.00	1.00
	.00	.0	3.81	.00	9.72	.00	4.50	3.22		
CASENO:	83	1.00	.00	9.45	2.56	1.79	1.00	1.00	1.00	1.00
	.00	0	3.89	.00	.00	.00	5.19	3.61		
CASENO:	83	1.00	.00	10.23	2.20	1.10	1.00	.00		
	.00	7.66	0	3.99	.00	8.99	.00	4.09	4.16	
CASENO:	84	.00	.00	6.32	1.39	1.93	.00	.00	.00	.00
	.00	.0	4.09	.00	.00	5.59	.00	2.30		

CASENO:	84	1.00	.00	6.01	.18	1.48	.00	.00	.00
	.00	0	4.16	.00	.00	8.56	3.40	1.39	
CASENO:	84	1.00	1.00	6.21	-.29	1.77	.00	.00	
	.00	.00	3	3.85	.00	.00	5.70	4.50	1.36
CASENO:	85	.00	.00	8.62	2.44	1.79	.00	.00	.00
	.00	.0	4.32	.00	.00	.00	4.79	4.08	
CASENO:	85	1.00	.00	9.73	2.30	.69	1.00	1.00	1.00
	6.63	0	4.41	1.00	.00	.00	5.19	3.40	
CASENO:	85	1.00	.00	9.33	3.01	.41	1.00	.00	
	1.00	6.60	0	4.47	2.00	9.10	.00	5.48	3.25
CASENO:	86	.00	.00	8.79	2.17	1.61	.00	.00	.00
	.00	2.0	3.40	.00	.00	.00	4.09	2.40	
CASENO:	86	1.00	.00	10.07	1.39	1.95	1.00	1.00	.00
	7.31	2	3.61	1.00	.00	.00	.00	2.72	
CASENO:	86	1.00	.00	9.46	1.79	1.79	1.00	.00	
	.00	7.20	2	3.69	.00	8.52	.00	4.79	3.09
CASENO:	87	.00	.00	.00	-2.30	1.61	.00	.00	.00
	.00	.0	4.17	.00	.00	.00	2.30	5.30	
CASENO:	87	1.00	.00	.71	-2.30	1.10	.00	.00	.00
	.00	0	4.26	1.00	.00	.00	.00	5.35	
CASENO:	87	1.00	.00	9.21	3.00	.81	1.00	.00	
	1.00	.00	0	4.32	2.00	.00	.00	4.79	5.07
CASENO:	88	.00	.00	5.17	-.22	2.56	1.00	1.00	1.00
	.00	5.0	3.89	1.00	11.49	.00	2.71	3.69	
CASENO:	88	1.00	.00	.71	-2.30	2.08	1.00	1.00	1.00
	.00	6	3.97	1.00	8.31	.00	4.79	3.77	
CASENO:	88	1.00	.00	6.17	.92	1.66	1.00	1.00	
	1.00	.00	5	4.08	2.00	9.31	9.63	1.61	3.31
CASENO:	89	.00	.00	10.83	2.80	2.30	1.00	1.00	1.00
	.00	2.0	3.81	1.00	.00	9.72	.00	5.30	
CASENO:	89	1.00	.00	9.22	.79	1.61	1.00	1.00	1.00
	.00	2	3.91	1.00	8.31	.00	4.79	2.53	
CASENO:	89	1.00	.00	5.16	.00	1.36	.00	.00	
	.00	7.82	12	3.56	.00	.00	7.64	4.09	.00

CASENO:	91	.00	.00	9.38	1.79	1.95	1.00	1.00	.00
	.00	6.0	3.76	.00	.00	.00	.00	3.37	
CASENO:	91	1.00	.00	10.24	1.96	1.61	1.00	1.00	1.00
	.00	6	3.87	1.00	9.92	.00	1.61	3.37	
CASENO:	91	1.00	.00	10.13	2.77	.61	.00	.00	
	1.00	7.31	6	3.95	.00	8.01	9.00	4.50	4.13
CASENO:	93	.00	.00	8.99	1.61	1.33	.00	.00	.00
	.00	.0	4.32	1.00	.00	7.06	.00	2.20	
CASENO:	93	1.00	.00	6.06	.00	.69	.00	.00	.00
	.00	0	4.38	.00	.00	.00	4.79	.69	
CASENO:	93	1.00	1.00	.00	1.36	1.66	.00	.00	
	.00	.00	0	3.87	.00	.00	.00	2.30	1.36
CASENO:	94	.00	.00	6.52	-.11	2.07	.00	.00	.00
	.00	.0	4.03	.00	.00	4.90	4.09	-.69	
CASENO:	94	1.00	.00	5.73	-1.61	1.79	.00	.00	.00
	.00	0	3.99	.00	.00	.00	.00	-1.39	
CASENO:	94	1.00	.00	.00	-1.20	.78	.00	.00	
	.00	.00	0	4.09	.00	.00	7.83	5.01	-1.20
CASENO:	95	.00	.00	8.48	.83	1.39	.00	1.00	1.00
	.00	1.0	3.91	.00	.00	.00	4.79	2.20	
CASENO:	95	1.00	.00	6.11	-2.30	1.39	.00	1.00	.00
	5.70	1	3.99	.00	.00	.00	4.09	1.91	
CASENO:	95	1.00	.00	.00	-2.30	1.02	.00	1.00	
	.00	.00	0	4.08	.00	7.31	7.09	5.19	2.01
CASENO:	96	.00	.00	9.94	1.79	1.61	.00	.00	1.00
	.00	2.0	3.50	1.00	8.11	.00	3.40	3.04	
CASENO:	96	1.00	.00	.71	-2.30	1.79	1.00	1.00	1.00
	.00	6	3.66	.00	.00	.00	3.81	2.85	
CASENO:	96	1.00	.00	9.16	.41	1.76	.00	1.00	
	.00	7.60	6	3.76	4.00	6.91	7.09	3.40	3.74
CASENO:	97	.00	.00	5.18	-1.20	.68	.00	.00	.00
	.00	.0	4.04	.00	.00	4.02	5.19	-1.20	
CASENO:	97	1.00	.00	4.60	1.10	.00	.00	.00	.00
	.00	0	4.13	.00	.00	.00	.00	-1.71	

CASENO:	97	1.00	.00	5.04	-.27	.02	.00	.00	
	.00	4.61	0	4.22	.00	.00	7.09	3.87	-.51
CASENO:	98	.00	.00	7.51	1.34	1.10	.00	.00	1.00
	.00	2.0	3.43	.00	.00	.00	5.70	1.39	
CASENO:	98	1.00	.00	9.11	-1.61	1.61	.00	.00	.00
	.00	2	3.56	.00	.00	.00	3.00	-1.51	
CASENO:	98	1.00	.00	5.30	-1.39	1.30	.00	1.00	
	1.00	5.52	2	3.69	4.00	.00	7.68	3.40	-1.20
CASENO:	99	.00	.00	7.80	.92	1.95	.00	.00	.00
	.00	3.0	3.71	.00	.00	.00	4.09	2.64	
CASENO:	99	1.00	.00	7.51	.00	2.08	1.00	.00	.00
	.00	2	3.83	.00	.00	.00	4.09	2.08	
CASENO:	99	1.00	.00	7.40	.92	2.01	.00	1.00	
	1.00	6.11	2	3.93	4.00	.00	.00	3.40	2.94
CASENO:	100	.00	.00	7.75	.69	1.95	.00	.00	1.00
	.00	2.0	3.58	.00	8.34	.00	3.00	1.39	
CASENO:	100	1.00	1.00	7.35	.69	1.39	1.00	1.00	1.00
	.00	12	3.47	.00	.00	.00	4.50	.92	
CASENO:	100	1.00	.00	8.07	.41	.96	1.00	1.00	
	1.00	6.50	12	3.66	0.	8.01	9.88	3.81	2.40
CASENO:	101	.00	.00	7.76	.00	2.30	1.00	.00	1.00
	.00	.0	4.01	1.00	8.34	.00	4.79	2.89	
CASENO:	101	1.00	.00	8.84	.74	1.95	1.00	1.00	1.00
	7.20	0	4.09	1.00	8.31	.00	4.09	.41	
CASENO:	101	1.00	.00	7.74	-.01	1.50	1.00	1.00	
	.00	8.26	0	4.09	4.00	7.60	.00	3.40	1.36
CASENO:	102	.00	.00	6.66	.18	.69	1.00	.00	.00
	.00	1.0	4.26	1.00	.00	.00	3.81	1.87	
CASENO:	102	1.00	1.00	6.20	1.39	.69	1.00	.00	.00
	.00	0	4.20	.00	.00	.00	4.09	2.16	
CASENO:	102	1.00	.00	8.57	1.76	.41	.00	.00	
	.00	6.54	3	4.44	2.00	.00	.00	3.69	2.01
CASENO:	103	.00	.00	.00	-2.30	1.61	.00	1.00	.00
	.00	1.0	3.85	1.00	.00	.00	.00	2.48	

