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**ANALYSIS OF THE CONTRIBUTION OF MICRO AND SMALL  
ENTERPRISES TO RURAL HOUSEHOLD INCOME IN CENTRAL AND  
NORTHERN MOZAMBIQUE**  
presented by

Rui M.S. Benfica

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M.S. degree in Agricultural Economics

Major professor

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**ANALYSIS OF THE CONTRIBUTION OF MICRO AND SMALL  
ENTERPRISES TO RURAL HOUSEHOLD INCOME IN CENTRAL AND  
NORTHERN MOZAMBIQUE**

**By**

**Rui M.S. Benfica**

**A THESIS**

**Submitted to  
Michigan State University  
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## **ABSTRACT**

### **ANALYSIS OF THE CONTRIBUTION OF MICRO AND SMALL ENTERPRISES TO RURAL HOUSEHOLD INCOME IN CENTRAL AND NORTHERN MOZAMBIQUE**

**By**

**Rui M.S. Benfica**

**There is considerable conventional wisdom that in a country like Mozambique, rural household welfare is largely determined by activities in production agriculture. The purpose of this study was to analyze the contribution of household non-farm micro and small enterprises (MSEs) to household income in Central and Northern Mozambique.**

**Using data from 2,176 farming households and 948 enterprises owned by household members, the study finds that: i) About a third of the households have at least one member engaged in MSEs, mostly manufacturing and trading with linkages to local agriculture; ii) households with more land and agricultural income per capita are more likely to engage in MSEs; iii) households engaged in MSEs earn 70 percent more in terms of per capita income than those without MSEs; iv) econometric results indicate that involvement of household members in nearly all MSE sectors has a positive effect on per capita incomes.**

**The study recommends that rural development policies to increase rural incomes take an integrated activity approach that promotes intensification of agricultural production while assisting and enhancing the role of MSEs.**

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## LIST OF ACRONYMS

<b>BS</b>	Micro and small enterprise survey Business Site approach
<b>ERP</b>	Economic Recovery Program
<b>FSP</b>	Food Security Project
<b>ha</b>	Hectare
<b>HH</b>	Household
<b>HME</b>	Micro and small enterprise survey household-member-enterprise approach
<b>IMF</b>	International Monetary Fund
<b>JVC</b>	Joint Venture Company
<b>LAE</b>	Labor adult equivalent
<b>MAP</b>	Ministry of Agriculture of Mozambique
<b>MSE</b>	Micro and Small Enterprise
<b>MSU</b>	Michigan State University
<b>SAP</b>	Structural Adjustment Program
<b>TIA</b>	Trabalho de Inquerito Agrícola
<b>USAID</b>	United States Agency for International Development
<b>WASAT</b>	West Africa Semi-Arid Tropics
<b>WB</b>	World Bank

## **Chapter 1**

### **Introduction and Scope of the Study**

#### **1.0 Introduction**

Mozambique is endowed with a vast natural resource base in agriculture, energy and mining, as well as strategic transport corridors for the Southern African region, and a tourism potential. In spite of that, poverty is high by any standard. About eighty percent of the population live in rural areas, two thirds of them in absolute poverty (World Bank, 1996). Therefore, policies aimed at reducing rural poverty are given top priority in the current debate on the definition of rural development strategies.

This thesis analyzes current smallholder household income earning strategies, with special emphasis on understanding patterns of diversification into micro and small enterprise (MSE) self-employment, across different income strata, and the factors affecting overall income levels and MSE performance in rural areas.

When the Economic Recovery Program (ERP) was launched in 1987, Mozambique's economy faced enormous distortions resulting from long years of a rigid central planning and a civil war. The ERP, recommended and funded by the International Monetary Fund/World Bank,<sup>1</sup> was aimed at reversing the economic decline and restoring minimum

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<sup>1</sup> International Monetary Fund (IMF)/World Bank (WB) Structural Adjustment Programs (SAP) are intended to influence structural economic changes that ensure an environment conducive to  
(continued...)

levels of consumption and income through a set of pricing and market liberalization policies. Since then the country has moved rapidly from a central planned economy to a market-based economic environment, with private markets becoming increasingly important. Further, the end of a 16-year civil war in 1992, the establishment of a democratic system of government in 1994 and the improved weather, have allowed the resettlement of over 4 million people in rural areas, setting the stage for the sustained recovery of agricultural activities and overall rural economic growth.

Despite this improved environment, farmers still face serious problems as a result of weak or non-existent markets for agricultural inputs, lack of credit and highly unstable agricultural output markets with high price variability and uncertainty. As a result, low and unstable crop yields remain threats to smallholder household food security. With an increasingly monetized economy, failure in relying on agricultural/livestock market sales as a stable and reliable source for smallholder household cash income, may induce smallholder households to increasingly embark on income diversification strategies. Due to the absence of landless smallholder households and the high rate of use of family labor, agricultural labor wage income is likely to be of minor importance, on average.

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<sup>1</sup>(...continued)

consistent long-term economic growth. At the macro level, they include government deficit reduction through expenditure cuts and tax reform, currency devaluation and other monetary reforms to contain inflation and improve the balance of payments, privatization of state-owned enterprises and market liberalization. In agriculture, the focus is on producer prices, elimination or changes in the role of government marketing boards and progressive reduction in consumer subsidies.

Moreover, as rural economies evolve and incomes grow, local demand for non-farm goods and services increase. To meet this demand while taking advantage of local resource endowments, smallholder households can reduce their income risk by investing in micro and small enterprises (MSEs) with backward and forward linkages with local agriculture. More endowed and skilled smallholder households may invest in more capital intensive non-farm activities to exploit profitable opportunities and increase their incomes. Evidence from other African countries has shown that as economies develop, in the process of structural transformation, there has been a widespread self-employment in MSEs in rural areas (Liedholm and Mead, 1987; Chuta and Liedholm, 1990). The result is an increased importance of the share of non-farm income in total smallholder household income, and a strong incidence of farm:non-farm linkages in rural areas and growing rural:urban linkages (Haggblade et al., 1989).

Mozambique is not an exception to these patterns. Indeed, preliminary results of the 1996 Micro and Small Enterprise Survey suggest that the sector in Central and Northern Mozambique is very widespread and growing rapidly, with one in every seven persons in the survey areas employed in such activities (MAP/MSU, 1997). But there is a need to complement these initial findings and help policy makers address policies aimed at rural income growth while enhancing the role of MSEs in the rural economy in transition.

## **1.1 Research Objectives**

The main purpose of this study is to describe and analyze the contribution of MSEs to smallholder household income in rural areas of Central and Northern Mozambique. It is also to study the factors associated with overall household income and MSE performance, and to draw broad conclusions on the potential policy mechanisms to boost rural incomes.

The study has four specific objectives:

- i) Describe smallholder household income sources and magnitude, i.e., income earning strategies in selected Central and Northern provinces of Mozambique by smallholder characteristics and resource endowment status;
- ii) Identify relationships between total smallholder household per capita income and MSE activity, and identify MSE income shares across provinces and zones;
- iii) Describe the characteristics of the smallholder MSE sector and examine the factors associated with its structure and performance overall and by sector;
- iv) Identify policy mechanisms and investment strategies that government, donors and the private sector can pursue to increase rural incomes, while enhancing the attractiveness of MSEs in the rural economy.

## **1.2 Thesis Organization**

This thesis is organized into six chapters, including this introduction. Chapter Two presents a review of the relevant literature on the topic, the conceptual framework used to address the research issues, and research design procedures followed in data collection and analysis. Chapter Three presents demographic and other relevant characteristics of



smallholders in the study areas, as well as their income earning strategies and income patterns, emphasizing income composition across household per capita income terciles. An overall description of the smallholder household MSE sector is presented in Chapter Four along with an analysis on employment and profits generated in the sector. Chapter Five looks at the major factors associated with total smallholder household income and MSE returns through the estimation of econometric models. The final chapter summarizes the overall results of the study and presents their economic policy implications.

## Chapter 2

### Literature Review, Analytical Framework and Research Design

#### 2.0 Introduction

This chapter introduces the theoretical and conceptual framework on which this thesis is based. It is organized in three sections. The first section introduces a review of the literature relevant to the topic. The second section presents the conceptual framework and research questions. The final section provides details concerning sampling procedures and research design issues.

#### 2.1 Literature Review

Economic theory offers conflicting insights on the relationship between smallholder household income diversification and total income (Reardon and Taylor, 1996). *Portfolio and risk theory* (Robison and Barry, 1986) suggests that the riskier is agriculture, and the less correlated the returns of farm and non-farm activities, the more smallholders will pursue income diversification away from agriculture. This implies that smallholders in the agro-climatically poor and risky zones will diversify the most, and those in the agro-climatically-favored and stable zones will diversify the least. On the other hand, the *inter-sectoral growth literature* (Mellor, 1976; Hazell and Roell, 1983) suggests that agricultural development leads to the development of non-farm activities, MSEs, with forward or backward linkages to farm activities, or the demand for which is spurred by

increases in farm incomes (Liedholm and Kilby, 1989). The implication is that zones with less economic development are less likely to have more non-farm income.

The existence of heterogeneous environments pushes smallholder households in poor and unstable agro ecological zones to diversify their income sources across zones where returns to income generating activities are not highly correlated (e.g., migration) or within the same zone into activities whose returns do not depend on the harvest. In more stable agro ecological zones (good soils and more stable rainfall), by contrast, there are more incentives to specialize or diversify locally into micro and small enterprises that may be linked to agricultural production through input or output markets (Reardon and Taylor, 1996).

At the household level, two sets of determinants of diversification are identified in the literature when discussing income composition across different income levels among rural households, namely *push* and *pull* factors. *Push* factors are related to cropping risk that induces households to diversify into non-farm activities. Since returns to non-cropping activities are less than perfectly correlated with returns to cropping activities, households reduce overall income risk by undertaking a mix of the two types of activities (Reardon et al., 1994). Given that poor households tend to be more risk averse, they are more influenced by *push* factors (Newbery and Stiglitz, 1981). Reardon, Delgado and Malton (1992) identify five *push* factors in the Sahelian and Sudanian zones of West Africa, namely: i) low and unstable yields; ii) short growing season; iii) lack of irrigation or drought; iv) credit/capital market failure; and v) land constraints. Using household data

for four years, they found that, in those areas, diversification was driven by the need to compensate for bad harvests. Despite evidence of growing land constraints in the region, this factor was not found to be driving diversification. Suggesting a credit market constraint or failure, they also found that households with more liquid assets and cash crops are more able to diversify.

*Pull* factors induce reallocation of resources to potentially more attractive non-cropping activities to exploit profitable opportunities and increase total income. In economies with credit market constraints, richer households are more likely to respond to these factors, by self-financing their diversification. The most important *pull* factors identified in the literature include: i) terms of trade between agriculture and non-agriculture; ii) migration opportunities; and iii) local non-farm opportunities in backward and forward linkages with agriculture.

Empirical studies of farm households in developing countries, particularly in South Asia (Liedholm and Kilby, 1989; Walker and Ryan, 1990; Adams and Alderman, 1992), show a U-shaped relationship between non-farm income and total income. That is, income is more diversified among relatively poor and relatively rich households and less diversified among middle income stratahouseholds. These results are not applicable to other areas with different structural characteristics that play a role in shaping both the incentive to diversify and the access to off-farm income. For instance, the Asian results are caused by three major factors: i) the availability of high labor-to-capital-ratio jobs with low barriers

to entry for poor households (with very low-asset base); ii) the possibility for middle-asset households to specialize in land intensive crop production; and iii) the ability of households with greater assets to diversify into more capital intensive activities through self-financing or using their assets as collateral in an incomplete credit market. Asset holdings enable high-asset households to diversify production for expected income enhancing as well as for risk reducing motives.

Little research has been carried out in Africa regarding the relationship between income composition and inequality. The studies that have been done do not provide conclusive insights concerning the relationship between agricultural and non-agricultural income sources and magnitude across income groups. Studies by Matlon (1979) in Northern Nigeria, Collier, Radwan, and Wangwe (1986) in rural Tanzania; and Reardon, Delgado and Matlon (1992) in Burkina Faso find that the poor earn a lower proportion of their income from non-farm sources than better off households. On the other hand, another study from Northern Nigeria (Norman, Simmons, and Hays, 1982) found the opposite result, i.e., non-farm incomes are a relatively more important source to poorer households than to their better off neighbors.

Reardon and Taylor (1996) suggest that the monotonically increasing relationship between income diversification and income in the Sahel is due to the scarcity of low-barrier to entry and labor intensive jobs that result from three specific characteristics of the West Africa Semi-Arid Tropics (WASAT) zone: i) an undeveloped farm labor market

and predominantly traditional production technologies using family inputs; ii) a relatively equal land distribution and a virtual lack of landless households; and iii) a low population and infrastructure density (compared to Asia). Also, poor WASAT households appear to face serious entry barriers to capital intensive sectors (Reardon et al., 1994). These results are similar to those found by Matlon (1979) for the Guinean zone of Northern Nigeria. Evidence of credit constraints on poor households' involvement in MSEs in these areas is also presented by Chuta and Liedholm (1990).

In sum, although both theory and empirical evidence present ambiguous hypotheses concerning which zones or households will diversify the most, it is clear from the literature that both *push* and *pull* factors are likely to be important in driving diversification into MSEs. In other words, diversification into non-farm activities has two causes: the struggle to survive in a risky environment and the desire to build on the base of a dynamic agriculture (Reardon, Delgado and Matlon, 1992) and take advantages of profitable opportunities that help maximize household income in a given economic and policy environment.

Analyzes from Burkina, Senegal and Niger in the 1980s shows that participation in local micro and small enterprises differs across income groups in all three countries (Reardon et al., 1994). In these studies, the share of commerce, manufacturing and services is higher for the upper income tercile rural households in all the three countries. Poorer households tend to engage in activities with low capital requirement and high labor intensity while

richer households pursue more capital intensive activities. The findings indicate that besides agricultural wage labor, poorer household participate in activities such as gathering, petty trade and cottage manufacturing (e.g., basket weaving and bamboo bed and screen making), often using locally gathered materials. Cottage manufacturing undertaken by richer households is often more capital intensive such as blacksmithing, carpentry and tailoring. Relatively richer households tend to be involved in activities that require skills and/or capital or both, such as veterinary services, machinery repairing, wells digging, etc, while poorer households tend to be involved in more labor intensive services, such as hand-milling or winnowing grain, and other unskilled manual jobs. The share of food preparation does not differ much across income strata, except in the Guinean zone of Burkina where a restaurant sector (more capital intensive preparation) has emerged. The authors note that those activities in other areas are of low capital intensity, undertaken by women, and include biscuit making, beer brewing and condiment preparation.

Most of the available literature on micro and small enterprises research that emphasizes their role in employment and income generation, and describes the dynamics of the sector in the global rural and urban economies is done strictly at the enterprise level. Farm household level analysis is seldom done. The business site approach used in most surveys results in the impossibility of household level analysis without an ambiguous interpretation due to double counting that is likely to occur in the data collection, and the unclear definition of the household unit.