CASENO:	103	1.00	.00	5.59	-.69	1.61	1.00	.00	1.00
	3.91	0	3.95	.00	.00	.00	.00	2.98	
CASENO:	103	1.00	.00	7.98	1.10	.60	1.00	1.00	
	1.00	7.31	0	4.04	4.00	6.91	9.20	3.81	1.87
CASENO:	104	.00	.00	7.52	1.10	1.65	.00	.00	.00
	.00	.0	4.08	.00	.00	8.11	4.09	2.53	
CASENO:	104	1.00	.00	7.70	1.10	1.29	.00	.00	.00
	.00	0	4.14	.00	.00	7.11	1.61	2.48	
CASENO:	104	1.00	.00	7.70	.92	-1.24	.00	.00	
	.00	.00	0	4.20	4.00	.00	7.27	4.09	2.31
CASENO:	105	.00	.00	5.49	-1.20	1.61	.00	.00	.00
	.00	.0	3.87	1.00	.00	.00	3.31	.26	
CASENO:	105	1.00	.00	.71	-2.30	1.39	.00	.00	
	.00	.00	0	4.06	.00	.00	.00	.41	
CASENO:	105	1.00	.00	3.22	.34	1.10	.00	.00	
	.00	.00	0	4.22	.00	.00	.00	5.19	.69
CASENO:	106	.00	.00	6.03	1.10	.69	.00	.00	.00
	.00	.0	4.30	.00	.00	.00	3.22	1.10	
CASENO:	106	1.00	.00	6.01	.69	.69	.00	.00	.00
	.00	0	4.37	.00	.00	.00	.00	.69	
CASENO:	106	1.00	1.00	8.34	.92	1.91	1.00	1.00	
	.00	6.11	3	3.87	2.00	8.52	6.68	3.40	1.61
CASENO:	107	.00	.00	8.19	1.13	2.20	.00	.00	.00
	.00	4.0	3.64	.00	.00	.00	.00	1.25	
CASENO:	107	1.00	.00	.71	-2.30	2.08	1.00	.00	
	1.00	.00	4	3.74	1.00	9.01	.00	5.19	1.56
CASENO:	107	1.00	.00	7.43	.18	1.91	1.00	1.00	
	.00	7.42	3	3.87	2.00	8.52	6.68	3.40	1.31
CASENO:	108	.00	.00	7.57	.69	1.61	.00	.00	.00
	.00	11.0	4.16	.00	.00	.00	4.09	2.71	
CASENO:	108	1.00	.00	6.42	2.48	1.10	.00	.00	.00
	.00	6	4.25	.00	.00	.00	.00	3.00	
CASENO:	108	1.00	.00	1.46	.69	.81	.00	.00	
	.00	.00	15	4.30	0.	.00	.00	.69	3.04

CASENO:	109	.00	.00	7.11	.64	1.39	.00	.00	.00
	.00	5.0	3.33	.00	.00	.00	.00	1.03	
CASENO:	109	1.00	.00	5.91	.00	1.39	1.00	.00	.00
	.00	5	3.50	1.00	7.62	.00	4.09	.22	
CASENO:	109	1.00	.00	7.99	.79	1.32	1.00	.00	
	.00	6.42	5	3.66	3.00	7.31	.00	3.69	.79
CASENO:	110	.00	.00	7.74	1.19	1.10	1.00	.00	.00
	.00	.0	4.20	.00	.00	.00	4.09	1.87	
CASENO:	110	1.00	.00	5.94	1.50	1.95	1.00	.00	.00
	.00	0	4.28	.00	.00	.00	2.71	1.79	
CASENO:	110	1.00	.00	6.49	.56	.13	.00	.00	
	.00	.00	0	4.34	2.00	.00	7.75	3.40	2.10
CASENO:	112	.00	.00	7.35	.00	1.10	.00	.00	.00
	.00	3.0	3.40	1.00	.00	.00	.00	.69	
CASENO:	112	1.00	.00	8.02	.69	1.10	1.00	1.00	1.00
	.00	1	3.61	.00	9.22	.00	4.09	.69	
CASENO:	112	1.00	1.00	8.06	.00	1.99	.00	.00	
	.00	5.86	0	4.14	.00	.00	6.04	3.40	.00
CASENO:	113	.00	.00	8.40	.74	.69	.00	1.00	.00
	.00	2.0	4.22	1.00	.00	.00	4.79	1.34	
CASENO:	113	1.00	.00	7.94	1.10	.69	.00	.00	.00
	.00	2	4.29	.00	.00	.00	.00	1.61	
CASENO:	113	1.00	.00	7.78	1.46	1.10	.00	.00	
	.00	.00	2	4.36	2.00	.00	.00	3.69	1.76
CASENO:	114	.00	.00	7.79	.92	1.95	.00	1.00	.00
	.00	4.0	3.37	.00	.00	.00	4.09	.69	
CASENO:	114	1.00	.00	7.11	-.22	1.79	1.00	1.00	1.00
	.00	5	3.53	.00	8.02	.00	1.61	.41	
CASENO:	114	1.00	.00	7.65	.69	.98	1.00	.00	
	1.00	7.31	5	3.74	.00	8.01	10.42	3.69	1.39
CASENO:	115	.00	.00	7.90	.59	1.79	.00	.00	.00
	.00	.0	4.36	.00	.00	.00	.00	.00	
CASENO:	115	1.00	.00	6.42	.00	1.58	.00	.00	.00
	5.30	1	3.78	.00	.00	8.54	.00	.22	

CASENO:	115	1.00	1.00	.00	.34	1.66	1.00	.00		
	1.00	.00	6	3.50	.00	8.85	6.68	2.30	.88	
CASENO:	116	.00	.00	7.42	1.39	1.79	.00	.00	.00	
	.00	4.0	3.47	.00	.00	.00	4.79	1.25		
CASENO:	116	1.00	.00	7.20	-.36	1.79	.00	.00	.00	
	.00	4	3.61	1.00	.00	.00	3.40	.92		
CASENO:	116	1.00	.00	8.04	1.75	1.10	1.00	.00		
	1.00	.00	4	3.69	.00	.00	.00	3.40	1.89	
CASENO:	117	.00	.00	7.32	.41	1.79	.00	.00	.00	
	.00	4.0	3.33	.00	.00	.00	3.40	.92		
CASENO:	117	1.00	.00	7.11	-.69	1.95	.00	1.00	.00	
	.00	4	3.43	.00	.00	.00	2.71	.78		
CASENO:	117	1.00	.00	5.86	.00	1.50	.00	.00		
	.00	7.38	4	3.61	.00	.00	.00	2.71	.47	
CASENO:	118	.00	.00	8.51	1.25	1.39	.00	.00	.00	
	.00	.0	4.19	.00	.00	.00	5.48	2.86		
CASENO:	118	1.00	.00	7.20	.41	1.39	.00	1.00	1.00	
	.00	3	4.28	.00	.00	.00	4.79	2.83		
CASENO:	118	1.00	.00	3.69	1.10	1.05	.00	.00		
	.00	.00	0	4.32	.00	.00	5.99	3.40	3.18	
CASENO:	119	.00	.00	.00	-2.30	1.61	.00	.00	1.00	
	.00	3.0	3.61	1.00	.00	6.46	2.71	1.10		
CASENO:	119	1.00	.00	6.82	.26	1.95	.00	1.00	.00	
	.00	2	3.69	.00	.00	.00	4.09	1.82		
CASENO:	119	1.00	.00	1.79	-.92	1.46	.00	.00		
	.00	.00	3	3.83	.00	.00	6.40	2.71	1.61	
CASENO:	120	.00	.00	6.95	-1.20	1.95	.00	.00	.00	
	.00	.0	3.85	.00	.00	.00	.00	-1.20		
CASENO:	120	1.00	1.00	5.79	-1.20	.00	1.00	1.00		
	.00	5.30	1	3.04	1.00	.00	.00	1.10	-.69	
CASENO:	120	1.00	.00	5.96	.18	.39	1.00	1.00		
	.00	6.21	0	3.30	.00	.00	7.60	4.79	-.92	
CASENO:	121	.00	.00	.00	-2.30	1.95	.00	1.00	.00	
	.00	6.0	3.43	.00	.00	.00	3.31	.92		

CASENO:	121	1.00	.00	4.82	-2.30	1.90	1.00	1.00	1.00
	1.00	5.70	6	3.58	1.00	.00	6.19	2.64	-.21
CASENO:	121	1.00	.00	6.40	-1.20	1.78	1.00	.00	.00
	.00	5.70	6	3.71	1.00	.00	6.68	4.50	.83
CASENO:	122	.00	.00	8.52	1.10	1.95	1.00	.00	.00
	.00	1.0	3.53	.00	.00	.00	4.09	1.39	
CASENO:	122	1.00	.00	5.55	.18	2.47	.00	.00	.00
	.00	0	3.58	.00	.00	6.78	5.89	1.39	
CASENO:	122	1.00	1.00	7.50	.92	1.50	.00	.00	.00
	.00	.00	0	3.40	.00	.00	.00	5.89	1.59
CASENO:	123	.00	.00	6.59	-.92	2.08	1.00	.00	.00
	.00	.0	3.83	.00	.00	.00	4.09	1.10	
CASENO:	123	1.00	.00	5.04	-.69	2.22	.00	.00	.00
	.00	0	3.93	.00	.00	7.80	3.40	1.10	
CASENO:	123	1.00	.00	2.48	.36	1.98	.00	.00	.00
	.00	.00	0	4.04	.00	.00	6.58	4.09	1.46
CASENO:	124	.00	.00	6.44	.69	1.61	1.00	.00	.00
	.00	.0	3.99	1.00	.00	.00	5.19	1.39	
CASENO:	124	1.00	.00	8.08	.69	1.39	1.00	1.00	1.00
	.00	0	4.03	1.00	9.20	.00	4.09	1.45	
CASENO:	124	1.00	.00	.00	.22	1.41	.00	.00	.00
	1.00	.00	0	4.11	3.00	8.85	8.08	4.50	.99
CASENO:	125	.00	.00	7.97	1.03	1.95	.00	.00	.00
	.00	.0	4.13	.00	.00	.00	4.09	2.55	
CASENO:	125	1.00	.00	7.29	.26	1.95	.00	.00	.00
	.00	0	4.13	.00	.00	.00	4.79	2.48	
CASENO:	125	1.00	.00	3.09	.00	.49	.00	.00	.00
	.00	7.60	0	4.26	.00	.00	8.34	5.48	2.22
CASENO:	126	.00	.00	7.28	1.28	2.40	1.00	.00	.00
	.00	.0	3.83	.00	.00	.00	4.79	2.48	
CASENO:	126	1.00	.00	6.51	.00	2.30	1.00	.00	.00
	.00	0	3.93	.00	.00	.00	4.79	2.40	
CASENO:	126	1.00	.00	7.24	.00	2.19	1.00	.00	.00
	.00	.00	0	4.01	.00	.00	4.28	3.40	2.28