**This thesis analyzes income composition among rural smallholder households in Central and Northern Mozambique using survey data on farming households, collected in 34 districts, regarding both their farming and non-farming activities with respect to income patterns and other relevant characteristics. It analyzes the relationship between income shares and income levels, and identifies types of activities that households choose to diversify into in different regions, as well as the factors affecting the performance of such activities and overall household income levels.**

## **2.2 Conceptual Framework and Research Questions**

**The conceptual framework discussed in this section is two-folded. First, it refers to the smallholder income composition and income distribution analysis. Then, it deals with the analysis of the factors associated with the rural household total income and the MSE sector performance (sub-section 2.2.1). The underlined research questions are introduced in Section 2.2.2.**

### **2.2.1 Conceptual and Analytical Framework**

**The analysis of smallholder household income composition and income distribution is undertaken using a rural smallholder household income model. Smallholder households are assumed to be motivated by maximization of expected utility of income.**

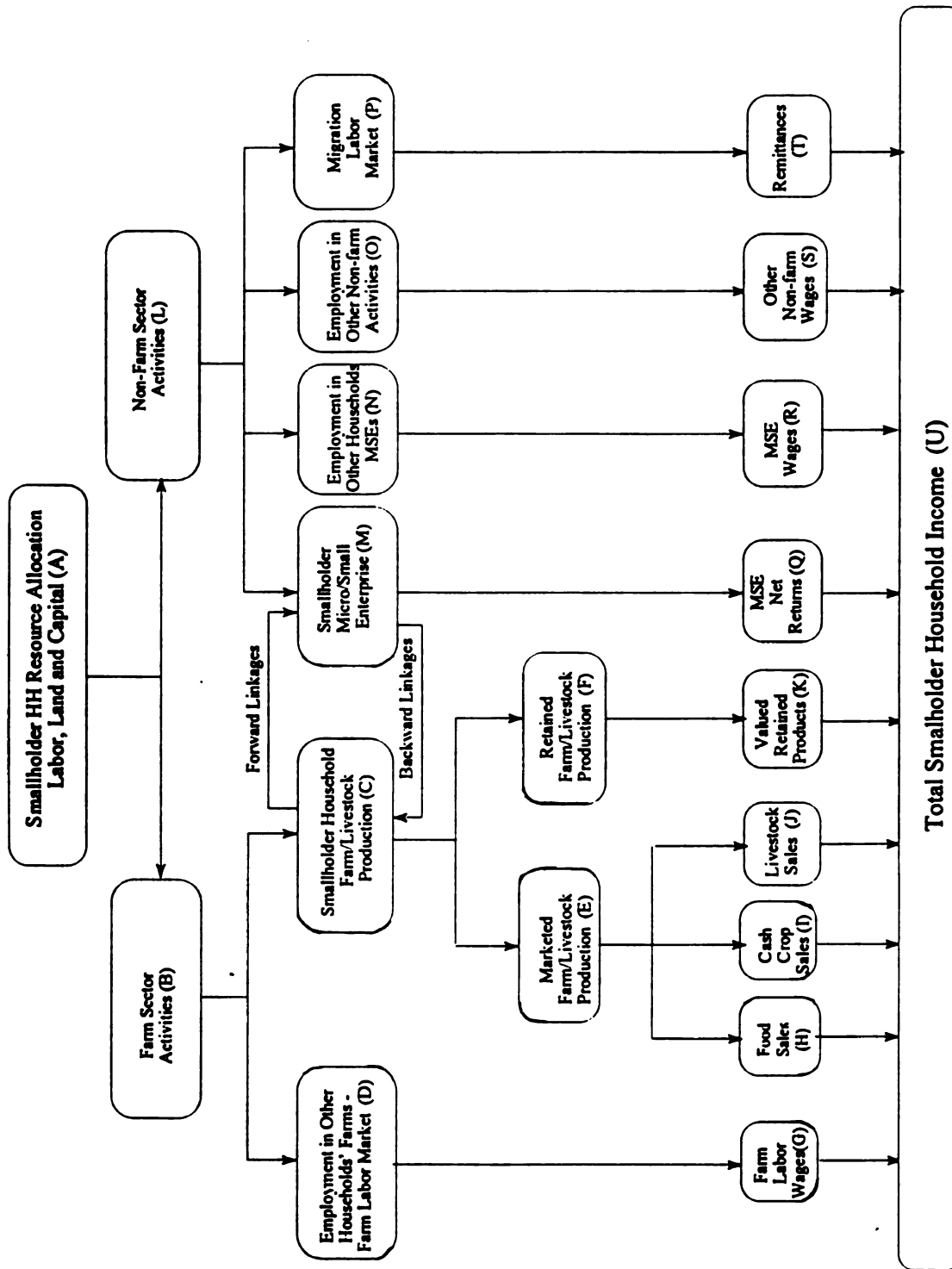


As shown in Figure 2.1 it is assumed that, conditioned by a set of exogenous factors,<sup>2</sup> smallholder households allocate their scarce resources (Box A) in an array of income generating activities, both in the *farm sector* and/or in the *non-farm sector*. This allows them to minimize income risk, take advantage of profitable opportunities and, as a result maximize expected utility of income.

The *farm sector* (Box B) includes exclusively cropping and livestock activities (left side of Figure 2.1). Smallholder households can either use their productive resources in their own farm/livestock production activities (Box C) or sell their labor to other households' farm/livestock production activities, i.e., supply labor in the farm labor market (Box D), or do both. Therefore, the income generated in the farm sector consists of: i) the cash income obtained with the sale of smallholder household agricultural/livestock production (Box E) - food crop, cash crop and livestock sales (Box H, I and J); ii) the value of retained household agricultural and livestock production (Box F); and iii) wage earnings received in the farm labor market from labor sales for work on other households' fields (Box G). Note that the first two components refer to income generated *on-farm*, i.e., from production in the own household fields, while the latter refers to the income generated *off household farm*, i.e., from work on other households' fields or on larger farm sector firms.

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<sup>2</sup> Such factors include: 1) Household assets and structure, 2) the input and output market (for farm and non-farm goods and services) and wage rates it faces, and 3) the institutional (including policy) and physical (including available technology) setting in which it operates (MAP/MSU, 1992).



**Figure 2.1 Conceptual Framework for Analyzing Household Income**

The *non-farm sector* (Box L) includes household involvement in all activities other than agricultural and livestock production (right side of Figure 2.1), namely rural non-farm labor market, i.e, employment in other household MSEs (Box N); employment in medium or large scale non-agricultural businesses, or government (Box O); employment in the migration labor market (Box P); or self-employment or ownership of MSEs (Box M). Hence, smallholder household income generated in the non-farm sector consists of: i) profits from self-employment/ownership in MSEs (Box Q); ii) wages paid to household members working in other households' MSEs (Box R); iii) wages paid to household members working for medium and large scale non-agricultural businesses or government (Box S); and iv) remittances (Box T).

It is necessary to emphasize the distinction between the *on-farm/off-farm dichotomy* (Box C versus Boxes L and D), on the one hand, and the *farm/non-farm dichotomy* on the other (Box B versus Box L). The discussion in the previous paragraphs make clear that the first one is merely locational, while the second is sectoral.

For the purposes of this analysis of smallholder household income, *smallholder household farm income* is defined as all income generated on the household fields in their agricultural and livestock production, namely: i) valued retained agricultural/livestock production; and ii) sales of agricultural/livestock production. *Smallholder off-farm income* refers to income generated outside household agricultural fields/livestock production. It includes all the previously defined non-farm income plus the wage earnings from the household

farm labor market participation, namely: i) self-employment/ownership in MSEs; ii) wages paid to household members from their participation in the farm labor market (labor supply in the farm sector); and iii) wages paid to household members from their participation in the non-farm labor market (labor supply in the non-farm labor market). Income diversification refers to household income strategies oriented to this set of off-farm income choices.

Total *smallholder household net income* is, therefore, estimated by adding up the *net household farm income*, i.e., value of crop and livestock retained for own consumption and all crop and livestock sales net of value of production inputs, and the *net household off-farm income*, i.e., wage income in the farm and non-farm labor market, net profits generated in household MSEs, and other net cash and in-kind payments.

For analytical purposes in this study, smallholder households are divided into *income per capita terciles*, i.e., the one third of the households that earn the lowest per capita total net income is grouped into the first income strata, the middle per capita income households (also one third of the sample) forms the second tercile, and the richest smallholder households are grouped into the upper per capita income strata.

*Income composition* refers to the structure of household income across the above defined categories. Special attention is given to the question of income diversification strategies by per capita household income stratum, i.e., changes in the relative share of income from

on-farm and off-farm sources, especially from self-employment in MSEs, across these different income groups.

To make this analysis more insightful, an assessment of the types of businesses into which smallholder households tend to be involved according to their position in the income distribution scale and the comparative analysis of returns to those activities is of significant importance.<sup>3</sup> These and existing/potential linkages will potentially help to address policy issues aimed at promoting rural income growth through MSE enhancement. All these issues on income composition and income diversification are addressed in Chapters Three and Four.

The analysis of the factors associated with the aggregate level of smallholder household income and those affecting micro and small enterprise profits is undertaken through the estimation of econometric models, using least squares techniques. A detailed description of the econometric models, estimation methods and discussion of results is presented in Chapter Five.

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<sup>3</sup> The analysis include terciles of land owned per adult, agricultural income per capita and total income per capita.

### **2.2.2 Research Questions**

Following the research objectives defined in Chapter One, and insights from the discussion presented in the literature review, the following research questions are defined:

- 1) What is the relationship between land holdings, demographic characteristics and smallholder propensity to diversify into MSEs?
- 2) What are key relationships between household propensity to invest in MSEs and other income earning strategies: i) are households with MSEs more or less likely to get involved in cash cropping, food crop marketing or labor markets? ii) are households with cash income from agricultural activities more or less likely to invest in MSEs?
- 3) What are the patterns of household total income and income per capita in the region, and what are the shares of income from different sources across household per capita income terciles? Emphasis is given to questions about the relationship between income per capita terciles and MSE income shares?
- 4) What are the characteristics of the rural MSE sector and the factors determining its profit levels? What is the relationship between land holdings, agricultural income and total income per capita, and household propensity to engage in given MSE activities and its annual profits per worker?
- 5) What is the effect of household involvement in MSE sectors on household income per capita levels in the different study zones? What other factors explain variations in income per capita levels?

## **2.3 Field Research Design**

This Section describes the surveys undertaken as part of this study and the sampling procedures followed in each case as well details on how they relate to each other.

### **2.3.1 Agricultural and Micro and Small Enterprises Surveys**

The analysis presented in this study is based on data collected in the 1996 Smallholder Agricultural Sector Survey (TIA-96) and the Micro and Small Enterprise Baseline Survey

conducted with the same rural households in four provinces of central and northern Mozambique, namely Nampula, Zambezia, Manica and Sofala, and the district of Mutarara in Tete Province.

**The Smallholder Agricultural Sector Survey (TIA-96).** This survey was undertaken in all ten provinces by the Mozambique's Ministry of Agriculture and Fisheries (MAP). It collected information concerning smallholder household demographic characteristics, production and marketing of smallholder household agricultural and livestock production, as well as land ownership and use, and participation of household members in the farm and non-farm labor markets.<sup>4</sup>

**The Micro and Small Enterprise Baseline Survey.** This survey was undertaken by the Food Security Project MAP/MSU concurrently with TIA-96. It was aimed at uncovering with relatively fine detail the part of the rural economy not covered in TIA-96. In essence, it approached all households interviewed in the TIA-96 survey and, where relevant, collected data on any non-agricultural activities - micro and small enterprises - in which members of those households were engaged as owners during the 1995/96 agricultural season. For the purposes of this study, MSEs are defined as activities or businesses employing 50 or fewer people engaged in non-farm, non-livestock income generating activities, i.e., any economic activity by any family member, other than those

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<sup>4</sup> For details on the methodology and instrument of the agricultural sector survey, see MAP/MSU, 1998.

that involve the sale of wage labor, the production of crops and livestock and/or sales of one's own crop or livestock production. Where relevant, the MSE survey collected detailed information about each rural household member and their respective enterprise. Besides collecting general information regarding their sector of activity, age, gender of the owner and other background information on the owner and enterprise, it covered enterprise working patterns, work force composition over time, access to financial and non-financial assistance, income earned, investments and operating costs, input and output markets and constraints faced by MSEs.<sup>5</sup>

### **2.3.2 Survey Sampling Approach**

The sampling procedures for the selection of districts, villages and households for the field survey followed the standard three-stages used in TIA-96. The household member enterprises covered in the MSE survey were identified using the household-member-enterprise (HME) approach.

#### **2.3.2.1 Selection of Districts, Villages and Households**

This followed a three-stage sampling design as follows:

**Stage 1: Selection of Districts** - For TIA-96, the total number of districts to be covered in the 10 provinces was defined as 60. The number of districts covered in each province

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<sup>5</sup> For more details on the methodology and instruments of the MSE survey, see MAP/MSU, 1998.



was proportional to its population, i.e., more populated provinces had more districts selected. In each of the provinces, the sample of districts was randomly selected with a probability proportional to the size of its population. In the TIA-96/MSE survey areas, the total number of districts covered was 34 located in 5 different provinces.

**Stage 2: Selection of Villages** - For each sampled district, all villages were listed together with their number of inhabitants. Then, eight villages were selected with probability proportional to the size of its population. Overall, for TIA-96, the number of villages to be selected was 480. In the TIA-96/MSE survey areas the corresponding number was 272 villages.

**Stage 3: Selection of Households** - For each sampled village, all households were listed, identified by the name of the head of the household. Then, eight households are selected using systematic random sampling. For TIA-96 this approach results in 3,891 smallholder households selected nationally and 2,176 smallholder households in the TIA-96/MSE study areas.

#### **2.3.2.2 The MSE Survey Household-Member-Enterprise (HME) Approach**

There are two major approaches used in undertaking MSE surveys. The Business Site/Location (BS) Approach, widely used in MSE surveys all over the world, consists of visits to business sites, both houses and non-residential places of business. In contrast, the HME approach starts by asking in each household for each member listed in the

demographic characteristics section of the TIA-96 survey: 'Does this household member run a non-agricultural activity on his/her own account?' The MSE survey procedure then traces those members who have a MSE in each household. Still in the Agricultural Survey, for those members who have MSEs, the following question is asked: 'How many activities does this member own?'

This information is then passed to a *Village Level Control Sheet*, and a summary of information about each household, member and activity type identification and current operating status is registered in the *Household Level MSE Instrument*.

Once the household members and the types of activities are identified and reported upon, a detailed *Member-Enterprise Questionnaire* is administered for each activity reported. The interview was conducted with the household member that owns the enterprise, or with someone else close to the business, in case the owner is not available.

This approach, while taking advantage of targeting the households covered by the TIA-96 agricultural survey allows a richer and more integrated analysis of the household economy. It also provides data at the individual/enterprise level and will allow to better estimate the incidence and importance of MSEs for the smallholder household sector. Each enterprise is connected to a member of a household selected and interviewed in the TIA-96 agricultural survey.

A key concern in using this approach is that, since it is not always based on a physical identification at a business site, it is important to be careful in probing to investigate the existence of any and all businesses in the household that qualify for the MSE survey. The MSE definition needs to be very clear and enumerators must be very well trained to carry out this search. To help accomplish this among the field survey teams, a sheet was prepared providing *Tips for Household/Member MSE Identification*.

The two steps described above result that up to the level of the household, it was possible to anticipate the number of units of observation (households) for the TIA-96 Agricultural Survey. From this potential sample, the number of households with at least one member owning a MSE and the total number of MSEs to be interviewed could only be determined *ex-post*. The results of this sampling procedure are presented in Table 2.1. In total there were about 766 households with one or more members engaged in MSE activity. A total of 948 enterprises were interviewed. Figure 2.2 shows the geographical location of the Districts covered by the surveys.

**Table 2.1 Smallholder Survey (TIA-96) Sample Size and the Incidence of MSEs**

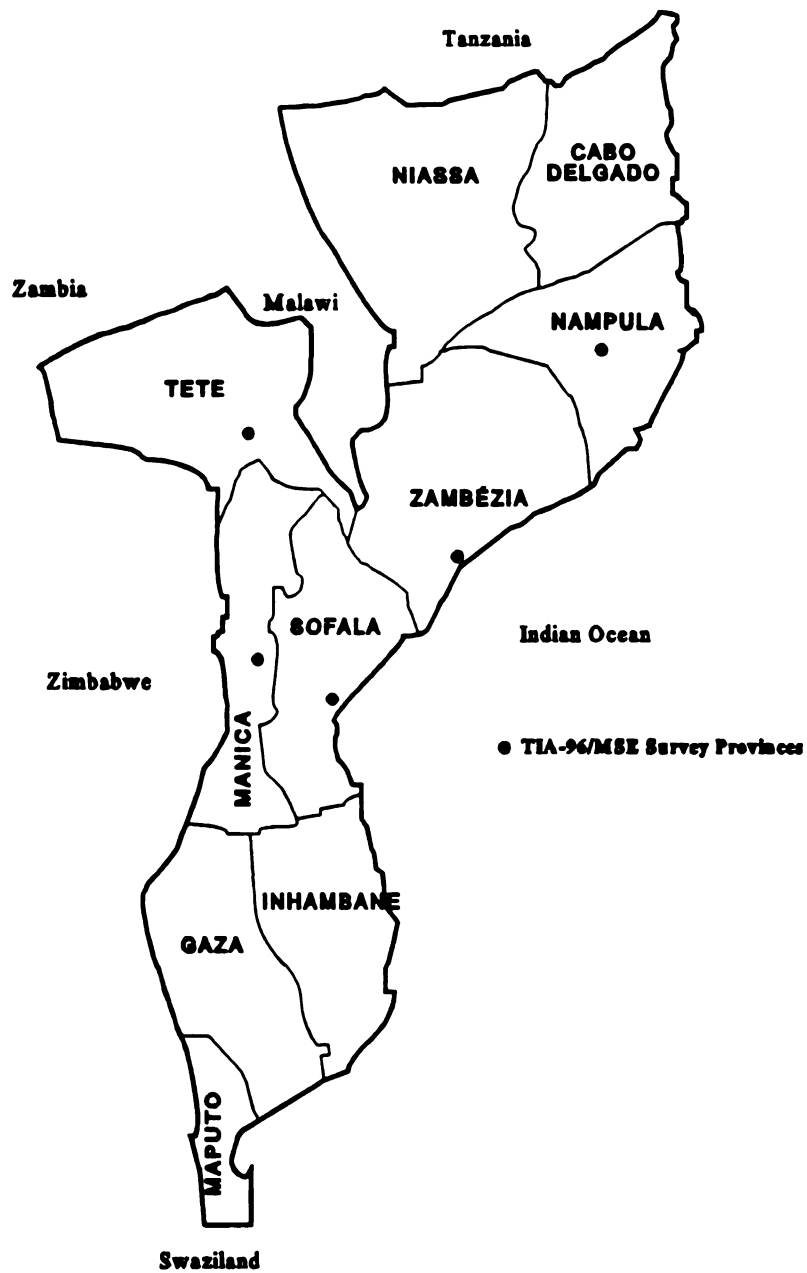
Smallholder Household Survey (TIA-96) Sample Size			Households with MSEs		Number of MSEs	
Province/ District	Number of Villages <sup>a</sup>	Number of Households	Number of HHs	(%) of HHs	Total # of MSEs	per HH with MSE <sup>b</sup>
<b>Nampula</b>	88	704	247	35	287	1.2
Malema	8	64	26	41	30	1.2
Meconta	8	64	17	24	18	1.1
Mogovolas	8	64	38	59	49	1.3
Moma I & II	16	128	50	43	65	1.3
Monapo	8	64	20	30	21	1.1
Murupula	8	64	27	42	27	1.0
Nacala-a-velha	8	64	15	23	15	1.0
Nampula	8	64	23	34	23	1.0
Ribaue	8	64	20	30	27	1.4
Namapa	8	64	11	17	12	1.1
<b>Zambezia</b>	104	832	273	34	315	1.2
Alto Molocue	8	64	28	44	39	1.4
Ile	8	64	29	45	33	1.1
Inhassunge	8	64	17	27	18	1.1
Lugela	8	64	14	22	16	1.1
Maganja da Costa	8	64	19	30	19	1.0
Milange	8	64	10	16	10	1.0
Mocuba	8	64	16	25	16	1.0
Mopeia	8	64	15	23	17	1.1
Murrumbala	8	64	26	41	31	1.2
Namacurra	8	64	26	39	27	1.0
Namarroi	8	64	15	23	15	1.0
Pebane	8	64	25	35	25	1.0
Nicoadala	8	64	33	48	49	1.5
<b>Mutarara (Tete)</b>	8	64	29	45	42	1.4
<b>Manica</b>	32	256	106	43	146	1.4
Gondola	8	64	33	51	44	1.3
Guro	8	64	20	28	27	1.4
Sussundenga	8	64	37	60	57	1.5
Tambara	8	64	16	23	18	1.1
<b>Sofala</b>	40	320	111	37	158	1.4
Buzi	8	64	28	43	44	1.6
Chemba	8	64	25	39	34	1.4
Cheringoma	8	64	18	28	21	1.2
Chibabava	8	64	19	30	26	1.4
Marromeu	8	64	21	33	33	1.6
<b>Total</b>	272	2,176	766	36	948	1.2

<sup>a</sup> Number of villages covered in each district and province. Moma district was selected twice.