CASENO:	127	.00	.00	6.73	-.92	1.68	.00	.00	.00
	.00	.0	3.74	.00	.00	7.67	5.19	1.39	
CASENO:	127	1.00	.00	5.33	1.61	1.79	.00	.00	.00
	.00	.00	0	3.85	.00	.00	.00	.00	-.69
CASENO:	127	1.00	.00	5.99	-.69	.96	.00	.00	.00
	.00	.00	0	3.95	4.00	.00	7.09	5.19	-.69
CASENO:	128	.00	.00	5.49	-.69	1.69	1.00	.00	.00
	.00	2.0	3.56	.00	10.01	7.64	5.48	-.69	
CASENO:	128	1.00	.00	4.82	-.64	1.83	.00	.00	.00
	.00	2	3.69	1.00	.00	7.80	2.30	-.80	
CASENO:	128	1.00	.00	.41	-.69	1.50	.00	1.00	.00
	.00	4.00	2	3.81	4.00	4.79	8.01	4.79	-.51
CASENO:	129	.00	.00	.00	-2.30	1.61	.00	.00	1.00
	.00	.0	4.19	.00	.00	.00	4.09	1.50	
CASENO:	129	1.00	.00	5.88	-.69	2.20	.00	.00	.00
	.00	0	4.32	.00	.00	.00	.00	1.39	
CASENO:	129	1.00	.00	.00	-2.30	.71	.00	.00	.00
	.00	.00	0	4.33	.00	.00	8.01	4.50	1.39
CASENO:	130	.00	.00	8.81	1.95	1.61	.00	.00	.00
	.00	.0	4.26	.00	.00	.00	3.00	3.00	
CASENO:	130	1.00	.00	7.49	1.79	1.95	1.00	1.00	1.00
	.00	6	3.58	.00	.00	.00	4.79	2.48	
CASENO:	130	1.00	.00	8.13	2.30	1.66	.00	.00	.00
	.00	5.70	0	4.39	.00	.00	.00	4.79	2.48
CASENO:	131	.00	.00	7.75	.59	1.79	.00	.00	.00
	.00	.0	3.74	.00	.00	.00	4.79	.69	
CASENO:	131	1.00	.00	7.02	.59	1.91	.00	.00	.00
	.00	0	3.81	.00	.00	5.68	4.79	.69	
CASENO:	131	1.00	.00	7.09	.92	1.32	.00	.00	.00
	.00	6.21	0	3.87	.00	.00	.00	4.79	.99
CASENO:	132	.00	.00	9.63	1.74	2.08	1.00	1.00	1.00
	.00	.0	4.14	.00	.00	.00	4.50	5.70	
CASENO:	132	1.00	.00	.71	-2.30	1.96	1.00	1.00	1.00
	1.00	.00	0	4.36	.00	.00	8.90	3.81	2.71

CASENO:	132	1.00	.00	9.61	2.10	1.88	1.00	1.00	
	1.00	.00	0	4.29	.00	.00	9.04	3.91	4.09
CASENO:	133	.00	.00	7.31	.74	1.07	.00	.00	.00
	.00	.0	4.11	.00	.00	6.03	3.40	.69	
CASENO:	133	1.00	.00	7.11	.69	1.10	.00	1.00	.00
	4.61	0	4.13	.00	.00	.00	3.81	1.10	
CASENO:	133	1.00	.00	6.55	.99	.81	.00	.00	
	.00	6.61	0	4.26	.00	.00	.00	3.81	.99
CASENO:	134	.00	.00	7.83	.69	2.08	1.00	.00	1.00
	.00	.0	3.78	.00	.00	.00	5.19	.69	
CASENO:	134	1.00	.00	6.64	.00	2.09	.00	1.00	.00
	5.70	0	3.95	1.00	.00	8.79	.00	.69	
CASENO:	134	1.00	.00	3.18	.69	1.50	.00	.00	
	.00	5.01	0	4.29	.00	.00	.00	4.50	.69
CASENO:	135	.00	.00	5.49	-1.20	1.39	.00	.00	.00
	.00	.0	4.04	.00	.00	.00	5.89	-1.20	
CASENO:	135	1.00	.00	4.64	-1.61	1.95	.00	.00	
	.00	4.38	0	4.09	1.00	.00	8.18	2.64	-1.39
CASENO:	135	1.00	.00	.00	-2.30	.41	.00	.00	
	.00	.00	0	4.25	.00	.00	.00	4.50	-1.20
CASENO:	136	.00	.00	9.59	1.81	1.10	.00	.00	.00
	.00	.0	4.03	.00	.00	.00	5.19	3.74	
CASENO:	136	1.00	.00	.71	-2.30	.69	1.00	.00	
	1.00	.00	0	4.14	1.00	.00	.00	4.50	3.40
CASENO:	136	1.00	.00	7.22	3.77	-.31	1.00	.00	
	.00	.00	0	4.33	4.00	.00	7.60	3.40	3.07
CASENO:	137	.00	.00	7.82	.41	1.95	.00	.00	.00
	.00	1.0	3.78	.00	.00	8.85	4.79	.41	
CASENO:	137	1.00	.00	7.00	.00	1.03	.00	1.00	.00
	.00	0	3.26	.00	.00	7.88	2.71	.22	
CASENO:	137	1.00	.00	5.99	.00	1.28	.00	.00	
	.00	.00	0	3.53	.00	.00	5.99	3.40	.64
CASENO:	138	.00	.00	8.04	.00	1.10	1.00	.00	.00
	.00	5.0	3.50	1.00	7.93	8.02	5.48	1.50	

CASENO: 138 1.00 .00 8.43 .41 1.39 1.00 1.00 1.00
.00 4 3.64 1.00 .00 .00 4.50 1.10

CASENO: 138 1.00 .00 8.70 -.11 1.32 1.00 .00
.00 .00 5 3.74 2.00 8.01 8.01 3.40 .47

CASENO: 139 .00 .00 .00 -.69 2.07 .00 .00 .00
.00 .0 3.22 .00 .00 5.30 6.17 .92

CASENO: 139 1.00 .00 .71 -2.30 1.96 .00 .00
.00 .00 0 3.43 .00 .00 7.63 2.64 .69

CASENO: 139 1.00 1.00 7.73 1.16 2.01 1.00 1.00
1.00 7.30 6 3.33 .00 .00 .00 4.79 .92

CASENO: 140 .00 .00 9.97 1.13 2.03 .00 .00 .00
.00 .0 3.64 .00 .00 7.24 4.50 1.87

CASENO: 140 1.00 .00 8.35 1.95 2.40 .00 1.00 .00
2.54 0 3.74 .00 7.62 .00 5.19 2.67

CASENO: 140 1.00 .00 7.68 1.39 1.50 .00 .00
.00 .00 0 4.08 .00 .00 .00 4.79 2.64

CASENO: 141 .00 .00 6.78 -.22 1.60 .00 1.00 .00
.00 .0 4.01 .00 .00 5.59 .00 .26

CASENO: 141 1.00 .00 6.42 -.22 .69 .00 .00 .00
.00 0 3.47 1.00 .00 .00 3.40 -.29

CASENO: 141 1.00 .00 6.15 .53 .90 .00 .00
.00 4.61 0 4.06 .00 .00 7.22 3.00 .18

CASENO: 142 .00 .00 7.83 .83 1.10 .00 .00 .00
.00 .0 4.28 .00 7.24 .00 .00 1.46

CASENO: 142 1.00 .00 .71 -2.30 .37 .00 .00
.00 .00 0 4.34 1.00 7.62 8.49 2.64 1.50

CASENO: 142 1.00 .00 7.38 .69 .41 .00 .00
.00 5.01 0 4.41 4.00 .00 .00 3.40 1.50

CASENO: 143 .00 .00 7.17 .00 1.61 .00 .00 .00
.00 .0 3.09 .00 .00 .00 3.22 -.69

CASENO: 143 1.00 .00 3.97 -.69 1.52 .00 .00 .00
.00 0 3.56 .00 .00 7.20 5.01 -.69

CASENO: 143 1.00 .00 6.88 .57 1.90 .00 .00
.00 5.90 0 3.47 .00 .00 5.60 3.40 .26

CASENO:	144	.00	.00	5.63	-.69	2.20	1.00	.00	1.00
	.00	1.0	3.95	.00	.00	.00	.00	1.92	
CASENO:	144	1.00	.00	5.62	-.51	2.30	1.00	1.00	1.00
	.00	1	4.04	.00	.00	.00	3.40	1.83	
CASENO:	144	1.00	.00	7.15	-.69	.41	1.00	.00	
	.00	7.76	0	4.09	4.00	7.60	8.81	3.69	-.69
CASENO:	145	.00	.00	8.40	-.69	1.79	1.00	.00	1.00
	.00	4.0	3.33	1.00	9.88	.00	4.50	2.01	
CASENO:	145	1.00	.00	.71	.92	1.79	1.00	1.00	1.00
	.00	3	3.50	1.00	8.31	.00	.00	2.60	
CASENO:	145	1.00	.00	.00	-2.30	1.50	1.00	.00	
	1.00	.00	3	3.64	2.00	7.70	.00	3.40	2.56
CASENO:	146	.00	.00	8.91	2.08	1.95	.00	.00	.00
	.00	.0	4.17	.00	.00	.00	4.09	2.30	
CASENO:	146	1.00	.00	8.89	1.79	1.79	1.00	1.00	1.00
	6.21	4	3.66	.00	.00	.00	5.19	2.30	
CASENO:	146	1.00	1.00	7.13	1.95	1.32	.00	.00	
	.00	.00	0	3.85	4.00	.00	.00	4.50	2.01
CASENO:	147	.00	.00	6.73	-1.61	1.39	.00	.00	.00
	.00	.0	3.43	.00	.00	.00	3.31	-1.61	
CASENO:	147	1.00	.00	3.97	.00	1.41	.00	.00	.00
	.00	0	3.56	.00	.00	7.80	.00	.00	
CASENO:	147	1.00	.00	-.69	-2.30	1.32	.00	.00	
	.00	.00	0	3.71	4.00	.00	7.78	3.40	-.69
CASENO:	148	.00	.00	6.29	.69	1.37	.00	.00	.00
	.00	.0	3.95	.00	.00	5.81	4.79	.41	
CASENO:	148	1.00	.00	5.51	.00	.73	.00	.00	.00
	.00	0	3.95	.00	.00	7.47	2.30	.41	
CASENO:	148	1.00	.00	5.99	.00	.41	.00	.00	
	.00	.00	0	4.14	.00	.00	.00	3.40	.26
CASENO:	149	.00	.00	7.19	.69	2.08	1.00	.00	1.00
	.00	.0	4.20	1.00	.00	.00	4.79	3.69	
CASENO:	149	1.00	.00	10.95	3.40	2.30	1.00	1.00	
	.00	4.61	0	4.28	.00	.00	.00	5.30	

CASENO: 149 1.00 .00 8.70 3.86 .41 1.00 .00
.00 4.43 0 4.34 4.00 .00 7.15 2.30 4.35

CASENO: 150 .00 .00 10.15 2.35 2.48 .00 .00 1.00
.00 1.0 4.14 .00 .00 .00 4.50 3.97

CASENO: 150 1.00 .00 10.33 2.40 1.96 1.00 1.00
.00 .00 2 4.25 .00 9.41 9.49 4.50 3.26

CASENO: 150 1.00 .00 9.52 2.20 .81 1.00 .00
.00 6.84 3 4.32 3.00 8.75 8.01 4.09 2.89

CASENO: 151 .00 .00 9.25 1.46 1.61 1.00 .00 .00
.00 1.0 3.64 .00 .00 .00 1.39 2.83

CASENO: 151 1.00 .00 7.28 1.10 1.79 .00 .00 .00
.00 0 3.69 .00 .00 .00 1.10 2.56

CASENO: 151 1.00 .00 8.38 1.10 1.50 .00 .00
.00 6.91 0 3.85 .00 .00 6.40 4.09 1.57

CASENO: 152 .00 .00 9.89 2.71 2.20 .00 .00 .00
.00 .0 4.08 1.00 .00 .00 4.50 4.37

CASENO: 152 1.00 .00 .71 -2.30 2.20 1.00 1.00
.00 .00 0 4.14 .00 .00 .00 4.79 2.52

CASENO: 152 1.00 .00 8.88 2.08 1.70 1.00 .00
.00 7.03 0 4.20 2.00 .00 9.55 3.69 3.36

CASENO: 153 .00 .00 8.85 1.65 1.79 .00 1.00 .00
.00 .0 4.20 1.00 8.34 .00 4.09 4.17

CASENO: 153 1.00 .00 7.67 1.61 2.20 .00 .00 1.00
2.81 9 3.33 .00 .00 .00 3.40 1.83

CASENO: 153 1.00 .00 8.52 3.81 -.29 .00 .00
1.00 .13 0 4.33 .00 .00 .00 3.81 1.84

CASENO: 154 .00 .00 9.56 2.20 2.08 1.00 .00 1.00
.00 10.0 4.22 .00 8.62 .00 4.09 5.48

CASENO: 154 1.00 .00 5.04 .69 1.61 .00 .00 .00
.00 10 4.29 1.00 .00 .00 .00 3.64

CASENO: 154 1.00 .00 9.38 1.61 .41 1.00 1.00
1.00 5.99 9 3.30 4.00 7.94 .00 3.40 2.94

CASENO: 155 .00 .00 7.20 1.61 1.95 .00 .00 .00
.00 4.0 4.41 .00 .00 .00 .00 2.56

CASENO: 155 1.00 .00 8.77 1.61 1.10 .00 .00 .00
.00 4 4.49 .00 .00 .00 3.00 1.79

CASENO: 155 1.00 1.00 7.22 2.30 1.79 1.00 .00
1.00 7.65 12 3.53 1.00 .00 9.62 2.30 1.67

CASENO: 156 .00 .00 5.49 .00 .65 .00 1.00 .00
.00 .0 4.17 1.00 .00 5.81 5.48 .00

CASENO: 156 1.00 .00 4.35 .00 2.16 .00 .00 .00
.00 0 4.13 .00 .00 7.00 4.09 .00

CASENO: 156 1.00 1.00 .00 -2.30 1.71 .00 .00
.00 .00 0 3.87 .00 .00 7.24 4.79 .00

CASENO: 157 .00 .00 9.57 1.70 2.20 .00 .00 .00
.00 .0 3.43 .00 8.62 .00 4.79 2.74

CASENO: 157 1.00 .00 8.93 1.61 2.20 .00 .00 .00
.00 0 3.56 .00 .00 .00 3.69 1.87

CASENO: 157 1.00 .00 7.80 1.70 2.01 .00 .00
.00 5.54 0 3.91 .00 .00 .00 3.56 1.72

CASENO: 159 .00 .00 7.35 .92 1.61 .00 1.00 .00
.00 6.0 3.53 1.00 .00 .00 3.00 .92

CASENO: 159 1.00 1.00 6.20 .92 2.08 .00 .00 1.00
.00 3 3.78 .00 .00 .00 .69 1.10

CASENO: 159 1.00 .00 .00 -2.30 1.15 1.00 1.00
1.00 .00 2 4.16 .00 .00 8.90 1.61 .92

CASENO: 160 .00 .00 6.58 .00 2.20 .00 .00 .00
.00 4.0 3.61 .00 .00 5.63 3.40 2.01

CASENO: 160 1.00 .00 6.70 .41 2.08 1.00 .00 1.00
6.50 4 3.74 .00 .00 .00 3.40 2.14

CASENO: 160 1.00 1.00 7.09 .69 1.50 .00 .00
.00 .00 4 3.40 .00 .00 .00 3.00 2.48

CASENO: 161 .00 .00 5.89 .00 .00 .00 .00 .00
.00 .0 4.34 .00 .00 .00 3.31 2.01

CASENO: 161 1.00 .00 6.93 .69 2.08 .00 .00 .00
.00 4 3.74 .00 .00 .00 3.40 1.32

CASENO: 161 1.00 1.00 6.35 .49 1.62 1.00 .00
1.00 .00 0 3.71 2.00 7.31 6.40 3.40 .88

CASENO:	162	.00	.00	6.96	.41	2.20	.00	.00	.00
	.00	.0	3.69	1.00	.00	.00	3.40	3.40	
CASENO:	162	1.00	.00	6.20	-1.61	2.08	1.00	1.00	
	.00	.00	0	3.78	.00	.00	.00	4.09	3.11
CASENO:	162	1.00	.00	8.58	1.50	1.32	1.00	.00	
	.00	6.17	0	3.87	.00	.00	.00	3.40	3.17
CASENO:	163	.00	.00	5.41	.41	2.20	.00	.00	1.00
	.00	.0	3.61	.00	.00	.00	4.09	2.08	
CASENO:	163	1.00	.00	6.98	1.79	2.20	.00	.00	.00
	.00	0	3.76	.00	.00	.00	4.09	2.26	
CASENO:	163	1.00	.00	8.20	1.39	1.91	1.00	.00	
	1.00	.00	0	3.85	.00	.00	.00	2.71	3.80
CASENO:	164	.00	.00	8.10	1.19	1.79	.00	.00	1.00
	.00	.0	3.74	1.00	.00	.00	5.48	2.08	
CASENO:	164	1.00	.00	8.07	1.79	2.12	.00	.00	.00
	.00	0	3.85	.00	.00	6.60	4.09	1.79	
CASENO:	164	1.00	.00	.69	-.69	1.97	.00	1.00	
	.00	5.99	0	3.97	.00	.00	8.07	4.09	1.39
CASENO:	165	.00	.00	7.02	.00	1.79	.00	.00	.00
	.00	1.0	3.64	.00	.00	.00	4.09	1.39	
CASENO:	165	1.00	.00	6.01	.41	1.90	.00	.00	.00
	.00	1	3.69	.00	.00	5.90	4.09	1.39	
CASENO:	165	1.00	.00	7.99	.92	1.46	.00	.00	
	.00	.00	1	3.83	.00	.00	6.11	2.71	1.46
CASENO:	166	.00	.00	8.28	.69	2.48	.00	.00	.00
	.00	.0	3.64	.00	.00	.00	5.70	1.61	
CASENO:	166	1.00	.00	7.94	1.50	2.53	.00	.00	.00
	.00	0	3.78	.00	8.02	6.41	3.40	2.64	
CASENO:	166	1.00	.00	7.83	1.25	1.74	.00	.00	
	.00	.00	0	3.87	4.00	.00	6.93	2.71	2.22
CASENO:	167	.00	.00	9.72	2.01	2.64	.00	.00	1.00
	.00	.0	3.99	.00	7.93	.00	4.09	2.90	
CASENO:	167	1.00	.00	9.63	2.01	2.48	1.00	.00	1.00
	5.30	0	4.04	.00	8.31	.00	4.79	3.00	