<sup>b</sup> Average number of MSEs among smallholder households with MSEs.

HH = household.

Source: 1996 MAP Smallholder Survey and 1996 MAP/MSU MSE Survey data



**Figure 2.2 TIA-96 and MSE Survey Areas**

## **Chapter 3**

### **Characteristics and Income Strategies of Smallholder Households**

#### **3.0 Introduction**

The decision of a smallholder household to engage in micro and small enterprise activity or embark on other income diversification strategies, or simply specialize in agricultural or livestock production, is likely to be associated with smallholder household characteristics and resource endowments, such as land holdings and liquid assets. These options are also affected by economic and social environmental and locational characteristics and relative returns across activities.

The starting point for the analysis in this chapter consists of the assessment of rural household characteristics and their relationship with patterns of diversification into micro and small enterprises (section 3.1). Then, it examines income earning strategies through an analysis of smallholder income sources (section 3.2). Section 3.3 analyzes smallholder total net income patterns, income strategies, and income composition patterns by household total net income per capita terciles across provinces and selected smallholder-zone characteristics. The association between diversification into MSEs, and environmental and locational characteristics and relative sectoral returns is not included. Chapter Five deals with those factors in the context of the analysis of factors associated with MSE profitability and overall smallholder household income .

### **3.1 Smallholder Household Sector Characteristics**

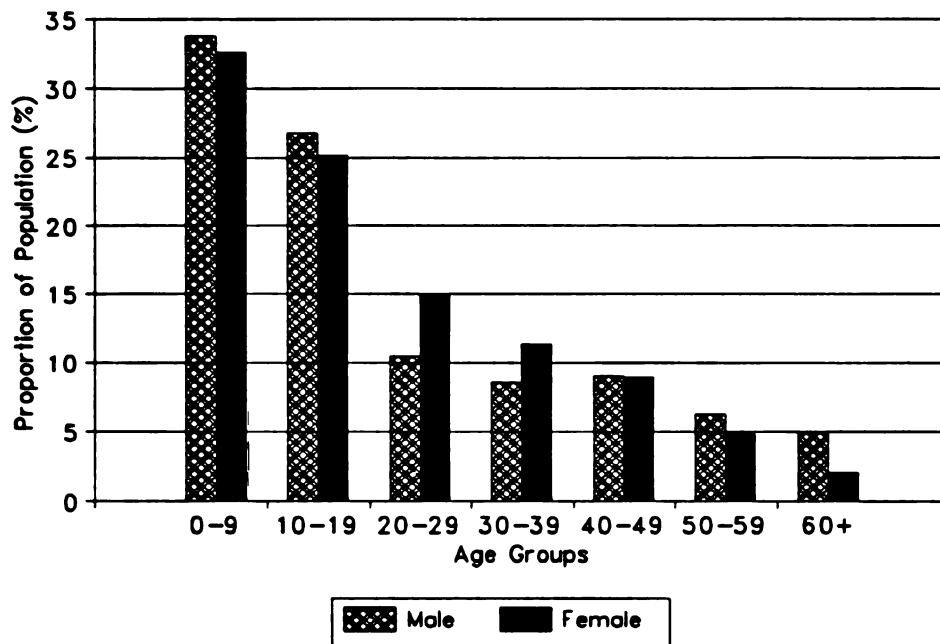
The analysis includes solely household level characteristics and household resource endowments that are hypothesized to be related to smallholder propensity to diversify income, especially into MSE activity. First, smallholder household demographic characteristics are analyzed in relation to diversification into MSE activity. Then, attention turns to the relationships between land size and use and diversification into MSEs.

#### **3.1.1 Demographic Characteristics**

Figure 3.1 shows the distribution of the population by age and gender in the survey areas. This is a very typical age/gender distribution for a developing country. For most of the relevant range of the economically active population age groups - 15 to 65 years - there is a greater number of females, while in the upper and lower age groups there are more males. This structure has potential implications on the work force trends in the near future. Indeed, most of this female labor is currently involved in agricultural activities. However, as the economy is structurally transformed, part of this labor can be freed to non-farm activities. The analysis of gender ownership of micro and small enterprises presented in Chapter Four gives additional insights on this issue.

Table 3.1 presents mean levels of selected household demographic characteristics by province and smallholder household MSE ownership status. The demographic characteristics include household size, age of household head, proportion of female

headed smallholder households, proportion of polygamous smallholder households, years of schooling of the smallholder household head, proportion of smallholder households that have migrated at some point, and the smallholder household dependency ratio.



Source: 1996 MAP Smallholder Survey data

**Figure 3.1 Population Age and Gender Structure**

It is worth noting that (excluding Mutarara) Manica province has the highest average household size, the highest proportion of female headed households, the highest proportion of polygamous households and the more educated household heads across the study zone.



**Table 3.1 Demographic Characteristics of Smallholder Households, by Province and MSE Ownership Status**

Province/ Household MSE Ownership Status	Population Proportion	Demographic Characteristics						
		Household Size	Age of the Household Head	Female Headed Households	Polygamous Household	Years of Schooling, Household Head	Have the Household ever moved?	Household Dependency Ratio
	(percent)	(residents)	(years)	(percent)	(percent)	(years)	(percent)	
<b>Nampula</b>	100	4.8	42	10	4	1.7	17	1.3*
HHs without MSEs	65	4.7	44	14	3	1.6	18	1.3
HHs with MSEs	35	4.9	40	3	6	1.7	15	1.2
<b>Zambezia</b>	100	5.3	43*	13	7	1.9	58	1.2
HHs without MSEs	66	5.1	44	16	7	1.6	58	1.2
HHs with MSEs	34	5.7	41	6	6	2.4	59	1.2
<b>Manica</b>	100	6.2	47	8	27	1.8*	89	1.3*
HHs without MSEs	55	5.3	51	9	17	1.1	86	1.2
HHs with MSEs	45	7.3	43	7	37	2.6	91	1.4
<b>Sofala</b>	100	6.4	43*	28	10	2.2	39	1.3
HHs without MSEs	57	6.0	44	35	5	1.9	39	1.4
HHs with MSEs	43	7.0	42	17	16	2.3	40	1.3
<b>Overall Study Area</b>	100	5.8	44	17	8	1.7*	43	1.2
HHs without MSEs	64	5.6	45	19	8	1.6	41	1.3
HHs with MSEs	36	6.2	41	13	8	2.0	47	1.1
<b>Overall Study Area</b>	100	5.3	43	13	7	1.8	41	1.3
HHs without MSEs	64	5.1	44	17	6	1.6	40	1.3
HHs with MSEs	36	5.6	41	7	8	2.2	41	1.2

T-Tests comparing provincial means and within province household MSE status group means for the different variables, show that the differences are statistically significant for all provinces (p-value=0.01), except for \*, where provincial means for these variables are not statistically different (p-value=0.01)

Source: 1996 MAP Smallholder Survey and MAP/MSU MSE Survey data

Households that are involved in some type of MSE activity, when compared to those without it, appear to be slightly larger in size, in general more likely to be headed by a male, younger and relatively more educated. The overall incidence of female headed households is very low, being more common among those that do not diversify into micro and small enterprises. On the other hand, the proportion of polygamous households overall is somewhat lower, being more common among households with micro and small enterprises, except for Zambezia province.

The statistically significant differences identified in household size between households with and without MSEs gives some initial insights. However, this measure does not consider age or gender of those members and can be misleading. Therefore, dependency ratios - a measure that gives the number of dependent household members (aged less than 15 plus those over 65 years old) per each economically active member (aged 15-65 years old) - are computed. The overall results show very similar relationships across provinces.

Regarding household MSE ownership status comparisons, households that do not diversify into MSEs appear to have slightly higher dependency ratios, excepting for Zambezia Province where they are similar.

To better explore the relationship between smallholder household propensity to diversify into MSE activity, and household size and labor availability, Table 3.2 presents the incidence of smallholder households MSEs by household size and by household labor adult equivalent (LAE) terciles. Results suggest that diversification into MSEs is

positively correlated with household size, i.e., the higher the number of household members the more likely is the household to diversify into MSEs. This follows from the fact that the proportion of households that diversify among those in the lower size tercile is lower than the proportion diversifying in the middle and the higher size terciles.<sup>6</sup> It may be that larger households find in MSE activity a feasible alternative to increase household income to face increasing household consumption needs.

The extent to which this relationship has to do with labor availability, inducing households to diversify into MSEs, is analyzed by using household LAE ( i.e., the number of adult labors: average household size, weighted by an adult equivalent conversion factors to take into account age and gender of each household member in the calculation is used to compute the sample terciles).<sup>7</sup> In general, households in the lower LAE tercile tend to diversify less into MSEs than those in the middle and higher terciles. This results suggest that larger households can take advantage of labor availability to diversify into MSEs using own household labor, and therefore respond to increasing consumption needs derived from their size. A possible exception, however, is found for Nampula province where the higher LAE tercile households are slightly less likely to diversify into MSEs. It may be the case that larger households in Nampula find it more profitable to specialize in

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<sup>6</sup> Note that this relationship holds systematically, being the middle size tercile more diversified than the first and the highest more diversified than the middle, excepting for Sofala province where the middle tercile appears to be less diversified than the lower one.

<sup>7</sup> Labor adult equivalent conversion factors are: individuals 7-8 years old=0.3, 6-12=0.5, 13-15=0.7, males 16-54=1, females 16-54=0.85, and individuals >54=0.7 (FAO).

the sale of labor to other households or engage in their own agricultural production. As presented below, the highest rate of participation in farm and nonfarm labor markets is found in Nampula Province. However, as will be shown, even among households that diversify into MSEs, farm labor market participation is important.

Over the past two decades, population migration (due to various reasons, particularly the armed conflict, natural disasters and other associated factors) was quite common among rural smallholder households in central and northern Mozambique. Results from the present survey indicate that, overall, about 40% of the households were displaced at some point in their lifetime. An analysis by province, however, shows that the province of Zambezia, and the district of Mutarara in Tete, were the areas where most people have been displaced, followed by Sofala and Manica, while Nampula has the lowest incidence (Table 3.1).

In Nampula the proportion of displaced households is higher for households that do not diversify into MSEs, while in other provinces, although just by slight differences in some cases, the incidence of that type of Households is higher among those who are diversifying into MSEs. One could argue that, due to the nature of the migration, Zambezia, Tete, Manica, and to some extent Sofala, households that were displaced to neighboring countries and to more stable domestic areas, could have capitalized on knowledge and physical assets that allowed them to embark into MSEs by the end of the war.

**Table 3.2 Household Diversification into MSEs by HH Size and Labor Availability, by Province and Sample Terciles**

Provinces and Household and Sample HH Size Terciles	Household Size		Household LAE	
	Mean HH Size	HHs with MSEs	Mean HH LAE	HHs with MSEs
	— % of HHs —		— % of HHs —	
<b>All Study Zone</b>	5.2	36	3.7	36
Tercile 1	3.1	30	1.9	33
Tercile 2	5.5	36	3.5	34
Tercile 3	8.3	42	5.7	40
<b>Nampula</b>	4.7	36	3.3	36
Tercile 1	2.4	33	1.7	36
Tercile 2	4.5	36	3.2	37
Tercile 3	7.0	37	5.0	34
<b>Zambezia</b>	5.3	34	3.8	34
Tercile 1	3.0	25	1.9	28
Tercile 2	5.5	37	3.6	36
Tercile 3	8.1	41	5.8	37
<b>Mutarara</b>	6.2	45	4.4	45
Tercile 1	3.3	20	2.0	30
Tercile 2	5.9	44	4.2	45
Tercile 3	9.5	74	6.9	62
<b>Manica</b>	6.4	43	4.4	43
Tercile 1	3.5	35	2.0	35
Tercile 2	6.4	36	4.2	40
Tercile 3	9.7	56	6.9	53
<b>Sofala</b>	5.8	36	4.1	36
Tercile 1	3.3	37	2.3	32
Tercile 2	5.5	25	3.9	37
Tercile 3	9.1	45	6.4	40

LAE=labor adult equivalent. T-tests of statistical significance show that all household size means are statistically different across provinces (p-value=0.01).

Source: 1996 MAP Smallholder Survey and MAP/MSU MSE Survey data

Nampula households, on the other hand, were generally internal refugees, and were subject to very different circumstances, and therefore likely to have been less able to diversify due to the lack of investment in human capital and physical assets by the end of the war. Indeed, results indicate that, although some were displaced, none of the Nampula MSE owners have ever lived in a refugee camp neither domestic nor abroad. Ninety six per cent of Mutarara's displaced MSE owners lived in refugee camps in Malawi, while 16% of Manica owners and 20% of Sofala owners lived in Malawi or Zimbabwe. Among Zambezia's owners, 27% lived in Malawi. This province has the highest incidence of domestic refugees (31%), followed by Manica (4.1%) and Sofala (2.5%). These numbers are consistent with the fact that only 4% of Nampula's owners indicate that they acquired some skills during the conflict. The figure for Zambezia, Manica and Sofala is around 6%, while in Mutarara, a border district, about a quarter of the MSE owners indicated they acquired some useful entrepreneurial skills during the conflict.

### **3.1.2 Farm Size and Land Use**

Land constraints among smallholder households is a key potential *push* factor for income diversification (Reardon, Delgado and Matlon (1992). In fact, the low production potential and high household labor surplus associated with land scarcity can be hypothesized as a factor associated with overall smallholder income diversification decisions. Whether households diversify into self-employment in MSEs or simply choose to sell labor to the farm and/or non-farm labor market also depends on other factors. This

includes the ability of land poor households to self-finance investment in MSEs in the absence of functioning credit markets, the existence of low barriers to entry in labor intensive MSE sectors, the existence of functioning labor markets, and the relative returns between MSEs and wage rates in the labor market.

This section looks specifically at the relationship between MSE ownership and land holdings.<sup>8</sup> Table 3.3 presents comparative farm size (cultivated plus fallow land) and land cultivated per household and per household LAE, among smallholder households with and without MSE activity. Overall, smallholder households that diversify into MSEs tend to have larger farms and also cultivate more land, either per household or per household LAE. An exception, however, is found for Nampula province, regarding total land per household and total land per household LAE, where households without MSEs tend to have larger total areas. Area cultivated follows the pattern found for other provinces, which suggests that households without MSEs in Nampula tend to have more land in fallow than those who choose to diversify into MSEs.

To address the issue on the relationship between land size and area cultivated, and smallholder propensity to diversify into MSE activity, in Table 3.4 smallholder households are divided into land per LAE terciles (total and cultivated land) and the share of household that diversify in each tercile across provinces is indicated. The general result

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<sup>8</sup>Smallholder households income earning strategies in general are discussed in detail in section 3.2.

found is that the land poor smallholder households are only slightly less likely to diversify when compared to the land abundant households. The same result is found regarding land cultivated, i.e., households cropping more land per household LAE are slightly more likely to diversify into MSEs when compared to those cropping smaller areas per LAE.

The rate of diversification into MSE activity by the middle tercile is somewhat ambiguous. Overall (all smallholder households), it is higher than both the land poor and the land abundant smallholder households with respect to total area, and higher than the poor and similar to the land rich with respect to area cultivated. An analysis across provinces indicate that for Nampula the middle tercile (total and cultivated area) is the one that diversifies the most. In Manica and Zambezia Provinces and the District of Mutarara, there is a positive relationship between land terciles and propensity to diversify into MSEs. Finally, for Sofala province, the middle tercile of land cultivated per household LAE has the lowest rate of diversification into MSE activity. With respect to total area per household LAE, a direct (positive) relationship holds for this Province.