CASENO: 167 1.00 .00 8.39 2.51 1.86 1.00 .00
 .00 6.44 0 4.13 3.00 8.01 6.98 4.50 2.55

CASENO: 168 .00 .00 9.21 1.79 2.17 .00 .00 .00
 .00 1.0 3.71 .00 .00 7.06 3.40 2.30

CASENO: 168 1.00 .00 9.41 2.20 2.20 1.00 .00 1.00
 4.33 2 3.83 .00 8.02 .00 3.40 2.56

CASENO: 168 1.00 .00 9.46 2.39 1.64 1.00 .00
 .00 5.86 2 3.93 3.00 8.01 5.70 4.79 2.63

CASENO: 169 .00 .00 9.69 1.79 .69 .00 .00 .00
 .00 .0 4.11 .00 .00 .00 4.38 3.14

CASENO: 169 1.00 .00 8.45 1.79 .73 1.00 .00 1.00
 .00 0 4.19 1.00 .00 9.75 4.50 3.09

CASENO: 169 1.00 .00 8.07 2.21 .39 1.00 1.00
 1.00 7.62 0 4.26 4.00 8.52 7.60 5.19 2.60

CASENO: 170 .00 .00 8.55 1.79 1.51 .00 .00 .00
 .00 .0 3.91 .00 .00 7.38 3.40 1.39

CASENO: 170 1.00 .00 6.70 .41 1.15 .00 .00 .00
 .00 0 3.91 .00 .00 8.68 3.40 1.61

CASENO: 170 1.00 .00 6.09 .97 -.52 .00 .00
 .00 .00 0 4.01 .00 .00 6.17 3.40 1.39

CASENO: 171 .00 .00 9.89 2.33 1.78 .00 .00 .00
 .00 4.0 3.47 .00 .00 5.52 1.39 3.22

CASENO: 171 1.00 .00 6.82 2.22 1.45 .00 1.00 1.00
 5.81 0 4.29 1.00 .00 8.61 1.61 2.40

CASENO: 171 1.00 1.00 7.78 3.00 1.10 .00 .00
 .00 .00 0 4.22 1.00 .00 .00 4.09 2.64

CASENO: 172 .00 .00 9.81 1.25 1.61 .00 .00 .00
 .00 3.0 3.61 .00 .00 .00 4.09 1.10

CASENO: 172 1.00 .00 8.43 1.10 1.61 .00 .00 1.00
 .00 3 3.90 .00 .00 .00 4.79 1.39

CASENO: 172 1.00 .00 8.06 .92 1.32 .00 .00
 .00 .00 3 3.85 .00 .00 .00 4.09 1.61

CASENO: 173 .00 .00 5.63 -2.30 1.82 .00 .00 .00
 .00 1.0 3.61 .00 .00 7.65 .00 .41

CASENO: 173 1.00 .00 5.51 .00 1.62 .00 .00 .00
.00 1 3.90 .00 .00 7.98 4.79 -2.12

CASENO: 173 1.00 1.00 .00 -2.30 1.50 .00 .00
.00 .00 0 3.78 .00 .00 7.78 4.50 -1.61

CASENO: 174 .00 .00 8.89 1.84 1.95 1.00 .00 .00
.00 .0 3.81 1.00 8.62 .00 4.09 1.84

CASENO: 174 1.00 .00 8.35 1.61 2.20 1.00 .00 .00
.00 0 3.97 1.00 10.10 .00 1.10 1.76

CASENO: 174 1.00 .00 7.60 1.70 .41 1.00 .00
1.00 6.35 2 4.09 .00 7.55 .00 3.40 1.70

CASENO: 175 .00 .00 9.03 1.53 1.80 1.00 1.00 1.00
.00 3.0 3.66 1.00 9.43 9.03 3.40 1.53

CASENO: 175 1.00 .00 9.20 1.57 2.08 1.00 1.00 1.00
.00 3 3.50 1.00 8.82 .00 5.48 1.56

CASENO: 175 1.00 .00 6.40 -1.20 1.50 1.00 .00
.00 8.02 3 3.58 .00 9.10 .00 3.40 .88

CASENO: 176 .00 .00 7.68 .83 1.61 .00 .00 .00
.00 3.0 3.71 .00 .00 7.71 2.30 1.50

CASENO: 176 1.00 .00 7.11 .69 1.62 .00 .00 .00
.00 3 3.83 .00 .00 7.98 .00 1.50

CASENO: 176 1.00 .00 7.31 1.25 1.03 1.00 .00
.00 7.32 3 3.91 4.00 7.60 8.01 3.00 1.50

CASENO: 177 .00 .00 6.81 .00 1.87 .00 .00 .00
.00 3.0 3.47 .00 .00 7.68 4.09 .00

CASENO: 177 1.00 .00 7.54 .26 2.48 1.00 1.00 1.00
.00 3 3.53 1.00 .00 .00 5.19 2.40

CASENO: 177 1.00 .00 6.35 -.36 1.76 .00 1.00
1.00 .00 6 3.69 .00 9.14 7.97 5.01 3.28

CASENO: 178 .00 .00 9.23 1.19 .00 1.00 1.00 .00
.00 5.0 4.42 .00 7.93 .00 .00 1.19

CASENO: 178 1.00 .00 8.54 1.10 .00 .00 .00 .00
.00 5 4.44 .00 .00 .00 1.61 1.10

CASENO: 178 1.00 1.00 8.29 1.06 1.10 .00 .00
.00 6.54 3 3.85 .00 .00 .00 3.40 1.06

CASENO:	179	.00	.00	10.79	2.08	1.79	.00	.00	1.00
	.00	3.0	4.23	1.00	9.03	8.62	3.40	3.50	
CASENO:	179	1.00	.00	8.94	2.40	.69	1.00	1.00	1.00
	.00	4	4.29	1.00	9.23	.00	5.48	2.96	
CASENO:	179	1.00	.00	8.69	1.95	.41	1.00	.00	
	.00	7.03	3	4.36	.00	6.91	.00	4.09	3.37
CASENO:	180	.00	.00	7.81	.92	2.08	.00	.00	.00
	.00	.0	3.99	.00	.00	.00	4.09	1.39	
CASENO:	180	1.00	.00	.71	-2.30	2.00	.00	.00	.00
	.00	.00	0	4.06	1.00	.00	.00	.00	3.74
CASENO:	180	1.00	.00	7.47	1.39	1.50	.00	.00	
	.00	6.62	0	4.17	2.00	8.16	.00	4.79	3.71
CASENO:	181	.00	.00	6.32	.00	1.79	.00	.00	.00
	.00	.0	3.76	.00	.00	.00	5.70	.92	
CASENO:	181	1.00	.00	5.51	-.69	1.62	.00	.00	.00
	.00	0	3.87	.00	.00	7.98	3.40	.69	
CASENO:	181	1.00	.00	.00	.00	.80	.00	.00	
	.00	.00	0	3.97	.00	.00	5.99	4.79	.69
CASENO:	182	.00	.00	8.69	2.08	2.08	.00	.00	.00
	.00	3.0	3.56	.00	7.71	.00	4.50	2.30	
CASENO:	182	1.00	.00	8.41	.00	2.08	1.00	1.00	.00
	8.10	3	3.69	1.00	9.77	.00	4.09	2.25	
CASENO:	182	1.00	.00	7.73	.69	1.66	.00	.00	
	.00	6.91	3	3.76	2.00	8.52	.00	4.09	.69
CASENO:	183	.00	.00	9.16	3.22	1.95	1.00	.00	.00
	.00	.0	3.99	.00	.00	.00	4.79	2.96	
CASENO:	183	1.00	.00	8.87	1.79	2.08	1.00	.00	1.00
	.00	0	4.04	.00	.00	.00	5.19	2.44	
CASENO:	183	1.00	.00	9.26	2.91	1.66	1.00	.00	
	.00	6.08	0	4.16	.00	.00	.00	4.79	3.03
CASENO:	185	.00	.00	8.67	1.95	1.39	.00	.00	.00
	.00	.0	4.45	1.00	.00	.00	.00	3.50	
CASENO:	185	1.00	1.00	8.26	1.61	1.39	.00	.00	.00
	.00	0	4.34	.00	.00	.00	.00	2.61	

CASENO:	185	1.00	1.00	8.04	1.10	1.32	.00	.00	
	.00	8.29	6	3.71	.00	.00	.00	4.50	2.56
CASENO:	186	.00	.00	6.48	.69	1.79	.00	1.00	.00
	.00	.0	3.66	.00	.00	.00	.00	.41	
CASENO:	186	1.00	.00	6.01	-.69	1.61	1.00	.00	1.00
	4.25	0	3.81	.00	.00	.00	1.61	.00	
CASENO:	186	1.00	.00	6.80	.00	1.07	.00	.00	
	.00	4.25	0	3.89	.00	.00	5.52	3.40	.34
CASENO:	187	.00	.00	10.53	1.61	1.79	1.00	.00	1.00
	.00	.0	4.32	1.00	.00	.00	4.50	1.95	
CASENO:	187	1.00	.00	8.98	1.50	2.20	1.00	1.00	1.00
	6.60	0	4.38	.00	9.56	.00	4.09	1.79	
CASENO:	187	1.00	.00	9.80	1.39	.81	1.00	.00	
	.00	.00	0	4.48	2.00	9.31	.00	4.09	1.61
CASENO:	188	.00	.00	10.42	2.79	1.61	1.00	.00	1.00
	.00	.0	4.06	.00	.00	.00	4.09	2.89	
CASENO:	188	1.00	.00	11.63	2.48	1.79	1.00	1.00	1.00
	1.00	6.03	0	4.16	.00	.00	.00	4.09	2.89
CASENO:	188	1.00	.00	10.56	2.67	1.79	.00	.00	
	.00	5.85	5	4.23	.00	.00	.00	2.30	2.67
CASENO:	189	.00	.00	7.05	.34	1.95	.00	.00	.00
	.00	.0	4.22	.00	.00	.00	.00	.69	
CASENO:	189	1.00	.00	.71	-2.30	2.48	.00	1.00	
	.00	.00	0	4.32	1.00	.00	.00	1.61	1.39
CASENO:	189	1.00	1.00	6.68	1.10	1.32	.00	.00	
	.00	.00	0	4.36	.00	.00	.00	4.50	1.10
CASENO:	190	.00	.00	8.92	.79	1.39	.00	.00	.00
	.00	.0	4.45	.00	.00	.00	4.09	.69	
CASENO:	190	1.00	.00	8.61	.69	1.10	.00	.00	.00
	.00	0	4.51	.00	.00	.00	1.61	.69	
CASENO:	190	1.00	.00	8.07	1.39	1.32	.00	.00	
	.00	8.01	1	3.53	.00	10.04	.00	4.50	2.08
CASENO:	191	.00	.00	7.64	-.22	.69	.00	.00	.00
	.00	1.0	3.14	.00	.00	.00	4.79	2.20	