Table 3.3 Farm Size (Cultivated and Fallow) and Area Cultivated, by Province and MSE Ownership Status

Province/ Household MSE Ownership Status	Farm Size (Cultivated+Fallow)		Area Cultivated		Household LAE
	per Household	(ha)	per Household LAE	(ha)	per Household LAE
<b>Nampula</b>					
	(ha)			(ha)	
	2.30	0.85	1.67	0.60	3.24
HHs without MSEs	2.33	0.86	1.64	0.59	3.24 <sup>a</sup>
HHs with MSEs	2.26	0.83	1.72	0.63	3.23 <sup>a</sup>
<b>Zambeza</b>					
	1.79	0.57	1.39	0.44 <sup>a</sup>	3.75
HHs without MSEs	1.63	0.54	1.29	0.43	3.69
HHs with MSEs	2.09	0.62	1.57	0.46	3.87
<b>Matara (Tete)</b>					
	1.88	0.45	1.71	0.40 <sup>a</sup>	4.36 <sup>a</sup>
HHs without MSEs	1.71	0.43	1.50	0.37	4.00
HHs with MSEs	2.08	0.48	1.95	0.45	4.79
<b>Manica</b>					
	2.44 <sup>a</sup>	0.65 <sup>a</sup>	2.14	0.58	4.32 <sup>a</sup>
HHs without MSEs	1.97	0.62	1.73	0.55	3.98
HHs with MSEs	3.09	0.68	2.72	0.61	4.78
<b>Sofala</b>					
	2.47 <sup>a</sup>	0.67 <sup>a</sup>	2.24	0.61	4.04
HHs without MSEs	2.31	0.65	2.14	0.61	3.86
HHs with MSEs	2.75	0.70	2.40	0.62	4.36
<b>Overall</b>					
	2.12	0.69	1.67	0.53	3.65
HHs without MSEs	2.00	0.68	1.57	0.52	3.57
HHs with MSEs	2.33	0.71	1.85	0.56	3.80

<sup>a</sup> Mean provincial farm size per household across this two provinces not statistically different ( $p=0.01$ ).

<sup>b</sup> T-test shows mean farm size per household labor adult equivalent significantly different ( $p=0.05$ ). All other mean size per household adult equivalent across groups within provinces and across provinces are significantly different ( $p=0.01$ ).

<sup>c</sup> T-test do not reject the hypothesis of equal means between area cultivated per household labor adult equivalent between these two provinces.

<sup>d</sup> No statistically difference between smallholder households with and without MSEs in Nampula province ( $p=0.01$ ).

<sup>e</sup> T-test do not reject the hypothesis of equal means between LAE between these two provinces.

Source: 1996 MAP Smallholder Survey and MAP/MSU MSE Survey data

**Table 3.4 MSE Activity by Total and Cultivated Area Terciles, by Province**

Provinces and HH Land Terciles	Total Area per LAE		Area Cultivated per LAE	
	Mean Area	Households with MSEs	Mean Area	Households with MSEs
	(Ha)	— % of HHs —	(Ha)	— % of HHs —
<b>All Study Zone</b>	0.69	36	0.53	36
Tercile 1	0.19	31	0.16	32
Tercile 2	0.48	39	0.40	38
Tercile 3	1.34	38	1.01	38
<b>Nampula</b>	0.85	36	0.60	36
Tercile 1	0.25	33	0.20	33
Tercile 2	0.62	39	0.46	40
Tercile 3	1.68	36	1.15	36
<b>Zambezia</b>	0.56	34	0.44	34
Tercile 1	0.16	28	0.13	32
Tercile 2	0.40	36	0.33	33
Tercile 3	1.15	38	0.86	37
<b>Mutarara</b>	0.45	45	0.40	45
Tercile 1	0.13	29	0.13	33
Tercile 2	0.32	46	0.30	38
Tercile 3	0.91	62	0.76	64
<b>Manica</b>	0.65	43	0.58	43
Tercile 1	0.23	34	0.21	34
Tercile 2	0.50	46	0.46	46
Tercile 3	1.21	47	1.05	48
<b>Sofala</b>	0.67	36	0.61	36
Tercile 1	0.25	32	0.23	35
Tercile 2	0.52	34	0.48	32
Tercile 3	1.24	42	1.13	40

Considerations on statistical significance of farm size and area cultivated per labor adult equivalent presented in Table 3.3.

Source: 1996 MAP Smallholder Survey and MAP/MSU Survey data

As already pointed out, diversification into MSEs is not only a function of relative land and labor availability. Therefore, this result is good enough to conclude that land constraints are not push factors towards smallholder household diversification into MSEs. However, diversification towards labor market participation is probably the alternative found for land poor households. The section that follows covers in more detail other forms of income diversification, along with diversification into MSEs, that help address this and other issues.

### **3.2 Smallholder Household Sector Income Earning Strategies**

This section analyzes smallholder household income earning strategies, i.e., the household activity portfolio, by computing the proportion of smallholder households in the study zone that choose different activities to maximize their overall income, namely, agricultural and livestock production and sales, farm and non-farm labor market participation and self-employment in micro and small enterprises. It also presents some basic descriptive statistics on the important indicators about these activities. An analysis of the contribution of each of these income sources to total household net income is presented in detail in section 3.3.

#### **3.2.1 Agricultural and Livestock Production and Sales**

Given household resource endowment and the current stage of rural development in Mozambique, virtually all rural smallholder households have some kind of agricultural or livestock activity as part of their food security and cash income earning strategy. In

general, smallholder households grow food for their own consumption but also some for sale as well. Agricultural cash income is generally obtained with the sale of cash crops and livestock, but increasingly, as food markets evolve, in an increasingly monetized and integrated rural-urban economy connecting entire regions, typical food crops are also grown for sale.

Table 3.5 shows the percentage of households growing and selling food crops<sup>9</sup> during the 1995/6 agricultural season, among all smallholder households, and among those with and those without MSEs.

As previously noted, the vast majority of smallholder households grow food crops mostly for self-consumption. There are considerably fewer households selling food crops, between 33 (Manica) and 57 (Nampula) percent overall. These results are, however, much higher than those found during the civil war years<sup>10</sup> and are likely to increase as the marketing system evolves with the improvement of the marketing infrastructure and increasing rural-urban marketing linkages, as well as rural income growth.

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<sup>9</sup> In this analysis, food crops include maize, rice, cassava, beans, sorghum, sweet potato, millet and peanuts.

<sup>10</sup> See MAP/MSU 1992, for figures for some districts in Nampula Province, and Agricultural Surveys from previous years (Trabalho de Inquerito Agrícola (TIA) - 93 and 94) for provincial figures.

**Table 3.5 Percentage of Smallholder Households Growing and Selling Food Crops, by Province and MSE Ownership Status**

<b>Households Growing and Marketing Food Crops</b>	<b>Household MSE Ownership Status</b>		
	<b>All Households</b>	<b>Households with MSEs</b>	<b>Households without MSEs</b>
<b>—— percent of Households ——</b>			
<b>Households Growing</b>	96.7	96.1	97.0
Nampula	99.1	98.6	99.3
Zambezia	94.7	94.5	94.8
Mutarara (Tete)	96.9	96.5	97.1
Manica	97.5	95.7	98.9
Sofala	95.6	94.2	96.5
<b>Households Marketing</b>	44.2	47.1	42.6
Nampula	56.7	60.2	54.8
Zambezia	38.0	37.9	38.0
Mutarara (Tete)	34.4	41.4	28.6
Manica	32.6	44.7	23.4
Sofala	35.0	39.5	32.4

Source: 1996 MAP Smallholder Survey and 1996 MAP/MSU MSE Survey data

Except for Zambezia Province, smallholder households with MSEs are more likely to market their food crop production. This may be a result of the need to self-finance MSE activities with cash from these sales and the confidence in covering their consequent food deficit through food purchases using income generated over time with the MSE activity. Smallholder households without MSEs, given the uncertain cash flow, may be more likely to keep food stocks fearing food shortages and the consequent inability to finance food purchases in the hungry season, due to the absence of MSE cash income in their portfolio.

The share of smallholder households engaging in the production of vegetables is much lower than the one found for field crops, varying from 12 percent in Nampula to 35 percent in Manica. The marketing of such crops is also quite uncommon, except for Manica province where a fifth of the smallholder households grow and market their production. Most of those are located in central Manica, close to the Beira corridor so that access to markets is not very constrained. Most of Mozambique's urban markets are supplied with vegetables grown in peri-urban green zones. Therefore, given the transport costs and the fact that vegetables are highly perishable goods, in the absence of safe supply contracts, it is risky for rural smallholder households to engage in such trade and hard to compete in those markets.

About half of the smallholder households in the study zone grow some kind of fruits. This varies from 33 percent in Mutarara to 53 percent in Nampula. The proportion of smallholder households marketing their fruit production, however, is very low overall (15%). It is more common in Manica and Zambezia, where approximately 20% have some sales of fruits. This results are consistent with a fruit survey undertaken in 1971 that shows that central and southwestern Zambezia and Central Manica are the areas with the highest fruit tree densities in the region, and therefore more likely to generate surpluses for the market (Atlas Geografico, 1986).

Smallholder household animal production includes mostly small animals like chickens, ducks, and goats. The proportion of smallholder households growing some type of

animals varies from 75% in Zambezia to 87% in Sofala. Cattle are not very common due to the predominance of tse-tse fly disease that makes the environment unsuitable for it. Most of those small animals are, however, for smallholder household consumption. The share of households marketing their animal production is as low as 12% in Zambezia to as high as 30% in Sofala, where it is more common among smallholder households that do not diversify into MSEs. Among smallholder households with MSEs Manica has the highest incidence (35%) of animal production marketed.

While virtually all rural households grow food crops as their food security safety first strategy, yet cash income is needed to face food shortages in the hungry season, through food purchases, and other household needs of non-agricultural goods and services. These needs are mostly assured by cash income from cash cropping<sup>11</sup> and off-farm sources.

Table 3.6 presents the proportion of smallholder households involved in cash cropping in the surveyed provinces by smallholder household MSE ownership status. Nampula Province where the major crops grown include cotton, cashew and to some extent coconuts in coastal areas has a high incidence of smallholder households growing and marketing these cash crops (66% overall). This province, along with Zambezia (43% overall), where the cropping of coconuts is done in the coastal areas, cashew in the central plains and tea in northwestern areas are the major source of cash crop income, have more

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<sup>11</sup> The cash crops included in this computation are: cashew nuts, cotton, coconuts, sunflower, sugar cane, “Mafurra”, coffee, tobacco, sisal, soy, tea, ginger, and “copra”.

smallholder households marketing cash crops than food crops (Table 3.5). In all other provinces, food market participation is more important than cash cropping. These results are consistent with the different natural resource endowments and the existing marketing and processing support infrastructure across these locations. For example, in most of northeast Nampula, joint venture companies (JVCs) supply inputs to facilitate smallholder household cotton production and retain a monopsony on buying/processing cotton in vast areas.<sup>12</sup> Moreover, local processing of cashew nuts and exporting opportunities are common in Nampula, while in Zambezia, there is a tea processing facility that represents a demand for smallholder tea production.

**Table 3.6 Smallholder Household Cash Cropping, by Province and MSE Ownership Status**

Households Growing and Marketing Cash Crops	Household MSE Ownership Status		
	All Households	Households with MSEs	Households without MSEs
	—— percent of households ——		
<b>Households Growing/ Marketing</b>	47.8	51.9	45.6
Nampula	66.0	71.1	63.2
Zambezia	42.8	49.4	39.4
Mutarara (Tete)	7.8	10.3	5.7
Manica	17.6	24.6	12.5
Sofala	32.3	30.7	33.3

Source: 1996 MAP Smallholder Survey and 1996 MAP/MSU MSE Survey data

<sup>12</sup> See Strasberg (1997) for detail on the JVC schemes.



Comparisons between smallholder households that own and those that do not own MSEs suggest that MSE activity and cash cropping appears to be complements in smallholder household income earning strategies. Indeed, at least in provinces where cash crops are quite common, among those smallholder households that own MSEs there is a higher proportion also earning income through cash cropping, when compared to those without MSEs. Sub-section 3.2.2.1 addresses some additional analysis on this issue, in the context of smallholder household diversification into MSEs.

A very general pattern observed here is that smallholder households that choose to diversify into MSEs appear to be more connected to farm product markets, reflecting their propensity for searching for cash income in all different ways. These results, while indicating the existence of this association and complementarity between MSE activity and farm products market participation, cannot be conclusive about the causality of the phenomenon.

### **3.2.2 Smallholder Household Income Diversification**

An important part of income earning strategies by smallholder households in developing countries is through what is conventionally referred as *income diversification* - the allocation of smallholder household labor to farm and non-farm activities other than the cropping of their own fields or livestock production. It includes the allocation of labor to the following activities: i) employment in the rural non-farm labor market; ii) self-

employment in rural micro and small enterprises; iii) employment in the farm labor market; and iv) employment in the migration labor market (Reardon, 1997).

Essentially, smallholder households diversify as a result of the previously referred *push* and *pull* factors depending on the specific circumstances they face, mostly related to risk in the farm income sources referred to in the previous section and credit and insurance market failure that characterizes most developing countries worldwide. As summarized by Reardon (1997), income diversification is undertaken for the following reasons: i) to reduce income risk by diversifying *ex ante*; ii) to maintain food security (income and consumption) in the face of low farm productivity and income shocks such as drought, by diversifying *ex post*, in the face of insurance market failure; and iii) to earn cash income to finance farm investments, in the face of credit market failure.

The analysis in this thesis is solely on income diversification into employment in the farm labor market, non-farm labor market, and self-employment into micro and small enterprises. Because of data limitations, the migration labor market is not closely analyzed. Nevertheless, historically, the migration labor market has been more important in the southern part of the country than in central and northern provinces because of the high concentration of the nation's industrial and services infrastructure in the South and the proximity to the South African mining industry.

The emphasis at this point is on the incidence of several income diversification options among smallholder households and the level of activity in terms of days of operation a year. Besides results across all households, emphasis is given to diversification combinations and diversification and agricultural market participation, to gain insights about the extent to which diversification is driven by other cash income options and vice-versa.

### **3.2.2.1 Farm and Non-farm Labor Market Participation**

Smallholder household labor supply is likely to be influenced both by smallholder household characteristics, such as household size and capital and overall asset endowments that affect their ability to diversify into self-employment, and regional cropping characteristics. For instance, poor households with excess labor, lack of land and skills are more likely to supply labor both to other smallholder households farms and to micro and small enterprises. Moreover, the farm labor supply is likely to be higher in cash crop labor intensive zones, especially cotton growing areas, where demand and wage rates are higher than in areas where subsistence crops are predominant. Non-farm labor supply in smallholder households micro enterprises and other private and public non-farm sectors is mostly affected by supply factors such as smallholder household skills, and the overall demand conditions in the non-farm labor market. Table 3.7 shows the share of smallholder households supplying labor to the farm and non-farm labor markets, and the average number of days worked per year by household members.

**Table 3.7 Smallholder Household Farm and Non-farm Labor Market Participation, by Province and MSE Ownership Status**

Province and MSE Ownership Status	Smallholder Household Labor Supply			
	Farm Labor	Non-farm Labor	Farm and/or Non-farm Labor	Labor Supplied per Year <sup>1</sup>
	----- percent of households -----			(days) <sup>a</sup>
<b>Overall Study Zone</b>	15	5	20	62
HHs without MSEs	15	5	20	75
HHs with MSEs	17	5	21	41
<b>Nampula</b>	23	7	29	50
HHs without MSEs	22	7	28	62
HHs with MSEs	26	6	31	31
<b>Zambezia</b>	10	3	13	37
HHs without MSEs	9	3	12	43
HHs with MSEs	13	3	15	27
<b>Mutarara (Tete)</b>	14	2	16	14
HHs without MSEs	20	3	23	16
HHs with MSEs	7	0	7	6
<b>Manica</b>	12	13	24	100
HHs without MSEs	13	14	25	122
HHs with MSEs	11	13	22	67
<b>Sofala</b>	11	6	16	160
HHs without MSEs	13	6	19	166
HHs with MSEs	6	5	10	137

Source: 1996 MAP Smallholder Survey and 1996 MAP/MSU MSE Survey data

<sup>1</sup> The mean is based only on those households that supplied labor.

<sup>a</sup> Tests of statistical significance between mean number of days worked per year indicate that across provinces and across household MSE status within each province, they are all differences ( $p=0.01$ ).

Results indicate three important aspects about smallholder household labor supply.

Firstly, non-farm labor supply is less common than farm labor supply among smallholder households, 5 and 15 percent, respectively. Assuming the scarcity of non-farm jobs other than micro and small enterprises, and taking into account the MSE size profile this result is not surprising.<sup>13</sup>

Secondly, farm labor supply is much more common among Nampula smallholder households than in other provinces. The predominance of labor intensive cash cropping, particularly cotton with a pretty stable output market through JVC monopsony schemes is likely to be the key factor. The nature of cash cropping in Zambezia, predominantly coconut and cashew production, does not require as much labor as cotton.

Thirdly, it appears that in cash cropping areas (Nampula and Zambezia), when compared to other areas, farm labor supply by members from smallholder households with MSEs is more common than from smallholder households without MSEs.

Nonetheless, results suggest that, in all provinces, among, smallholder households supplying labor to the farm and non-farm labor markets, those without MSEs have a higher average number of days supplied per year.<sup>14</sup> This is an expected result, since: (a)

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<sup>13</sup> Exception goes to Manica province that appear to have a more developed rural environment and where MSEs tend to be larger in size (see Section 4.1.3).

<sup>14</sup> On the other hand, Manica and Sofala smallholders appear to have a significantly higher  
(continued...)

smallholder households without MSEs have more time available to allocate to the labor market and are more likely to supply their labor even when wage rates are very low, while smallholder households with MSEs may have significantly higher opportunity costs of time and income.

The virtual absence of landless smallholder households in the region implies a low supply of labor that is associated with the predominance of subsistence cropping. Also, the relatively low level of monetization prevents households from choosing the sale of labor as a primary source of cash income. As the rural economies evolve and become more monetized, labor sales are likely to become more attractive. However, at the current rates of population growth the region is likely to suffer increasing land constraints which will tend to increase the number of landless poor, and therefore, the labor supply, driving down the farm labor wages, *ceteris paribus* (Reardon, 1997), with ambiguous effects on the aggregate level of income from labor sales.

### **3.2.2.2 Diversification into Micro and Small Enterprises**

Smallholder household diversification into micro and small enterprises is generally emphasized in the micro and small enterprise literature. It shows that in most of Africa, the majority of firms start as one-person firms, i.e., strictly self-employment and that only a minority of micro enterprise “graduate” to employing more than five workers, generally

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<sup>14</sup>(...continued)

average number of days supplied per year, which suggests the presence of a limited but less seasonal labor demand.

unpaid family members.<sup>15</sup> Unlike selling labor, diversification into micro and small enterprise requires, not only skills but also start up capital and, in some cases, physical assets. Locational characteristics both in the supply and demand side also play an important role in determining the overall level of activity and profitability in this sector.

The incidence of micro enterprise activity in the region is quite widespread. Table 3.8 presents the share of smallholder households that diversify into micro and small enterprises in the Provinces covered by the survey, among all smallholder households, and among those involved in cash cropping and those with no cash cropping.

**Table 3.8 Smallholder Household Diversification into MSEs, by Province and Cash Cropping Status**

Provinces	Household with MSEs by Cash Cropping Status		
	All Households	Households with Cash Crops	Households without Cash Crops
	----- percent of Households with MSEs -----		
<b>All Study Area</b>	36	38	33
Nampula	35	38	30
Zambezia	34	39	30
Mutarara (Tete)	45	60	44
Manica	43	59	40
Sofala	37	34	38

Source: 1996 MAP Smallholder Survey and 1996 MAP/MSU MSE Survey data

<sup>15</sup> Details on the rural smallholder household micro and small enterprise sector characteristics, structure and profitability patterns are presented in Chapter Four.

While there is variation across provinces, but most importantly across districts in the most populated provinces (see Table 2.1 in Chapter Two), on average 36 percent of the smallholder households in these areas diversify into micro and small enterprise activity.<sup>16</sup> Most of the analysis in this Chapter has indicated that household characteristics and their income earning strategies vary across households with and without MSEs. Moreover, larger households and households with larger land holdings are more likely to diversify into MSEs. Not yet conclusive however, is the relationship between cash cropping and diversification into MSEs. To complement the analysis introduced in Section 3.2.1. and address the question of the complementarity or substitutability of cash cropping and micro enterprise activity, Table 3.8 shows diversification rates across those with and those without cash crops.

The results appear to support the *liquidity constraint literature* (Collier and Lal, 1980), that sees cash cropping, not as a substitute for micro enterprise activity, but instead, as a source of liquidity for investment in MSEs in a missing credit market environment.

Indeed, smallholder households with cash crops are somewhat more likely to engage in micro and small enterprise activity in all study areas, except in Sofala province, where smallholder households without cash crops appear to be more likely to engage in MSEs.

In general, credit market failure characterizes most of rural Mozambique. Therefore, this

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<sup>16</sup> The 45% incidence found for Mutarara, looks very high when compared to provincial averages. An analysis by district indicates that across the regions the incidence get to as high as 48% in Nicoadala (Zambezia), 59% in Mogovolas (Nampula), 60% in Sussundenga (Manica) and 43% in Buzi (Sofala).



result suggests that strengthening cash cropping while taking advantage of the existing potential farm/non-farm linkages may help promote the rural smallholder household MSE sector and overall rural income growth.

The relative importance of these different income sources in overall smallholder household income is presented in Section 3.3. A more careful statistical and econometric analysis on these associations and the magnitude of income from different sources is presented in Chapter Five.

### **3.3 Overview of Smallholder Household Income Patterns**

As defined in Section 2.2.1, rural household income is the net value of income earned by resident members in the period September 1995 through August 1996, i.e., the 1995/96 agricultural season. It includes value of retained agricultural and livestock production, sales of agricultural and livestock production, off-household farm and non-farm labor sales plus the net micro and small enterprise income, less the cost of purchased agricultural/livestock inputs and paid labor.

This section analyzes for households in the survey areas total and per capita household net income across all households and comparisons between those that choose to diversify into MSE and those that do not (sub-section 3.3.1). Then it analyzes smallholder income diversification into micro and small enterprises, given agricultural incomes (sub-section

3.3.2) and income shares (sub-section 3.3.3) by smallholder total net income per capita terciles.

### **3.3.1 Smallholder Household Income Patterns**

On average, households in the study region earn \$201 per year.<sup>17</sup> On a per capita basis, households earn around \$44 per year. As expected, there is a wide variation across provinces. To better explore the extent to which that variation and overall total household income and per capita incomes levels are related to household diversification into micro and small enterprises, Tables 3.9 and 3.10 present results on these two dimension across all households, those that diversify into MSEs and those that do not (figures in columns 1, 2, and 3). The last column in each Table indicates the income ratios between these two groups of households.

Results in Table 3.9 indicate that households in Manica earn the highest incomes in the region, \$291 per year on average, followed by Sofala (\$245) and Nampula (\$205), with the lowest income levels in Zambezia and Mutarara (\$169).

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<sup>17</sup> This study uses the average exchange rate for the reference period: 1 USD = 11,366 Meticaís.

**Table 3.9 Total Smallholder Household Net Income, by MSE Ownership Status and by Province**

Provinces	Household Income by MSE Ownership Status			Total Income Ratio (HH with MSEs/HH without MSEs)
	All Households	Households with MSEs	Households without MSEs	
———— Mean income in \$ per year ————				
All Study Area	201	298	147	2.0
Nampula	205	264	173	1.5
Zambezia	169	268	118	2.3
Mutarara (Tete)	169	222	125	1.8
Manica	291	502	139	3.6
Sofala	245	366	176	2.1

Source: 1996 MAP Smallholder Survey and 1996 MAP/MSU MSE Survey data

On average, households with MSEs earn twice as much as households solely engaged in agriculture/livestock. It appears that the exceptionally high income level found in Manica province is due to the presence of profitable MSEs.<sup>18</sup> Households with MSEs in that Province earn, on average, as much as 3.6 times more than those who do not have MSEs. Note that Nampula province has a relatively low total income ratio (1.5) which suggests that income from MSEs, although raising overall rural incomes, has a relatively lower marginal contribution than cash cropping income, another important income source in this area, when compared to other provinces.<sup>19</sup>

<sup>18</sup> Comparative analysis on MSE profitability is presented in Chapter Four.

<sup>19</sup> See section 3.3.3 for a detailed discussion on the relative importance of income sources.

On a per capita basis results are slightly different because household sizes vary across provinces, with the Central provinces of Manica, Sofala and Tete the ones with larger household sizes - see Table 3.1.

**Table 3.10 Total Smallholder Household Net Income per Capita, by MSE Ownership Status and by Province**

Provinces	Household MSE Ownership Status			Income per capita Ratio (HH with MSEs/HH without MSEs)
	All Households	Households with MSEs	Households without MSEs	
	—— Mean \$ per year ——			
<b>All Study Area</b>	44	60	35	1.7
Nampula	50	61	43	1.4
Zambezia	38	55	29	1.9
Mutarara (Tete)	27	31	24	1.3
Manica	50	78	29	2.7
Sofala	47	66	36	1.8

Source: 1996 MAP Smallholder Survey and 1996 MAP/MSU MSE Survey data

Table 3.10 indicates that annual per capita incomes are higher in Nampula and Manica (\$50) followed by Sofala (\$47), Zambezia (\$38) and finally Mutarara (\$27). Note that income per capita ratios vary less across provinces than total income ratios. Nevertheless, results of income per capita ratios appear to support the argument that incomes can potentially be increased by promoting a micro and small enterprise sector.

The contribution of the MSE sector to rural income growth is much clear in the results found for Manica, Sofala and Zambezia. As mentioned previously, Nampula incomes are not significantly different across households that diversify into MSEs and those that do not. The implication is that, in this area, there is also a high potential to generated income growth through the enhancement of MSEs. The increasingly cash economy due the presence of cash crops generates a demand for non-farm goods that can be potentially supplied by local household MSEs. Making such businesses profitable, however, requires investment and allocation of time that many farm households in cash cropping zones find difficult to find.

### **3.3.2 Agricultural Income Distribution and Diversification into MSEs**

To better understand some trends drawn from the previous analysis and set the stage for the income shares analysis, in Sub-section 3.3.3, Table 3.11, presents results of smallholder household diversification into MSEs propensities, mean household income and income shares from that source among those households that diversify into MSEs and all households. Results suggest that overall, households with the lowest agricultural income are less likely to diversify into MSEs than ones in the highest tercile in all provinces, except Sofala, where the poorest have a higher rate of diversification.

These results suggest that despite the need agricultural poor households have to diversify into MSEs and compensate for their poor agricultural performance, constraints in terms of human, physical and financial capital, and other entry barriers may be preventing them of

**Table 3.11 Smallholder Agricultural Income Distribution and MSE Propensity, by Province**

Survey Areas and Agricultural Income per capita Terciles	Proportion of Households with MSEs	MSE Annual Profits	
		Total	Per Unpaid Worker
	— % of HHs —	—— \$ per year ——	
<b>All Study Zone</b>	36	94	74
Tercile 1	29	91	75
Tercile 2	40	101	78
Tercile 3	37	86	67
<b>Nampula</b>	35	64	53
Tercile 1	21	95	63
Tercile 2	43	78	66
Tercile 3	36	45	38
<b>Zambezia</b>	34	105	82
Tercile 1	29	84	73
Tercile 2	40	135	96
Tercile 3	34	93	72
<b>Mutarara</b>	45	44	36
Tercile 1	39	46	43
Tercile 2	57	46	36
Tercile 3	27	19	16
<b>Manica</b>	42	145	117
Tercile 1	26	96	66
Tercile 2	42	132	100
Tercile 3	60	175	151
<b>Sofala</b>	36	122	94
Tercile 1	42	115	98
Tercile 2	27	90	84
Tercile 3	40	156	96

Source: 1996 MAP Smallholder Survey and 1996 MAP/MSU MSE Survey data

doing so. Middle tercile households have on average a higher rate of diversification overall. An analysis by Province indicates that this is the case for Nampula, Zambezia and Mutarara. In Manica Province middle tercile households diversify more than the lowest tercile group but significantly less than the highest tercile households, while in Sofala, they are the less diversified group.

In terms of the income generated from MSEs by each of these groups, middle tercile households in Zambezia appear to have more profitable MSEs, which help them compensate for their relatively poor agricultural income. In Nampula, results suggest that households with poor agricultural incomes, essentially those without cash crops or with little income from cash crops, are taking advantage of the emerging demand to engage in profitable MSEs. Indeed, results suggest that annual incomes from MSEs in that Province increase as agricultural incomes fall, which indicates that households are being pushed by their relative comparative disadvantage in agricultural production, but are also taking advantage of the emerging demand, by diversifying their income as a way to maximize total income. Profits per worker, however, are higher for middle agricultural income households. In Mutarara, MSE profits per unpaid worker fall as agricultural income per capita rises. In total terms, profits per unpaid worker obtained by the first and second terciles are similar and significantly higher than the highest tercile.

In Sofala, unlike in Nampula where some substitutability is shown, middle agricultural income tercile households that have the lowest propensity to diversify have also less

profitable MSEs. MSE profits in the lowest tercile households in that Province are relatively higher than in the middle tercile but lower than in the highest tercile that has the highest MSE profit level. In Manica, MSE profits (both total and per unpaid worker) obtained by the households increase with their agricultural income per capita.

More insights on this issue are presented in Chapter Four considering individual MSE sectors and activities that households get involved in, and their incomes, given their agricultural incomes and other measures of wealth.

### **3.3.3 Income Distribution and Income Sources**

The analysis in previous sections makes clear that MSE income has an effect on overall household income levels and its promotion can be a potential mechanism to help boost rural incomes and smooth income distribution. This Sub-section seeks to answer the question: How do these earnings fit into the overall income of households in the study zone? In other words, how diversified are smallholder incomes in central and northern Mozambique?

Table 3.12 presents household income sources and their shares in total net household income by Province. Table 3.13 presents income sources and shares by household net income per capita terciles.



**Table 3.12 Household Income Shares, by Income Source and by Province**

Income Source	Province					Total
	Nampula	Zambezia	Mutarara	Manica	Sofala	
----- % of Household Income -----						
<b>On-Farm</b>						
Staple Food Retained	58	48	65	54	49	53
Fruits/Veg. Retained	10	22	14	14	17	16
Livestock Retained/Sold	3	3	7	6	9	4
Staple Food Sales	6	5	2	3	3	5
Fruits/Vegetables Sales	1	2	0	5	1	2
Cash Crop Sales	14	6	1	1	4	8
<b>Total On-Farm</b>	<b>92</b>	<b>86</b>	<b>89</b>	<b>83</b>	<b>83</b>	<b>88</b>
<b>Off-Farm</b>						
Net Labor Sales	1	2	0	3	2	2
Net MSE Income	7	12	11	14	15	10
<b>Total Off-Farm</b>	<b>8</b>	<b>14</b>	<b>11</b>	<b>17</b>	<b>17</b>	<b>12</b>
	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
----- Mean in \$ -----						
<b>Total HH Net Income</b>	<b>205</b>	<b>169</b>	<b>169</b>	<b>291</b>	<b>245</b>	<b>201</b>
<b>Total Net Income per capita</b>	<b>50</b>	<b>38</b>	<b>27</b>	<b>50</b>	<b>47</b>	<b>44</b>

Source: 1996 MAP Smallholder Survey and 1996 MAP/MSU MSE Survey data

**Table 3.13 Household Net Income Shares by Income per Capita Tercile, All Region**

Income Source	Net Income per capita Tercile			Region Average
	1	2	3	
----- % of Household Income -----				
On-Farm				
Staple Food Retained	69	51	39	53
Fruits and Vegetables Retained	7	20	21	16
Livestock Retained/Sold	5	4	4	4
Staple Food Sales	5	6	4	5
Fruits and Vegetables Sales	1	2	2	2
Cash Crop Sales	6	9	10	8
Total On-Farm	93	92	80	88
Off-Farm				
Net Labor Sales	3	0	1	2
Net Microenterprise Income	4	8	19	10
Total Off-Farm	7	8	20	12
	100	100	100	100
----- Mean in \$ -----				
Total Household Net Income	67	161	376	201
Total Net Income per capita	12	30	91	44

Source: 1996 MAP Smallholder Survey and 1996 MAP/MSU MSE Survey data

Tables 3.14 through 3.18 show the same information for each Province. On-farm income is defined as that coming from crop and animal production (retained and sold). Off-farm income is that generated in rural household micro and small enterprises and the net household labor sales income.

From the analysis of comparative provincial averages and per capita income terciles, three results stand out. First, large part of the household income is generated on-farm, ranging from 83% in Manica and Sofala to 92% in Nampula.<sup>20</sup> Most of this on-farm income, above 60% in every Province, is retained food and livestock production. The analysis by per capita income terciles, by province indicates that as income grows, the share of on-farm income drops, except in Zambezia province where the middle income per capita tercile has a relatively higher share of on-farm income than the poorest and the richest households. The same trend is evident for the on-farm component of retained food and animal production.

Second, the share of crop sales is surprisingly low. Despite the fact that, on average, almost 45% of the smallholder households sell part of their staple food, its share in total income is relatively low in all Provinces, ranging from 2% in Mutarara to 6% in Nampula. The share of cash crop sales is also low in all areas except in Nampula where it constitutes

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<sup>20</sup> These figures are relatively high when compared to 85% found by Tschirley and Weber (1994) for Rural Nampula, ranges of 57%-66% by Reardon et al. in three zones of Burkina Faso, 29%-55% by Staatz et al. in two zones of Mali, 62% by Kennedy and Cogill in southwestern Kenya, and 77% by Von Braun in The Gambia.

about 14% of the total household income, and is the second most important total income source and the most important cash income source. This result is not surprising, given previous analysis in this chapter which gives some indications of the involvement of Nampula households in cash cropping, especially in Districts where the JVCs operate and assure input supply and the purchase of cash crops such as cotton. In this case, the per capita tercile analysis indicates that for all provinces, the share of income from food sales and cash crop sales do not vary much, although there is a positive but not significant relationship between total income and cash crop income in some provinces.

Third, off-farm income is dominated by micro and small enterprise incomes, whose share is systematically higher than the share of net labor sales. The share of the net household labor sales is extremely low in all provinces. Provincial averages range from 0% in Mutarara to 3% in Manica Province. It appears that no pattern emerges when analysing per capita income terciles. This result is not surprising. Indeed, most of the farming households in Mozambique rely solely on family labor, and farm labor markets are still of negligible importance in many areas. Therefore, the direct relationship between income and off-farm income is essentially influenced by the micro and small enterprise income.