CASENO: 191 1.00 1.00 6.24 -.69 1.61 1.00 .00 .00
6.68 0 3.30 .00 .00 .00 3.40 1.50

CASENO: 191 1.00 .00 8.57 1.10 1.50 .00 .00
1.00 6.50 1 3.47 .00 .00 7.78 4.09 1.25

CASENO: 192 .00 .00 8.31 .69 2.08 .00 .00 .00
.00 2.0 3.56 1.00 .00 .00 4.79 -.69

CASENO: 192 .00 1.00 7.45 -.69 1.95 1.00 .00 1.00
.00 4
3.22 .00 .00 .00 .00 .92

CASENO: 192 .00 .00 8.95 1.25 1.79 1.00 .00
1.00 7.77 2 3.85 2.00 8.01 .00 1.61 1.39

CASENO: 193 .00 .00 6.12 .26 .69 1.00 1.00 .00
.00 .0 4.28 .00 .00 .00 .00 .41

CASENO: 193 .00 .00 6.89 -.69 1.61 1.00 .00 .00
.00 0
4.04 .00 .00 .00 2.71 -.69

CASENO: 193 .00 .00 7.27 -.69 .81 1.00 .00
.00 .00 0 4.23 .00 5.99 .00 3.40 -.69

CASENO: 194 .00 .00 8.50 1.39 1.39 1.00 .00 1.00
.00 2.0 3.33 1.00 .00 .00 5.19 2.56

CASENO: 194 .00 .00 .71 -2.30 1.79 1.00 .00
1.00 .00 2 3.47 1.00 8.72 .00 .00 3.56

CASENO: 194 .00 .00 9.78 1.27 1.66 1.00 1.00
1.00 5.72 2 3.64 2.00 8.99 .00 3.40 3.22

CASENO: 195 .00 .00 7.42 .00 1.10 1.00 .00 .00
.00 .0 3.71 .00 .00 .00 5.48 .00

CASENO: 195 .00 .00 7.99 .00 1.61 1.00 .00 .00
.00 0 3.83 .00 .00 .00 2.64 .00

CASENO: 195 .00 .00 8.51 1.32 1.50 1.00 1.00
1.00 .00 0 3.91 .00 .00 .00 3.40 1.25

CASENO: 196 .00 .00 6.32 -1.20 1.39 .00 .00
.00 .00 .0 3.50 .00 .00 .00 5.48 -1.20

CASENO: 196 .00 1.00 7.26 -.22 1.79 1.00 .00 .00
.00 0 4.17 .00 .00 .00 4.09 3.93

CASENO: 196	.00	.00	6.46	-.29	.41	1.00	1.00		
1.00	.00	0	4.26	4.00	.00	.00	3.40	2.38	
CASENO: 197	.00	.00	6.73	.83	1.95	.00	.00	.00	.00
.00	1.0	3.87	.00	.00	.00	5.48	.92		
CASENO: 197	.00	.00	8.39	.00	1.79	1.00	1.00	.00	.00
5.42	3	3.97	.00	.00	.00	.00	.18		
CASENO: 197	.00	.00	8.31	.41	.30	1.00	.00		
1.00	.00	1	4.11	3.00	7.42	6.27	4.09	1.70	
CASENO: 198	.00	.00	9.75	2.73	2.40	1.00	1.00	.00	
.00	5.0	4.20	.00	10.57	.00	.00	2.77		
CASENO: 198	.00	.00	9.16	2.20	2.20	1.00	1.00	1.00	
6.21	5	4.28	1.00	10.10	.00	4.09	2.94		
CASENO: 198	.00	.00	9.24	2.08	1.32	1.00	1.00		
1.00	7.20	5	4.34	4.00	9.39	.00	2.30	2.83	
CASENO: 200	.00	.00	7.20	-.69	1.10	.00	.00	.00	
.00	1.0	4.06	.00	.00	.00	2.71	.00		
CASENO: 200	.00	.00	4.82	-1.20	.87	1.00	.00	.00	
.00	.00	0	4.14	.00	.00	8.43	.00	-.69	
CASENO: 200	.00	.00	4.79	-1.39	1.06	.00	.00	.00	
.00	.00	0	4.25	.00	.00	6.58	3.40	-1.39	
CASENO: 201	.00	.00	.00	-2.30	.69	.00	.00	.00	
.00	.00	3.0	3.64	.00	.00	.00	3.40	.00	
CASENO: 201	.00	.00	.71	-2.30	.73	.00	.00	.00	
.00	.00	3	3.69	.00	.00	7.98	.00	-1.39	
CASENO: 201	.00	.00	.00	-2.30	.41	.00	.00	.00	
.00	.00	3	3.85	.00	.00	7.44	3.40	-1.20	
CASENO: 202	.00	.00	6.27	-.69	1.10	.00	.00	.00	
.00	.0	3.37	.00	.00	.00	3.40	-.69		
CASENO: 202	.00	.00	5.73	-.69	1.50	1.00	1.00	1.00	
.00	4	3.37	.00	.00	7.80	4.79	.00		
CASENO: 202	.00	.00	9.55	.69	1.50	1.00	1.00		
1.00	7.31	4	3.53	2.00	6.73	.00	3.40	1.25	
CASENO: 203	.00	.00	8.60	2.25	1.79	1.00	.00	1.00	
.00	6.0	3.87	1.00	8.53	.00	4.50	2.14		