The average provincial share of micro and small enterprise income in household income varies from as low as 7% in Nampula to as high as 14% in Manica and 15% in Sofala.<sup>21</sup>

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<sup>21</sup> Note that this analysis include all households. MSE income shares in total income among households that diversify into MSEs are: Nampula (18%), Zambezia (34%),  
(continued...)

An analysis by per capita income terciles indicate a monotonically increasing relationship, i.e, the higher the average net household income per capita the higher the share of MSE incomes in total income. The average MSE shares increase geometrically from the poorest to the richest households, which means that while the difference between the first and the second terciles is not very big, the third tercile presents, in all Provinces, significantly higher average shares of MSE income. For example, Nampula (4%-7%-12%), Zambezia (4%-9%-22%), Mutarara (5%-10%-19%), Manica (4%-11%-27%) and Sofala (5%-11%-29%).<sup>22</sup>

Table 3.19, presents summary results, across income per capita terciles in the study region regarding household propensity to diversify into MSEs among all households, and income shares analysis only among those households that diversify into MSEs. Results suggest that, overall, smallholder household propensity to diversify into MSEs increases with income, except for the case of Mutarara where the middle per capita income tercile is most diversified tercile. In all cases the poorest diversify less than the richest.

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<sup>21</sup>(...continued)

Mutarara (24%), Manica (33%) and Sofala (41%). For results across terciles in the study region, among households that diversify, see Table 3.18.

<sup>22</sup> This results are consistent with those found by Reardon, Delgado and Matlon (1992) in Burkina Faso.

**Table 3.14 Household Net Income Shares, by Source and by Income per Capita Tercile, Nampula**

Income Source	Net Income per capita Tercile			Province Average
	1	2	3	
----- % of Household Income -----				
On-Farm				
Staple Food Retained	71	55	46	58
Fruits and Vegetables Retained	4	12	14	10
Livestock Retained/Sold	3	3	4	3
Staple Food Sales	5	7	7	6
Fruits and Vegetables Sales	1	1	2	1
Cash Crop Sales	12	15	15	14
Total On-Farm	96	93	88	92
Off-Farm				
Net Labor Sales	0	1	2	1
Net Microenterprise Income	4	6	10	7
Total Off-Farm	4	7	12	8
	100	100	100	100
----- Mean in \$ -----				
Total Household Net Income	82	178	357	205
Total Net Income per capita	16	36	98	50

Source: 1996 MAP Smallholder Survey and 1996 MAP/MSU MSE Survey data

**Table 3.15 Household Net Income Shares, by Source and by Income per Capita Tercile, Zambezia**

Income Source	Net Income per capita Tercile			Province Average
	1	2	3	
—— % of Household Income ——				
On-Farm				
Staple Food Retained	64	47	35	48
Fruits and Vegetables Retained	10	25	29	22
Livestock Retained/Sold	4	4	2	3
Staple Food Sales	6	6	3	5
Fruits and Vegetables Sales	1	3	2	2
Cash Crop Sales	4	7	8	6
Total On-Farm	89	92	79	86
Off-Farm				
Net Labor Sales	7	-1	-1	2
Net Microenterprise Income	4	9	22	12
Total Off-Farm	11	8	21	14
	100	100	100	100
—— Mean in \$ ——				
Total Household Net Income	52	133	320	169
Total Net Income per capita	9	24	80	38

Source: 1996 MAP Smallholder Survey and 1996 MAP/MSU MSE Survey data

**Table 3.16 Household Net Income Shares, by Source and by Income per Capita Tercile, Mutarara**

Income Source	Net Income per capita Tercile			Province Average
	1	2	3	
—— % of Net Household Income ——				
<b>On-Farm</b>				
Staple Food Retained	82	59	53	65
Fruits and Vegetables Retained	8	18	16	14
Livestock Retained/Sold	5	8	9	7
Staple Food Sales	1	4	2	2
Fruits and Vegetables Sales	0	1	0	0
Cash Crop Sales	0	0	1	1
<b>Total On-Farm</b>	<b>96</b>	<b>90</b>	<b>81</b>	<b>89</b>
<b>Off-Farm</b>				
Net Labor Sales	2	-1	-1	0
Net Microenterprise Income	2	11	20	11
<b>Total Off-Farm</b>	<b>5</b>	<b>10</b>	<b>19</b>	<b>11</b>
	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
----- Mean in \$ -----				
<b>Total Household Net Income</b>	<b>52</b>	<b>152</b>	<b>304</b>	<b>169</b>
<b>Total Net Income per capita</b>	<b>10</b>	<b>23</b>	<b>47</b>	<b>27</b>
Source: 1996 MAP Smallholder Survey and 1996 MAP/MSU MSE Survey data				



**Table 3.17 Household Net Income Shares, by Source and by Income per Capita Tercile, Manica**

Income Source	Net Income per Capita Tercile			Province Average
	1	2	3	
----- % of Net Household Income -----				
<b>On-Farm</b>				
Staple Food Retained	75	50	39	54
Fruits and Vegetables Retained	6	22	15	14
Livestock Retained/Sold	7	6	7	6
Staple Food Sales	2	3	4	3
Fruits and Vegetables Sales	2	4	6	5
Cash Crop Sales	1	1	2	1
<b>Total On-Farm</b>	<b>93</b>	<b>86</b>	<b>72</b>	<b>83</b>
<b>Off-Farm</b>				
Net Labor Sales	3	3	1	3
Net Microenterprise Income	4	11	27	14
<b>Total Off-Farm</b>	<b>7</b>	<b>14</b>	<b>28</b>	<b>17</b>
	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
----- Mean in \$ -----				
<b>Total Household Net Income</b>	<b>63</b>	<b>180</b>	<b>626</b>	<b>291</b>
<b>Total Net Income per capita</b>	<b>10</b>	<b>29</b>	<b>110</b>	<b>50</b>

Source: 1996 MAP Smallholder Survey and 1996 MAP/MSU MSE Survey data

**Table 3.18 Household Net Income Shares, by Source and by Income per Capita Tercile, Sofala**

Income Source	Net Income per Capita Tercile			Province Average
	1	2	3	
— % of Household Income —				
<b>On-Farm</b>				
Staple Food Retained	68	45	35	49
Fruits and Vegetables Retained	9	25	18	17
Livestock Retained/Sold	11	9	6	9
Staple Food Sales	3	4	3	3
Fruits and Vegetables Sales	0	0	1	1
Cash Crop Sales	3	5	5	4
<b>Total On-Farm</b>	<b>94</b>	<b>88</b>	<b>68</b>	<b>83</b>
<b>Off-Farm</b>				
Net Labor Sales	1	1	3	2
Net Microenterprise Income	5	11	29	15
<b>Total Off-Farm</b>	<b>6</b>	<b>12</b>	<b>32</b>	<b>17</b>
	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>
— Mean in \$ —				
<b>Total Household Net Income</b>	<b>73</b>	<b>187</b>	<b>474</b>	<b>245</b>
<b>Total Net Income per capita</b>	<b>12</b>	<b>32</b>	<b>96</b>	<b>47</b>

Source: 1996 MAP Smallholder Survey and 1996 MAP/MSU MSE Survey data

**Table 3.19 Household Propensity to Diversify into MSEs and MSE Income Shares, by Income per Capita Tercile and by Province**

Provinces	Net Income per Capita Tercile			Average
	1	2	3	
<div> <div></div> <div>— % of Households<sup>1</sup> —</div> </div>				
<div> <div>Households with MSEs</div> <div>(From all HHs)</div> </div>				
Nampula	22	42	44	36
Zambezia	16	34	50	34
Mutarara	24	59	52	45
Manica	14	38	71	42
Sofala	21	25	57	36
All Region	20	36	51	36
<div> <div></div> <div>— % of Household Income<sup>2</sup> —</div> </div>				
<div> <div>MSE Income Shares</div> <div>(From HHs with MSEs)</div> </div>				
Nampula	16	14	25	18
Zambezia	26	29	48	34
Mutarara	19	9	41	24
Manica	29	28	42	33
Sofala	32	40	52	41
All Region	23	24	40	29

Source: 1996 MAP Agricultural Sector Survey and 1996 MSE Baseline Survey

<sup>1</sup> From all households.

<sup>2</sup> Only households with MSEs.

The analysis of MSE income shares among those households that diversify into MSEs indicate overall a monotonically increasing relationship between income distribution and MSE income shares, with wide variation across Provinces. A monotonically increasing relationship is found for Zambezia and Sofala. A not accentuated J-shaped relationship (i.e., the MSE income share of the lowest tercile is just slightly higher than the middle tercile, but both significantly lower than the highest tercile) is observed in Nampula and Manica, while a very accentuated J-shaped relationship is found in Mutarara, where the middle tercile (the one that diversifies the most) has MSE income shares significantly different from the poorest and the richest tercile households. In all cases, like in the propensity to diversify, the poorest households have lower MSE income shares than the richest households.

## **Chapter 4**

### **A Closer Look at the Smallholder Household Micro and Small Enterprise Sector**

#### **4.0 Introduction**

The smallholder income generated in micro and small enterprise activity across the different locations in the study area is directly associated with key characteristics of the sector. These include sectoral composition and other enterprise characteristics, magnitude and structure of employment generated, level of activity over time, access to input, output and financial markets, as well as other economic and institutional factors.

This chapter presents a detailed description of the rural smallholder micro and small enterprise sector in central and northern Mozambique. It looks essentially at the structural characteristics and magnitude (Section 4.1), structure and magnitude of employment and level of economic activity over time (Section 4.2) and comparative net profit figures from MSE activity (Section 4.3).

#### **4.1 Overall Structure of the Smallholder Micro and Small Enterprise Sector**

This section presents a detailed description of the structure and characteristics of the smallholder micro and small enterprise sector in the survey areas, with respect to location, sector of activity, size and age of enterprises, and gender of ownership.

**Table 4.1 Rural MSE Sector By Province and Physical Business Location**

Location	Breakdown of MSEs	
	Number of MSEs	Share of All MSEs
	— firms —	— percent of firms —
<b>Provinces</b>		
Nampula	229,654	35.5
Zambezia	234,542	36.2
Mutarara (Tete)	27,454	4.2
Manica	51,586	8.0
Sofala	104,072	16.1
<b>Total</b>	<b>647,308</b>	<b>100.0</b>
<b>Physical Location</b>		
Home	389,826	60.3
Local Market	105,840	16.4
District Shop	4,823	0.7
Along a Roadside	13,273	2.1
At a Mobile Location	60,878	9.4
Home and Local Market	21,321	3.3
Other Place	50,176	7.7

Source: 1996 MAP Smallholder Survey and MAP/MSU MSE Survey data

#### **4.1.1 Provincial Breakdown and Physical Location**

The provincial breakdown of the approximately 650,000 micro and small enterprises estimated to exist in central and northern Mozambique indicates the predominance of MSEs among households in Zambezia (36.2%) and Nampula (35.5%) Provinces, followed by Sofala (16%) Manica (8.0%) and the District of Mutarara (4.2%). This result is somewhat expected, since these are the two most populated provinces of the country. Note that it does not reflect the actual comparative density across provinces. For instance, Table 2.1 in Chapter Two shows that overall, in these areas, where households are generally involved in agricultural and livestock activities, about 36% of the households have at least one member owning and operating a non-farm/non-livestock enterprise. The within provincial likelihood of an MSE is 34% in Zambezia, 35% in Nampula, 37% in Sofala, 43% in Manica and 45% in the District of Mutarara. The average number of micro and small enterprises among those households that have any non-farm enterprise varies from 1.2 (Zambezia and Nampula) to 1.4 in other provinces.

Regarding the physical location of the enterprises, following the common pattern in developing countries worldwide, the majority of businesses operate out of the home (60.3%). Markets are the second most common location (16.4%) followed by itinerant businesses (9.4%). The relatively insignificant incidence of businesses operating from “formal” commercial district shops is a striking result compared to other countries. However, in Mozambique, although it has been historically common in the distant past, the network of formal rural shops has suffered the effects of a civil war; as a result, a new

network dominated by home businesses, informal market places, street vending and itinerant trading has become predominant.

#### **4.1.2 Sectoral Composition of Rural Micro and Small Enterprises**

As indicated in Table 4.2, in the aggregate, rural smallholder households in central and northern Mozambique are predominantly involved in manufacturing activities (56.9%), especially foods and beverages (30.0%) and those involving wood, grass and cane products (14.8%). Trade/hotels/restaurants is the second most important sector (29.5%), especially retailing (26.4%). A smaller proportion of smallholder households engage in services (5.7%), fishing/gathering/extraction (5.4%) and construction activities (2.5%).

The sectoral composition by province (Table 4.3), however, shows some differences. Manufacturing is the most frequent sector among smallholder households in Nampula, Zambezia and Manica, where the industry grouping of foods and beverages is the single most predominant activity overall, followed by retail trade in the trading sector and wood/grass products.<sup>23</sup> In Sofala Province, trading is as important as manufacturing, and in the District of Mutarara, the MSE sector is dominated by the trading sector, with retail trade as the single most important activity overall, followed by production of foods and beverages in the manufacturing sector. Among the less important sectors, fishing/gathering and extraction appear to be relatively more important, as compared to

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<sup>23</sup> Note that in Manica Province, however, manufacturing of wood/grass products is more frequent than retail trade, and in Nampula Province, the frequency of retail trading is just slightly higher.



**Table 4.2 Sectoral Breakdown of Rural Micro and Small Enterprises**

Sector	Industry Grouping	Rural Micro and Small Enterprises	
		Number of MSEs	Share of MSEs
		— firms —	— percent firms —
Fishing, Gathering, Extraction Activities	Firewood Gathering	6,137	0.9
	Fishing	24,285	3.8
	Water Gathering & Mineral Extraction	3,937	0.6
	Sub-total	34,359	5.4
Manufacturing	Food/Beverages/Tobacco	193,902	30.0
	Textile Products	17,666	2.7
	Wood, Grass & Cane	95,340	14.8
	Non-Metals	34,126	5.3
	Metal Products	10,999	1.7
	Other Manufacturing	15,343	2.4
	Sub-total	367,376	56.9
Construction	Construction	16,271	2.5
Trade, Hotels & Restaurants	Wholesale Trade	18,979	2.9
	Retail Trade	170,604	26.4
	Restaurants/Hotels	1,463	0.2
	Sub-total	191,046	29.5
Services	Transport/Storage	2,348	0.4
	Social/Community Services	16,405	2.5
	Other Services	18,262	2.8
	Sub-total	37,015	5.7
Total	Total	646,067	100.0

Source: 1996 MAP/MSU MSE Survey data

services and construction in Zambezia and Mutarara. Services are relatively more important in Nampula, Manica and Sofala, where the economies appear to be relatively more developed and an effective demand for services is emerging. In Zambezia and Mutarara, where markets for services appear to be less developed, natural endowments favor households engaging in fishing and gathering for which demand appear to be more stable.

Table 4.4 presents a more disaggregated level of MSE activities to emphasize the importance of individual activities, among the three most important sub-groups (foods and beverages, wood/grass/cane products and retail trading). In the foods and beverages category, preparation of beer based on agricultural products is far more common than food preparation. For instance, reflecting the relative abundance of agricultural products as inputs, in Nampula Province, manufacturing of sugar cane liquor and cashew beer is predominant. Zambezia smallholder households are predominantly involved in sugar cane liquor production, Manica smallholder households in sorghum beer and Mutarara and Sofala smallholds in other alcoholic drinks production (including maize beer).

**Table 4.3 Sectoral Breakdown of Rural MSEs, by Province**

TABLE NO. 10: BREAKDOWN OF FIRM SALES, BY PROVINCE						
Sector	Industry Grouping	Provinces				
		Nampula	Zambezia	Mutarara	Manica	Sofala
percent of firms						
Fishing, Gathering, Extraction Activities	Firewood Gathering, Water Gathering & Mineral Extraction	0.8	2.1	2.4	1.6	1.9
	Fishing	2.6	6.5	4.8	0.0	1.6
	Sub-total	3.4	8.6	7.2	1.6	3.5
Manufacturing	Food/Beverages/Tobacco	32.4	32.4	26.2	26.4	22.0
	Wood, Grass & Cane	17.6	11.8	7.1	23.2	13.0
	Other Manufacturing	13.9	12.0	9.6	21.3	9.0
	Sub-total	63.9	56.2	42.9	70.9	44.0
Construction	Construction	4.5	1.1	2.4	1.0	2.1
Trade, Hotels & Restaurants	Wholesale Trade	1.1	1.8	11.9	5.4	6.1
	Retail Trade	19.1	29.7	31.0	19.5	37.2
	Restaurants/Hotels	0.0	0.2	0	0	0.9
	Sub-total	20.2	31.7	42.9	24.9	44.2
Services	Transport/Storage	0.3	0.6	0.0	0.6	0.0
	Social/Community Services	3.9	1.3	4.8	0.6	2.7
	Other Services	3.8	2.4	0.0	0.6	3.5
	Sub-total	8.0	4.3	4.8	1.8	6.2
Total	Total	100.0	100.0	100.0	100.0	100.0

Source: 1996 MAP/MSU MSE Survey data

In the wood/grass/cane manufacturing group, basket and mattress making is the single most common activity in all provinces, except Zambezia. Furniture making is the most important category in Zambezia, and the second most important in Mutarara, while charcoal production is predominant among Manica smallholder households. Wood craft products are somewhat common in Sofala and Nampula provinces, where marketing of such products is booming in urban areas, with prospects for expansion to other provinces and foreign markets.