CASENO: 203 .00 .00 8.55 1.10 1.61 1.00 1.00 1.00
6.21 6 3.95 1.00 8.61 .00 4.09 2.44

CASENO: 203 .00 .00 7.21 .00 1.32 1.00 1.00
1.00 .00 6 4.04 .00 .00 8.01 2.30 1.61

CASENO: 204 .00 .00 9.16 1.25 1.61 1.00 1.00 1.00
.00 4.0 4.36 1.00 .00 .00 3.00 1.25

CASENO: 204 .00 .00 8.02 1.39 1.10 1.00 1.00 1.00
.00 6 4.42 1.00 .00 .00 1.95 1.39

CASENO: 204 .00 1.00 8.63 .92 .81 1.00 .00
.00 5.52 6 4.25 4.00 8.52 9.62 1.61 1.25

CASENO: 205 .00 .00 10.01 2.71 1.39 1.00 .00
1.00 .00 5.0 3.95 .00 .00 .00 4.09 2.71

CASENO: 205 .00 1.00 .71 -2.30 2.56 1.00 .00
1.00 .00 1 3.91 .00 .00 .00 .00 3.87

CASENO: 205 .00 1.00 .00 2.94 .07 1.00 1.00
1.00 .00 13 3.69 2.00 .00 .00 3.40 2.94

CASENO: 206 .00 .00 5.81 -.69 2.08 .00 .00 .00
.00 .0 4.41 .00 .00 .00 5.01 -.69

CASENO: 206 .00 .00 6.82 -2.30 2.09 1.00 1.00
.00 2.12 0 4.37 .00 .00 7.47 .00 1.80

CASENO: 206 .00 .00 6.63 -.69 1.79 1.00 .00
1.00 1.20 0 4.48 2.00 5.30 7.09 3.40 -1.20

CASENO: 207 .00 .00 8.10 .79 1.39 1.00 .00 1.00
.00 1.0 3.69 .00 .00 .00 .00 2.05

CASENO: 207 .00 .00 .71 -2.30 1.61 1.00 .00
1.00 .00 2 3.78 .00 .00 .00 3.81 2.28

CASENO: 207 .00 .00 7.03 .41 1.32 1.00 .00
.00 .00 2 3.97 .00 6.75 .00 4.79 2.20

CASENO: 208 .00 .00 8.06 .69 1.95 1.00 .00 .00
.00 5.0 3.83 .00 .00 .00 .00 1.10

CASENO: 208 .00 .00 7.84 .69 1.95 1.00 1.00 1.00
.00 5 3.93 .00 .00 .00 .00 1.18

CASENO: 208 .00 .00 7.72 .00 1.66 1.00 .00
1.00 .00 5 4.04 .00 .00 .00 2.71 1.95

CASENO: 209	.00	.00	8.76	.69	2.20	1.00	.00	1.00
.00	4.0	4.03	.00	.00	.00	.00	.69	
CASENO: 209	.00	.00	8.32	.41	1.62	.00	1.00	.00
.00	4	4.09	.00	.00	8.14	.00	.69	
CASENO: 209	.00	1.00	7.00	3.93	1.10	1.00	1.00	
1.00	.00	4	4.17	4.00	4.79	.00	.00	.41
CASENO: 210	.00	.00	8.06	-.69	2.20	1.00	.00	.00
.00	.0	3.53	.00	.00	.00	.00	-.69	
CASENO: 210	.00	.00	5.33	-1.61	1.48	1.00	.00	.00
.00	.00	0	3.64	.00	.00	8.12	2.64	-1.02
CASENO: 210	.00	.00	.00	-2.30	1.32	.00	.00	.00
.00	.00	0	3.85	0.	.00	8.48	4.09	.
CASENO: 211	.00	.00	10.28	2.08	2.08	.00	.00	.00
.00	.00	8.0	3.58	1.00	.00	.00	.00	3.64
CASENO: 211	.00	.00	9.70	2.40	1.61	1.00	1.00	1.00
7.60	6	3.71	.00	.00	.00	.00	3.50	
CASENO: 211	.00	.00	12.48	3.40	1.79	1.00	1.00	
1.00	7.09	6	3.85	4.00	11.85	.00	4.50	5.78
CASENO: 212	.00	.00	6.84	-.69	.71	1.00	1.00	1.00
.00	4.0	3.43	.00	.00	9.13	2.30	-.69	
CASENO: 212	.00	.00	.71	-2.30	1.41	1.00	.00	.00
.00	.00	2	3.58	.00	.00	8.14	2.64	.41
CASENO: 212	.00	.00	.00	-2.30	1.66	.00	.00	.00
.00	.00	4	3.69	.00	.00	9.10	3.40	.69
CASENO: 213	.00	.00	7.30	-.69	1.39	1.00	.00	1.00
.00	3.0	4.28	.00	.00	.00	.00	.92	
CASENO: 213	.00	.00	.71	-2.30	-.17	.00	.00	.00
.00	.00	4	4.34	.00	.00	9.47	2.64	.92
CASENO: 213	.00	1.00	8.08	.92	1.50	1.00	1.00	
.00	.00	6	3.40	.00	.00	8.34	2.30	.92
CASENO: 214	.00	.00	.00	-2.30	.69	.00	.00	.00
.00	.00	.0	4.20	.00	.00	.00	.00	1.79
CASENO: 214	.00	.00	7.61	-.69	2.40	.00	.00	.00
.00	0	4.28	.00	.00	.00	2.64	2.64	

CASENO: 214	.00	.00	9.15	1.45	2.01	1.00	1.00		
1.00	.00	1	4.30	2.00	.00	7.40	2.71	2.08	
CASENO: 215	.00	.00	9.27	.92	1.95	1.00	.00	1.00	
.00	.0	4.16	.00	.00	.00	.00	3.00		
CASENO: 215	.00	.00	.71	-2.30	1.79	1.00	.00	.00	
.00	.00	0	4.23	.00	.00	.00	.00	3.16	
CASENO: 215	.00	.00	.00	.00	1.10	.00	.00	.00	
.00	.00	2	4.33	.00	.00	.00	4.09	1.50	
CASENO: 216	.00	.00	6.17	-.69	1.93	.00	1.00	.00	
.00	1.0	3.87	.00	.00	6.03	4.79	.00		
CASENO: 216	.00	1.00	.71	-2.30	1.96	.00	.00	.00	
.00	.00	6	3.33	.00	.00	8.90	.00	.41	
CASENO: 216	.00	.00	.00	-2.30	1.10	1.00	1.00	1.00	
1.00	.00	1	4.01	2.00	.00	.00	4.09	3.02	
CASENO: 217	.00	.00	.00	-1.20	2.08	1.00	.00	.00	
1.00	.00	.0	3.58	.00	.00	.00	4.09	.00	
CASENO: 217	.00	.00	6.50	.00	1.91	.00	.00	.00	
.00	0	3.76	.00	.00	6.78	.00	.00		
CASENO: 217	.00	.00	7.95	.34	1.39	1.00	1.00	1.00	
1.00	.00	0	3.85	1.00	5.01	9.34	3.40	1.06	
CASENO: 218	.00	.00	8.61	.69	2.08	.00	.00	.00	
.00	3.0	3.95	.00	.00	.00	.00	2.83		
CASENO: 218	.00	.00	6.93	.00	1.79	.00	.00	.00	
.00	0	4.14	1.00	.00	.00	.00	2.08		
CASENO: 218	.00	.00	7.78	.92	1.10	1.00	.00	.00	
1.00	.00	3	4.14	.00	.00	5.30	4.09	2.83	
CASENO: 219	.00	.00	8.85	1.10	2.30	.00	1.00	1.00	
.00	5.0	3.89	1.00	8.52	.00	2.71	3.14		
CASENO: 219	.00	.00	7.96	1.10	2.08	1.00	1.00	1.00	
.00	4	3.97	1.00	8.87	10.10	3.00	3.18		
CASENO: 219	.00	.00	9.10	2.44	1.32	1.00	1.00	1.00	
1.00	.00	5	4.08	.00	8.61	.00	2.71	3.00	
CASENO: 220	.00	.00	9.86	2.74	1.59	1.00	1.00	1.00	
.00	4.0	4.09	1.00	10.50	5.55	3.31	4.55		