In the retail trading group, commerce of fish and other sea foods is the most common activity in the coastal provinces of Nampula and Sofala and in the interior District of Mutarara (Tete) located just on the Zambezi river valley. In Manica province, one of the country's food basket areas, retail of agricultural products predominates, while in Zambezia the sector is dominated by retail trade of food/drinks and tobacco.

It is worth noting that, overall the first two categories, foods and beverages and wood/can/cane manufacturing, and a great deal of the trading activities (approximately 50% overall) have strong forward linkages with local agriculture. The development of such activities have, therefore, the potential for boosting rural incomes. These differences in the structure of the MSE sector across provinces, along with the frequency of operations during the year and the relative profitability of those activities are determined by the relative importance of the sector profit levels across provinces.

**Table 4.4 Activity Breakdown of the Major MSEs Groups, by Province**

Industry Grouping	Provinces					
	Nampula	Zambezia	Mutarara	Manica	Sofala	All Area
	percent of firms					
<b>Food &amp; Beverages Production</b>	100.0	100.0	100.0	100.0	100.0	100.0
Food Preparation	3.2	2.5	9.1	3.5	0.0	2.7
Sugar Cane Liquor (Cachaca)	52.9	93.4	18.2	33.8	12.2	61.3
Cashew Beer	39.9	0.0	0.0	0.0	5.1	15.8
Sorghum Beer	1.7	0.6	9.1	50.6	7.3	5.6
Other Alcoholic Drinks	2.3	3.5	63.6	12.1	75.4	14.6
<b>Manufacturing of Wood, Grass &amp; Cane Products</b>	100.0	100.0	100.0	100.0	100.0	100.0
Basket and Mattress making	69.5	37.7	66.6	45.5	73.9	57.8
Charcoal Production	0.0	5.5	0.0	34.6	0.0	5.9
Furniture/other wood Products	13.2	51.5	33.4	18.3	9.9	21.0
Wood Craft Products	15.3	2.8	0.0	0.0	16.2	9.6
Other wood/grass/cane products	2.0	2.5	0.0	1.6	0.0	5.7
<b>Retail Trade</b>	100.0	100.0	100.0	100.0	100.0	100.0
Fish and Other Sea Foods	40.6	22.1	46.2	14.3	32.0	29.8
Food, Drinks & Tobacco	25.2	30.1	7.7	18.3	16.8	24.0
Agricultural Products	4.0	15.1	23.1	32.9	19.1	14.6
Fuel and Charcoal	7.3	2.9	0.0	5.1	0.0	3.4
Clothes and Textiles	5.2	4.3	0.0	9.0	0.0	3.6
Other Retail	17.7	25.5	23.0	20.4	32.1	24.6

Source: 1996 MAP/MSU MSE Survey data

#### **4.1.3 Size Breakdown of Rural Micro and Small Enterprises**

Survey results indicate that the sector in rural Central and Northern Mozambique is dominated by microenterprises, i.e., those employing 10 or fewer workers. Small enterprises, i.e., those with 11-50 workers constitute less than one percent of all enterprises and are only found in Nampula Province. Less than two percent have more than five workers, and more than a half consist of only one person working alone, i.e., strictly self-employment activities, except for Zambezia Province where they are slightly below fifty percent (Table 4.5).

These results are highly consistent with the size profile found in other Sub-saharan African countries. MSE survey results indicate that the percentage of enterprises with 10 or fewer workers is about 98.0% in Swaziland and Zimbabwe; 99.0% in Malawi, Kenya, Lesotho and Zambia; and 97% in Botswana. In these same countries, strictly self-employment activities are dominant. The figure of 60.2% for single person enterprises found for the survey areas in Mozambique was slightly higher than the 56.5% found in Kenya (Daniels, Mead and Musinga, 1995), but falls below all other countries with MSE surveys, where the figure ranges from 61.0% in Malawi to as high as 79.0% in Lesotho (Liedholm and Mead, 1995).

**Table 4.5 Size Breakdown of Rural Micro and Small Enterprises, by Province**

Number of Workers at Time of Survey	Location					Overall Study Area
	Nampula	Zambezi a	Mutarara a	Manica	Sofala	
	percent of all enterprises					
1 Worker	69.3	48.4	56.1	57.6	68.0	60.2
2 Workers	22.9	37.1	24.4	22.4	21.9	27.8
3 - 5 Workers	6.3	13.2	19.5	18.3	9.4	10.8
6 - 10 Workers	0.5	1.3	0.0	1.7	0.8	0.9
11 - 50 Workers	1.0	0.0	0.0	0.0	0.0	0.4
Total	100.0	100.0	100.0	100.0	100.0	100.0

Source: 1996 MAP/MSU MSE Survey data

#### 4.1.4 Age Distribution of Rural Micro and Small Enterprises

The results on enterprise age are presented in Table 4.6. The high percentage of enterprises that are less than two years old, i.e., those born in 1995 and 1996 (42.7%), suggest a rapid rate of expansion of the sector through new enterprises getting started. Recent developments of political stability and the consequent improved economic environment are key factors behind these results, especially in the Provinces of Zambezia, Tete (Mutarara) and Sofala, areas more seriously affected by the war.

**Table 4.6 Age Breakdown of Rural Micro and Small Enterprises, by Province**

Age of the Enterprise	Location					Overall
	Nampula	Zambezia	Mutarara	Manica	Sofala	
	percent of all enterprises					
Less than 2 years	30.0	47.4	73.2	36.5	55.6	42.7
2 - 5 years	30.4	22.8	17.1	27.7	19.5	25.1
6 - 10 years	13.8	6.8	2.4	15.4	8.5	10.1
11 - 20 years	14.5	8.9	4.9	13.6	7.2	10.9
21 - 30 years	5.9	10.6	2.4	3.0	5.8	7.2
More than 30 years	5.4	3.5	0.0	3.7	3.4	4.0
Total	100.0	100.0	100.0	100.0	100.0	100.0

Source: 1996 MAP/MSU MSE Survey data

The overall distribution of enterprises by age is similar to that found in other developing countries, but with a higher concentration of new firms and a relatively lower proportion of veteran enterprises, i.e., those that are at least 10 years old. For example, in Kenya, the MSEs with less than two years accounted for 38.3%, a lower proportion than that found in Mozambique, but the proportion of firms with less than 10 years and those more than 10 years old, is quite similar between the two countries. The proportion of firms with less than 10 years is 77.9% in Mozambique, against 80% in Kenya, and the proportion of veteran enterprises is also similar, with a slightly higher proportion found for Mozambique.



#### **4.1.5 Gender/Type of Ownership in Rural Micro and Small Enterprises**

The micro and small enterprise sector in central and northern Mozambique is dominated by male owners. Indeed, overall, single male owners outnumber single female owners (79.7% to 17.8%). The remaining 2.5% are owned by multiple owners, either blood relatives or not. In general, this result is contrary to those found in other African countries, where women outnumber men in MSE ownership. As shown in Table 4.7, however, there are significant differences across provinces. For instance, in the northernmost provinces of Nampula and Zambezia, only about 11.5% of the enterprises are owned by females, while in the central areas the proportion of female owned MSEs is much higher: over a quarter in Mutarara, one third in Sofala and two fifths in Manica.

Possible reasons for this gender results have to do with the predominance of a very labor intensive agriculture, where, in many regions women play a major role undertaking many key agricultural activities. Also, women are responsible for other activities such as water and firewood gathering, trade of own household agricultural production, childcare and other housekeeping activities. Cultural factors may also be important.

Ownership/gender by sector of activity (Table 4.8) indicates that in the central region, manufacturing, especially brewing of alcoholic beverages, is the sector where most females are involved: 38.9% in Mutarara, 43.5% in Manica and 51.3% in Sofala. Moreover, about one third of the fishing/gathering activities in Mutarara and Sofala,

42.2% of the trading activities in Manica and about a quarter of the services in Sofala are female owned.

**Table 4.7 Rural Micro and Small Enterprise Gender/Ownership Breakdown, by Province**

Provinces	Gender/Type of Ownership		
	Single Male Owned	Single Female Owned	Multiple Owners
	----- percent of all enterprises -----		
Nampula	88.1	11.5	0.4
Zambezia	84.7	11.4	3.9
Mutarara (Tete)	71.4	26.2	2.4
Manica	56.9	41.4	1.7
Sofala	63.6	32.1	4.3
Overall	79.7	17.8	2.5
Source: 1996 MAP/MSU MSE Survey data			

Most of these activities have potential production linkages with local agriculture and market linkages with urban centers, so that increasing agricultural productivity and urban market connections are likely to have an impact on the gender structure of ownership. Moreover, the population age/gender structure pointed out in chapter Three is likely to support this trend.

**Table 4.8 Rural Micro and Small Enterprise Gender Breakdown, by Sector and Province**

Province and Gender of Ownership	Provinces				
	Fishing, Gathering & Extraction	Manufacturing	Construction	Trade, Hotels & Restaurants	Services
----- percent of all Enterprises -----					
<b>Nampula</b>					
Male Owned	93.0	85.5	100.0	96.1	80.0
Female Owned	7.0	14.5	0.0	2.7	20.0
<b>Zambezia</b>					
Male Owned	87.3	82.7	100.0	87.3	78.0
Female Owned	12.7	11.5	0.0	11.0	15.8
<b>Mutarara</b>					
Male Owned	66.6	61.1	100.0	77.8	100.0
Female Owned	33.4	38.9	0.0	16.7	0.0
<b>Manica</b>					
Male Owned	100.0	54.0	100.0	57.8	100.0
Female Owned	0.0	43.5	0.0	42.2	0.0
<b>Sofala</b>					
Male Owned	50.0	46.1	100.0	82.1	59.1
Female Owned	35.6	51.3	0.0	15.6	26.6

Source: 1996 MAP/MSU MSE Survey data

## **4.2 Employment in Rural Micro and Small Enterprises**

This Section looks at the overall level and structure of employment in the rural MSE sector in the survey areas (sub-section 4.2.1). It also examines the seasonality and overall level of MSE activity over time (sub-section 4.2.2). It complements the insights on the structure of the MSE sector introduced in Section 4.1 and helps to better undertake the analysis and interpret the results on rural MSE profit patterns across locations and sectors of activity in Section 4.3.

### **4.2.1 Overall Level and Structure of Employment**

The micro and small enterprise sector in the rural survey areas of central and northern Mozambique employs over a million people. Given the predominance self-employment activities, the comparative figures of employment generated across provinces is quite similar to the enterprise incidence previously presented, with the more populated provinces (Zambezia and Nampula) showing higher employment levels. It is helpful to think about this employment in relation to the total population in those provinces, i.e., the employment densities - number of people engaged in MSE activities per capita, i.e., the percent of the population employed in the sector. The results suggest that, overall, about 12.9% of the population is employed in MSEs.<sup>24</sup> The figures are very similar across provinces, except for the district of Mutarara, where the employment density is much higher. Mutarara just represents a district in the Province of Tete, where variation across

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<sup>24</sup> Comparable national density figures for other countries are as follows: Botswana, 7.1%; Kenya, 8.3%; Lesotho, 8.4%; Malawi, 9.2%; Swaziland, 11.8%; and Zimbabwe, 12.7%. See Liedholm and Mead (1995) for full references to these studies.

districts is likely to exist. Therefore the figure is not directly comparable with other provinces' averages. The very high density in this particular district may be a reflection of the post-war attention given by domestic and foreign organization in that District. Indeed, Mutarara is the single District in the region that has been target by US and EU sponsored NGOs, involved in social and economic rehabilitation programs that create a favorable environment for the booming of the MSE sector.

The employment generated is predominantly in manufacturing (53.0%) and trading (26.9%), followed by fishing/gathering (11.6%) and finally services (5.6%) and construction (2.9%). Note that the larger proportion of employment generated in fishing/gathering activities over services reflects the higher labor intensities in those activities. An analysis across provinces indicates that there are exceptions to this overall pattern in Sofala province, where the trading sector is predominant in employment generation, and in Mutarara, Manica and Sofala, where services outweigh fishing/gathering. In light of the similar densities of trading and manufacturing enterprises (Table 4.3), the predominance of employment generated in trading in Sofala province reflects that trading enterprises in this particular location tend to be more labor intensive, compared to manufacturers. As in other African countries, only a small share of those working in MSEs are under the age of 15, most of whom are unpaid apprentice family members.

**Table 4.9 Rural MSE Employment by Sector and Employment Densities, by Province**

Sector	Provinces					Overall Study Area
	Nampula	Zambezia	Mutarara	Manica	Sofala	
	Number of People Employed (percent per Sector)					
Fishing, Gathering, Extraction Activities	54,672 (15.5)	53,061 (13.2)	3,268 (7.0)	801 (0.9)	9,299 (6.0)	121,102 (11.6)
Manufacturing	187,452 (53.1)	223,054 (55.6)	21,571 (46.5)	64,796 (72.2)	57,235 (36.9)	554,108 (53.0)
Construction	20,154 (5.7)	5,625 (1.5)	1,307 (2.8)	517 (0.6)	2,190 (1.4)	29,793 (2.9)
Trade, Hotels & Restaurants	62,966 (17.9)	104,576 (26.1)	16,341 (35.2)	21,832 (24.4)	75,093 (48.4)	280,808 (26.9)
Services	27,469 (7.8)	14,544 (3.6)	3,922 (8.5)	1,702 (1.9)	11,196 (7.3)	58,833 (5.6)
Total	352,713 (100.0)	400,860 (100.0)	46,410 (100.0)	89,648 (100.0)	155,013 (100.0)	1,044,644 (100.0)
Total Polpulation	2,748,693	3,301,046	109,552	699,828	1,225,409	8,084,528
Percent Employed in MSEs	12.8	12.1	42.4	12.8	12.6	12.9

Source: 1996 MAP/MSU MSE Survey data. The 1996 population data are from estimates of DNE for 1995. These figures are then extrapolated to 1996, using average population growth rates over the period 1991-95, estimated at 5.5% in rural locations.

**Table 4.10 Levels and Structure of Employment in Rural MSEs, by Province**

Structure of the Work Force	Provinces					Overall Study Area
	Nampula	Zambezia	Mutarara	Manica	Sofala	
	Number of People Employed (percent of workers in each category)					
<b>Total People Active in MSEs</b>	352,713	400,860	46,410	89,648	155,013	1,044,644
<b>Working Owners</b>	228,951 (64.9)	242,174 (60.4)	27,454 (59.2)	53,444 (59.6)	109,339 (70.5)	661,362 (63.3)
<b>Paid Workers</b>	61,618 (17.5)	46,905 (11.7)	2,615 (5.6)	10,176 (11.4)	14,602 (9.4)	135,915 (13.0)
<b>Unpaid Workers</b>	43,550 (12.3)	92,592 (23.1)	15,034 (32.4)	16,780 (18.7)	27,050 (17.5)	195,006 (18.7)
<b>Apprentices</b>	18,595 (5.3)	19,189 (4.8)	1,307 (2.8)	9,248 (10.3)	4,022 (2.6)	52,361 (5.0)
<b>Number of female workers, out of all workers</b>	44,888 (12.7)	78,809 (19.7)	17,649 (38.0)	36,243 (40.4)	43,877 (28.3)	221,466 (21.2)
<b>Number of workers aged less than 15, out of all workers</b>	10,824 (3.1)	14,185 (3.5)	3,268 (7.0)	5,601 (6.2)	9,407 (6.1)	43,286 (4.1)

Source: 1996 MAP/MSU MSE Survey data

#### **4.2.2 MSE Level of Activity Over Time**

The frequency of operation of the enterprises have important implications for the medium and long run importance of the sector as a smallholder income source. While many people are involved in MSE activities in central and northern Mozambique, a significant proportion of these participate only on a part-time basis.

Table 4.11 (upper part) indicates that over half of the enterprises that have been in existence for at least a year operated six months or less over the past twelve months. There is little variation across provinces. Overall only a fifth of the enterprises operated the entire year. However, Sofala (69.4%), Mutarara (34.6%) and Manica (27.4%) enterprises operate on a more permanent basis than the ones in other provinces. Furthermore, for the last month that the enterprise operated, overall 47.6% operated less than 10 days. Again, although the share of MSE operating almost the entire month is relatively low overall, the enterprises in Sofala, Manica and Mutarara are the ones that operate on a more frequent basis, i.e., more than three weeks a month.