CASENO: 220 .00 .00 9.54 2.30 -1.55 1.00 .00
 1.00 .00 3 4.16 1.00 .00 10.18 .00 4.25

CASENO: 220 .00 .00 10.21 2.30 .81 1.00 1.00
 .00 6.91 3 4.25 4.00 .00 .00 2.30 4.38

CASENO: 221 .00 .00 8.84 .26 1.95 1.00 .00 .00
 .00 3.0 4.38 .00 .00 .00 3.31 .69

CASENO: 221 .00 .00 6.64 .00 1.91 1.00 .00 .00
 .00 3 4.43 .00 .00 5.90 .00 .22

CASENO: 221 .00 .00 6.40 .00 1.66 .00 .00
 .00 .00 3 4.50 .00 .00 .00 4.09 .59

CASENO: 222 .00 .00 7.24 -.22 1.61 1.00 .00 .00
 .00 3.0 3.78 .00 .00 .00 .00 -.22

CASENO: 222 .00 .00 7.80 -.22 1.39 1.00 .00 1.00
 .00 2 3.89 .00 .00 .00 .00 -1.90

CASENO: 222 .00 1.00 4.79 -2.04 1.25 1.00 .00
 .00 .00 6 3.87 .00 .00 9.99 2.71 -.69

CASENO: 223 .00 .00 5.49 1.25 1.61 1.00 .00 1.00
 .00 6.0 4.09 .00 .00 .00 .00 1.95

CASENO: 223 .00 .00 6.24 1.10 1.56 .00 .00 .00
 .00 3 4.34 .00 .00 6.60 .00 2.08

CASENO: 223 .00 .00 8.25 .69 .81 1.00 .00
 .00 .00 5 4.38 .00 .00 .00 1.61 2.44

CASENO: 224 .00 .00 5.49 -.69 1.61 .00 .00 .00
 .00 .0 4.36 .00 .00 4.43 4.79 .00

CASENO: 224 .00 1.00 .71 -2.30 1.39 1.00 1.00
 1.00 .00 6 3.61 1.00 8.57 .00 2.71 2.22

CASENO: 224 .00 1.00 .00 -2.30 .50 1.00 .00
 1.00 .00 12 3.61 .00 .00 8.59 3.00 .81

CASENO: 225 .00 .00 5.35 .00 2.08 .00 .00 .00
 .00 1.0 4.14 .00 .00 .00 3.31 -.69

CASENO: 225 .00 1.00 5.46 -.36 1.95 1.00 .00 .00
 .00 6 3.71 1.00 .00 8.76 .00 1.75

CASENO: 225 .00 .00 7.25 .00 1.45 1.00 1.00
 1.00 .00 6 3.85 4.00 .00 9.81 4.09 1.39

CASENO: 226 .00 .00 7.89 1.10 1.79 1.00 1.00 .00
.00 .0 4.03 .00 9.72 .00 .00 3.50

CASENO: 226 .00 .00 .71 -2.30 .69 1.00 1.00
.00 .00 0 4.14 .00 9.01 .00 .00 3.42

CASENO: 226 .00 .00 7.31 .00 1.10 1.00 .00
.00 .00 0 4.17 .00 8.52 .00 3.40 1.61

CASENO: 227 .00 .00 9.97 1.39 1.95 1.00 1.00 .00
.00 10.0 3.81 1.00 8.62 9.58 .00 4.61

CASENO: 227 .00 .00 .71 -2.30 1.79 .00 .00
.00 .00 12 3.93 .00 .00 .00 .00 4.83

CASENO: 227 .00 .00 8.73 .69 .22 1.00 1.00
.00 7.88 12 4.03 .00 .00 9.66 3.00 5.52

CASENO: 228 .00 .00 9.32 .99 1.93 1.00 1.00 1.00
.00 2.0 3.81 1.00 8.52 6.32 4.09 2.40

CASENO: 228 .00 .00 7.80 .69 2.08 1.00 .00 .00
6.91 2 3.91 .00 .00 .00 .00 1.61

CASENO: 228 .00 1.00 5.99 -.69 1.10 1.00 .00
.00 .00 0 4.09 .00 .00 .00 3.40 2.30

CASENO: 229 .00 .00 7.64 .69 1.61 1.00 .00 .00
.00 3.0 4.25 .00 .00 .00 4.79 1.39

CASENO: 229 .00 .00 9.19 .92 1.39 1.00 .00 .00
.00 0 4.32 .00 .00 .00 .00 3.50

CASENO: 229 .00 .00 8.92 1.50 .81 1.00 .00
.00 .00 3 4.38 .00 .00 .00 4.09 2.71

CASENO: 230 .00 .00 7.46 .41 1.79 1.00 1.00 .00
.00 2.0 3.91 .00 .00 .00 4.79 .41

CASENO: 230 .00 .00 6.35 -.22 1.95 1.00 .00 .00
.00 2 4.01 .00 .00 .00 .00 1.56

CASENO: 230 .00 .00 8.61 .92 .80 1.00 .00
1.00 7.42 2 4.13 3.00 .00 7.78 4.09 .92

CASENO: 231 .00 .00 6.39 .00 2.08 .00 .00 .00
.00 .0 3.91 .00 .00 .00 3.31 1.61

CASENO: 231 .00 1.00 4.14 -2.30 .69 1.00 1.00
.00 .00 2 3.76 1.00 .00 8.06 1.61 1.47

CASENO: 231 .00 .00 .00 -2.30 .98 1.00 .00
1.00 .00 0 4.09 1.00 .00 8.13 4.09 .00

CASENO: 232 .00 .00 6.68 .00 1.07 .00 .00 .00
.00 .0 4.09 .00 .00 5.74 3.31 -.69

CASENO: 232 .00 .00 6.02 -1.61 1.10 1.00 1.00
1.00 .00 0 4.17 1.00 .00 .00 .00 -2.12

CASENO: 232 .00 1.00 .00 -2.30 .98 1.00 1.00
1.00 .00 2 3.69 4.00 .00 6.98 4.09 -1.20

CASENO: 234 .00 .00 6.62 -.69 1.10 .00 .00 .00
.00 .0 4.03 .00 .00 .00 5.19 .26

CASENO: 234 .00 .00 8.45 .26 .65 1.00 .00 1.00
.00 0 4.17 .00 .00 5.50 3.40 .22

CASENO: 234 .00 1.00 7.13 -.69 .78 1.00 .00
.00 .00 6 3.33 .00 .00 5.66 4.09 -.69

CASENO: 235 .00 .00 7.44 -.51 1.78 .00 .00 .00
.00 1.0 3.53 .00 .00 5.59 .00 .00

CASENO: 235 .00 .00 6.35 -.69 1.65 1.00 1.00 .00
.00 3 3.87 .00 .00 6.88 .00 2.35

CASENO: 235 .00 1.00 9.91 1.79 1.66 1.00 .00
1.00 .00 6 3.47 1.00 7.70 .00 4.09 2.48

CASENO: 236 .00 .00 7.02 -.69 1.10 .00 .00 .00
.00 3.0 4.39 .00 .00 .00 .00 2.56

CASENO: 236 .00 1.00 .71 -2.30 .69 1.00 .00
.00 .00 4 4.09 .00 6.01 .00 .69 3.09

CASENO: 236 .00 .00 7.72 1.61 -1.31 1.00 .00
.00 .00 3 4.20 .00 .00 8.01 4.09 3.74

CASENO: 237 .00 .00 7.81 .92 2.14 1.00 .00 1.00
.00 6.0 3.50 1.00 .00 8.11 .00 1.61

CASENO: 237 .00 .00 7.92 1.03 2.30 1.00 .00 1.00
.00 4 3.74 .00 .00 .00 1.61 1.87

CASENO: 237 .00 .00 .00 .41 1.84 1.00 1.00
1.00 .00 6 3.76 2.00 8.16 7.31 4.50 .41

CASENO: 238 .00 .00 8.46 .92 1.10 .00 .00 .00
.00 .0 4.08 .00 .00 .00 .00 2.94

CASENO: 238 .00 .00 5.73 .41 1.10 1.00 .00 .00
.00 0 4.16 .00 .00 .00 1.61 2.14

CASENO: 238 .00 .00 6.40 .00 .41 1.00 .00
1.00 .00 0 4.37 2.00 8.29 .00 4.09 .00

CASENO: 239 .00 .00 6.37 -.69 .54 .00 .00 .00
.00 .0 4.16 .00 .00 7.13 .00 .69

CASENO: 239 .00 .00 6.24 -.69 .07 .00 .00 1.00
.00 0 4.23 .00 .00 7.98 2.64 -.69

CASENO: 239 .00 .00 8.70 1.10 .41 .00 .00
.00 4.89 6 4.34 .00 7.31 8.29 3.40 1.50

CASENO: 240 .00 .00 7.57 .00 2.19 1.00 .00 .00
.00 .0 3.71 .00 .00 6.27 4.79 .41

CASENO: 240 .00 .00 6.60 .00 2.40 .00 1.00 .00
.00 0 3.83 .00 .00 .00 .00 .00

CASENO: 240 .00 .00 7.78 -.29 2.28 1.00 .00
1.00 .00 0 3.93 .00 .00 .00 3.40 .00

CASENO: 241 .00 .00 9.21 4.52 1.95 1.00 1.00 1.00
.00 3.0 3.64 1.00 9.32 .00 .00 .92

CASENO: 241 .00 .00 8.78 .00 1.95 1.00 1.00 1.00
.00 3 3.74 .00 9.23 .00 2.71 1.12

CASENO: 241 .00 .00 8.52 .92 1.91 1.00 1.00
1.00 7.17 3 3.87 2.00 9.55 .00 3.40 2.08

CASENO: 242 .00 .00 6.62 -1.20 1.95 .00 .00
.00 .00 .0 4.16 .00 .00 .00 .00 -1.20

CASENO: 242 .00 .00 7.51 -.69 1.95 1.00 .00 .00
.00 0 4.20 .00 .00 .00 .00 -.69

CASENO: 242 .00 .00 6.17 .00 .81 1.00 .00
1.00 .00 0 4.22 2.00 6.80 .00 3.40 .00

CASENO: 243 .00 .00 8.46 .92 1.61 1.00 .00 .00
.00 .0 4.17 .00 .00 .00 .00 2.20

CASENO: 243 .00 .00 8.25 .41 1.39 1.00 1.00 .00
4.89 0 4.25 .00 .00 .00 2.71 2.94

CASENO: 243 .00 .00 8.62 .92 1.32 1.00 .00
1.00 .00 0 4.33 2.00 5.70 .00 3.40 2.64

CASENO: 244 .00 .00 9.12 1.61 1.61 1.00 1.00 1.00
 .00 3.0 3.43 .00 8.62 .00 .00 4.09

CASENO: 244 .00 .00 7.62 -.69 1.61 1.00 1.00 1.00
 .00 4 3.58 .00 8.31 8.39 .00 4.50

CASENO: 244 .00 .00 .00 -2.30 1.50 .00 .00
 .00 .00 3 3.74 2.00 7.31 .00 1.61 3.56

CASENO: 245 .00 .00 5.81 -1.20 1.10 .00 .00
 .00 .00 .0 4.17 .00 .00 .00 .00 -1.20

CASENO: 245 .00 .00 .71 -2.30 1.10 .00 .00
 .00 .00 0 4.32 1.00 5.61 8.53 .00 -1.39

CASENO: 245 .00 .00 6.62 -1.39 1.32 1.00 1.00
 .00 7.78 0 4.44 2.00 6.40 .00 4.79 -1.39

CASENO: 246 .00 .00 7.76 .41 1.61 1.00 .00 .00
 .00 .0 3.33 .00 .00 .00 2.30 .41

CASENO: 246 .00 1.00 .71 -2.30 1.61 1.00 .00
 1.00 .00 2 3.47 .00 .00 .00 .00 1.79

CASENO: 246 .00 .00 7.83 -1.71 1.66 1.00 .00
 1.00 .00 1 3.91 .00 .00 .00 3.00 -2.30

CASENO: 247 .00 .00 6.55 .00 2.20 .00 .00 .00
 .00 2.0 3.69 .00 .00 .00 1.61 .00

CASENO: 247 .00 .00 4.60 -1.20 2.08 .00 .00
 .00 3.91 2 3.91 .00 .00 .00 .00 .41

CASENO: 247 .00 .00 7.59 1.10 1.48 1.00 .00
 1.00 .00 2 4.01 .00 .00 5.89 3.22 1.79

CASENO: 248 .00 .00 7.14 .41 2.30 1.00 .00 1.00
 .00 1.0 4.08 .00 7.02 .00 1.61 1.70

CASENO: 248 .00 .00 7.44 .69 2.08 1.00 1.00 1.00
 .00 2 3.99 1.00 5.75 .00 .00 2.08

CASENO: 248 .00 1.00 6.91 -2.81 1.32 1.00 1.00
 .00 .00 0 3.56 2.00 .00 .00 3.00 -2.30

CASENO: 249 .00 .00 8.41 .10 1.53 1.00 .00 .00
 .00 3.0 4.09 .00 .00 7.20 .00 1.39

CASENO: 249 .00 .00 .71 -2.30 1.10 .00 .00
 .00 .00 3 3.50 .00 .00 .00 .00 1.14

CASENO:	249	.00	.00	7.82	.41	.78	1.00	1.00	
	1.00	.00	3	4.28	2.00	5.70	5.48	2.30	.41
CASENO:	250	.00	.00	6.73	.00	.69	.00	.00	.00
	.00	.0	4.37	.00	.00	.00	.00	.00	
CASENO:	250	.00	.00	.71	-2.30	1.95	.00	.00	.00
	.00	.00	3	4.19	.00	.00	.00	.00	-.69
CASENO:	250	.00	.00	7.66	.49	.81	1.00	.00	.00
	1.00	.00	4	4.20	2.00	6.80	.00	3.40	.00
CASENO:	251	.00	.00	6.34	.79	1.07	1.00	1.00	1.00
	.00	3.0	3.85	1.00	7.71	5.59	4.79	-1.20	
CASENO:	251	.00	.00	4.37	-1.61	-.37	.00	.00	.00
	1.00	.00	3	4.01	1.00	6.93	6.88	3.40	-1.02
CASENO:	251	.00	.00	.00	-1.61	-.29	1.00	.00	.00
	.00	.00	2	4.09	1.00	6.40	.00	2.71	-1.20
CASENO:	252	.00	.00	6.68	.41	1.61	1.00	.00	1.00
	.00	.0	4.17	.00	.00	.00	.00	.69	
CASENO:	252	.00	.00	7.26	.41	1.75	1.00	1.00	.00
	.00	0	4.25	.00	.00	6.60	2.30	.92	
CASENO:	252	.00	.00	8.17	.96	.78	1.00	1.00	
	1.00	.00	0	4.33	1.00	6.40	5.48	3.00	1.25

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