To examine the issue of rural MSE seasonality, the share of MSEs that reported any sales in a particular month is computed across the different provinces (Figure 4.1). In general, but more evidently for Nampula, Zambezia and Manica there is a clear downward trend from September/95 through January-March/96 and then an upward trend thereafter. One possible reason for this trend in that period may be related to the relative scarcity in the hungry season (the first period) and the increased availability (in the second period) of



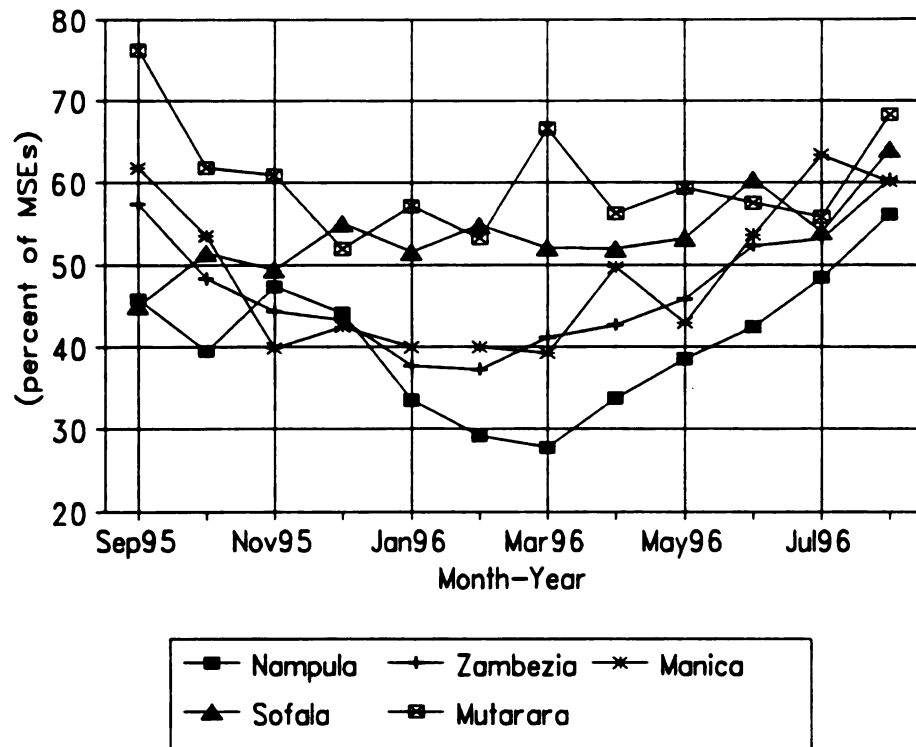
agricultural products used as inputs in manufacturing businesses and traded in the local marketing system. As the second period corresponds to the harvest and marketing seasons of the major agricultural crops, demand for MSE goods and services is likely to increase in these second period and shrink in the hungry season .

In essence, these results suggest that the level of activity in the micro and small enterprise sector is affected both by supply factors, i.e., the availability of inputs and products for trading, which is likely to affect mainly gathering, manufacturing and trading activities and demand factors, i.e., the effective demand for goods and services that is likely to affect all sectors including services and construction. Indeed, as shown in Figure 4.2, the previously identified seasonality across provinces is also evident for the three sectors directly related to agriculture, i.e., the share of manufacturing, trade and gathering activities shrinks in the hungry season and increases through the harvesting and marketing seasons. During the hungry season the share of construction activities reaches its lowest levels, but as the harvest comes and rural incomes from agricultural sales and other sources grow over the marketing season, demand for construction also grows which is reflected by an increasing number of enterprises in operation.

**Table 4.11 Frequency of Rural MSE Operation, by Province**

<b>Months of operation per year and Days of operation per month</b>	<b>Provinces</b>					<b>Overall Study Area</b>
	<b>Nampula</b>	<b>Zambezia</b>	<b>Mutarara</b>	<b>Manica</b>	<b>Sofala</b>	
<b>Months of Operation a Year</b>	<b>percent of all Enterprises 1 year or older</b>					
3 months or less	42.3	32.1	23.1	30.5	15.4	33.3
4 - 6 months	25.2	30.3	19.2	26.8	9.5	24.7
7 - 11 months	20.2	18.5	23.1	15.3	5.7	17.2
All 12 months	12.3	19.1	34.6	27.4	69.4	24.8
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
<b>Days of Operation in the Last Month</b>	<b>percent of all Enterprises 1 month or older</b>					
10 or less days	64.2	35.9	45.2	30.7	44.4	47.6
11 - 20 days	19.3	41.4	28.6	33.4	28.9	30.2
21 - 30 days	16.4	22.8	26.2	35.9	26.7	22.3
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Source: 1996 MAP/MSU MSE Survey data

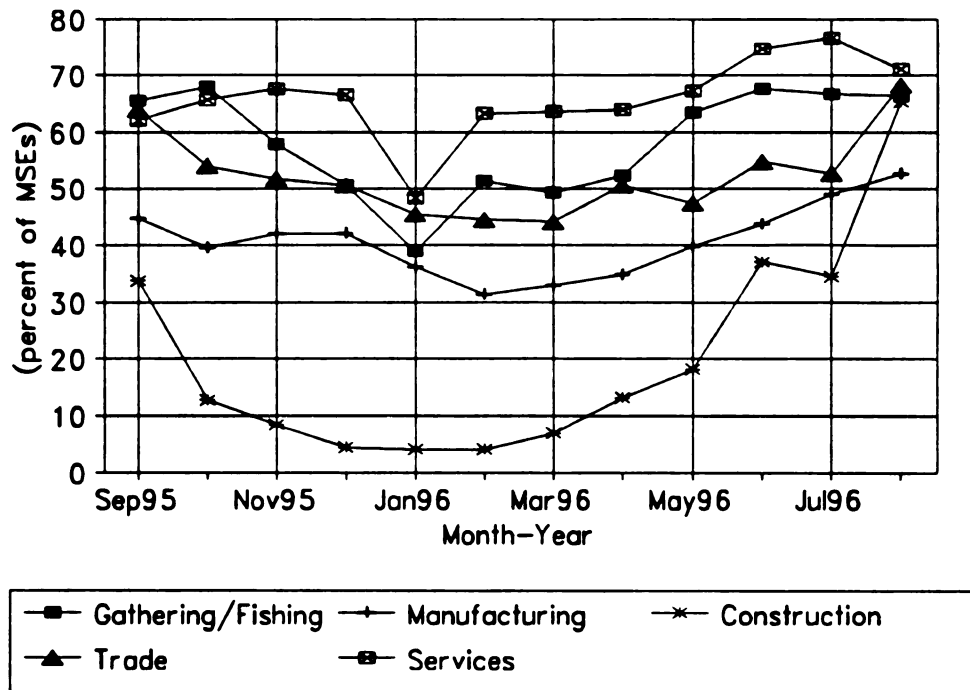


Source: 1996 MAP/MSU MSE Survey data

**Figure 4.1 Share of MSEs with Sales, by Province, September 95 - August 96**

The services sector presents a higher, more continuous and stable level of activity. Most of the services identified, although not related to the agricultural sector for input supply, are affected by reductions in effective demand in the hungry season. Therefore, they appear not to be as seasonal, but still shrink a bit in the hungry season and increase thereafter as rural incomes grow. Although one can hypothesize that the variation of the level of activity in a sector as reflected by the share of enterprises operating over time relates to the aggregate amount of money circulating in the economy, the actual trend in

the average sectoral current profits over time needs to be analyzed with caution. Indeed,



Source: 1996 MAP/MSU MSE Survey data

**Figure 4.2 Share of MSEs with Sales, by Sector, September 95 - August 96**

the entry of firms in a given sector may drop average prices down so that average enterprise profits can either grow, remain stable or fall.

### **4.3 Profitability in Rural Smallholder Micro and Small Enterprises**

This section analyzes rural smallholder micro and small enterprise net profits. MSE monthly net profit is computed for the last month of operation of each enterprise, by deducting from the reported value of sales the amount spent to operate the enterprise, namely cost of inputs, including raw materials (and purchased goods for trading enterprises), labor and capital, as well as rents, interest and other operating costs. The annual net profit is obtained by multiplying this amount by the number of months the enterprise operated over the past twelve months, i.e., during the last agricultural season. Results are presented for the different micro and small enterprise characteristics referred in previous Sections, namely location, sector of economic activity, enterprise size, age and gender of the owner.

#### **4.3.1 Rural Micro and Small Enterprise Profits and Enterprise Location**

Table 4.12 presents comparative nominal figures for micro and small enterprise net profits for the last month of operations and the 1995/96 agricultural season, and household income from that source, i.e., aggregated to include multiple enterprise household income analysis across provinces.

Overall, the micro and small enterprise sector in the region generates an average profit of \$16 per month and an average of about \$94 per year. The average contribution to the income those households that diversify into micro and small enterprises is around \$20 per month and \$118 per year.

**Table 4.12 Rural MSE Monthly and Annual Net Profits, by Province**

<b>Provinces</b>	<b>Mean MSE Net Profit</b>		<b>Mean HH MSE Income</b>	
	<b>Monthly Profit</b>	<b>Annual Profit</b>	<b>Monthly Income</b>	<b>Annual Income</b>
	<b>— Mean \$ —</b>		<b>— Mean \$ —</b>	
Nampula	12	64	14	76
Zambezia	19	105	22	123
Mutarara (Tete)	8	44	12	72
Manica	21	145	29	217
Sofala	18	122	26	179
<b>Total</b>	<b>16</b>	<b>94</b>	<b>20</b>	<b>118</b>

Source: 1996 MAP Smallholder Survey and MAP/MSU MSE Survey data

Manica appears to have the highest micro enterprise profits both on a monthly and an annual basis, while Nampula and Mutarara have the lowest levels. While Zambezia Province has the second highest level of net profits in the region, in annual terms it is overtaken by Sofala Province. This difference is a reflection of the differential level of MSE activity across these two provinces. As indicated in Section 4.2.2, around 70% of Sofala enterprises operate the all year, while in Zambezia Province the comparable figure is around 20% (Table 4.11). Figure 4.1 also gives some indications on the source of monthly and annual MSE net profit differences across provinces. Sectoral compositions across provinces and relative net profits across MSE sectors and sites of operation also have an effect on these differences.

**Table 4.13 Rural MSE Monthly and Annual Net Profits, by Business Location**

Physical Location	Mean MSE Net Profits	
	Monthly Profit	Annual Profit
	—— Mean \$ ——	
Home	11	60
Local Market	30	177
District Shop	11	91
Along a Roadside	10	80
At a Mobile Location	38	178
Home and Local Mkt	20	94
Other Place	19	91
<b>Total</b>	<b>16</b>	<b>94</b>

Source: 1996 MAP Smallholder Survey and MAP/MSU MSE Survey data

The MSE profitability is likely to be affected by the location of the enterprise. Access to input and output markets, as well as business connections are more difficult to enterprises operating from home or shops in remote areas than in mobile locations or well established market places. Table 4.13 indicates that enterprises operating from the home, along the road side and in District shops have lower levels of monthly and annual net profits, when compared to those operating in markets and at mobile locations. Among those with higher profits, it is worth noting that while those operating at mobile locations tend to have higher average monthly profits than those in market places, annual profits are quite similar due to more stable market conditions in a given market place where enterprises operate in a more regular basis than in alternative market places.

Although profitability may appear to be much higher in market places than in home based business, the majority of the households operate from home based business. For many households operating micro and small enterprises, the opportunity cost of time if they operate from markets can be much higher than it may appear. Indeed, operating business from home allow household members, especially females in rural areas to deal with other household and farm related activities in the meantime, while in markets, sometimes located far away from home, it requires their presence for long hours and very little space for interruptions to deal with other tasks. The alternative, increasingly found by some households, is to have a mix of the two, i.e., operate both from home and local markets depending on specific circumstances. Table 4.13 indicates that this option allows them to earn moderate levels of profits and eventually maximize overall household income.

#### **4.3.2 Rural Micro and Small Enterprise Profits and Sectoral Composition**

As discussed in Section 4.1 of this chapter, the rural MSE sector is dominated by manufacturing and trading enterprises, with services, construction and fishing/extraction/gathering activities being less common among households. The attractiveness of given sectors for new entrants is driven by their expected net profits and the level of barriers to entry in a given market. Missing input and credit market, may limit the access of poor households to capital intensive sectors. Moreover, the saturation of given sectors, reflected by excess supply of certain goods and services or/and the lack of effective demand, may lead to unit price falls that make small scale operations much less profitable in the short run, with firms exiting to other less saturated and more



profitable sectors. The dynamics of firm exit and entry is not discussed in this study due to data limitations.

Table 4.14 presents figures for monthly and annual net profits in rural micro and small enterprises in the study zone. Results suggest that primary activities, usually highly labor intensive and operating in a more frequent basis, yield the highest level of monthly and annual net profits. These, in monthly terms, by order of importance are: Trade, construction, manufacturing and services.<sup>25</sup>

Given different levels of activity, because some activities are more seasonal than others (see Figure 4.2 in Section 4.2), results on an annual basis are quite different. Primary activities, especially fishing, trading and services present the highest levels of annual profits in the study zone. Manufacturing activities, the most common type of business, appear to have relatively lower levels of annual net profit. Besides the saturation of businesses of certain types, like beer making for which average market prices are likely to be dropped due to excess supply, manufacturing has a lower level of activity along the year and its major businesses are affected by seasonality through the availability of the major agricultural inputs they are based upon.

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<sup>25</sup> Provided the lack of degrees of freedom in the fishing/gathering/extraction and construction groups, these results should be interpreted with caution.

**Table 4.14 MSE Monthly and Annual Net Profits, by Sector of Activity**

Sector	Industry Grouping	Rural MSE Net Profits	
		Monthly Profit	Annual Profit
		— Mean \$ —	
Fishing, Gathering, Extraction Activities	Firewood Gathering	15	82
	Fishing	48	296
	Water Gathering & Mineral Extraction	17	120
	Sub-total	39	237
Manufacturing	Food/Beverages/Tobacco	8	46
	Textile Products	8	75
	Wood, Grass & Cane	10	56
	Non-Metals	7	46
	Metal Products	12	81
	Other Manufacturing	8	29
	Sub-total	9	50
Construction	Construction	27	51
Trade, Hotels & Restaurants	Wholesale Trade	20	182
	Retail Trade	26	156
	Restaurants/Hotels	128	513
	Sub-total	26	161
Services	Transport/Storage	16	179
	Social/Community Services	8	81
	Other Services	8	61
	Sub-total	8	77
Total		16	94

Source: 1996 MAP/MSU MSE Survey data

To better understand the differences in micro enterprise profitability across provinces in more detail, Table 4.15 presents annual net profits for activities within the major groups of MSEs in the study area, namely foods and beverage manufacturing, pottery and manufacturing of wood/grass/cane products, and retail trade. Comparisons across these major groups suggest that overall, trading activities are the most profitable, followed by manufacturing of wood/grass/cane products and pottery, and finally beer brewing. However, some exceptions are found namely in Nampula and Manica where beer brewing appear to be more profitable than manufacturing of wood/grass/cane products. In Manica Province there is not a statistically significance difference in profitability between trading activities and manufacturing of wood/grass/cane products.

As indicated in Section 4.2, within the first group, foods and beverages, the incidence of beer brewing activities is far more important than food preparation. Therefore, the analysis concentrates solely on comparison between sugar cane liquor production, the most common beer brewing activity overall, and other types of beer brewing.<sup>26</sup> Sugar cane liquor production appear to be the most profitable brewing activity overall, although in Manica, it is not statistically different than the profitability earned in other types of beer brewing (specifically sorghum and maize beer). In Mutarara, other types of alcoholic drinks (predominantly maize and sorghum beer) are more profitable than sugar cane liquor production.

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<sup>26</sup> These other types of beer brewing include mostly cashew beer in Nampula, maize beer in Zambezia, Mutarara and Sofala, and sorghum beer in Manica.

**Table 4.15 Annual Net Profits of the Major MSE Groups, by Province**

Major MSE Groups	Provinces					
	Nampula	Zambezia	Mutarara	Manica	Sofala	All Areas
	—— Mean \$ per year ——					
Food & Beverages Production	38	46	19	76	62	46
Sugar Cane Liquor (Cachaca)	54	46	14	79	151	52
Other Alcoholic Drinks	13	22	22	69	49	31
Pottery and Manufacturing of Wood, Grass & Cane Products	20	50	46	192	58	56
Pottery	14	8	24	43	15	18
Basket and Mattress making	16	16	52	61	36	25
Furniture/other wood Products	57	88	35	589	222	144
Retail Trade	144	160	70	181	173	156
Fish and Other Sea Foods	174	164	82	53	126	149
Food, Drinks & Tobacco	47	90	70	38	230	98
Agricultural Products	143	256	18	135	121	174
Other Retail	185	177	97	353	225	198

Source: 1996 MAP/MSU MSE Survey data

In the second major group, a common pattern is found for all the four provinces, with production of wood furniture and other wood products showing higher levels of profitability, followed by basket and mattress making and finally pottery making.<sup>27</sup> Operators in these two last categories, usually using low “cash” cost inputs, have serious problems in transporting products to urban centers where the demand for such goods is much higher than in rural areas where prices paid are considerably lower. Basket and mattress makers often complain about the long distances they have to walk to find raw

<sup>27</sup> In the District of Mutarara, however, basket and mattress making earns more than other businesses.

materials and then the difficulty in selling them locally at prices that compensate such effort.

In the retail trading group, apart of the “other retail trading” category (a mix of activities from the retail of used clothes to household goods) that appear to be quite profitable, results indicate a wide variation across provinces and sectors. Retail of agricultural products is relatively more profitable than fishing and retail of foods/drinks/tobacco in Zambezia and Manica. In Nampula and Mutarara where the retail of sea foods is the single most common sub-category, the sector appears to be more profitable than the other two sub-categories. Note that entry to these sector is highly bounded by locational factors and the ability of operators to respond to changes in supply and demand conditions of these highly perishable commodities. The retailing of foods/drinks/tobacco is the less profitable category overall, although in Mutarara it appears to be more profitable than retailing of agricultural products that provides relatively lower returns, mostly due to the prevailing extremely low market prices. In Sofala, this sector yields profits significantly higher than retailing of sea foods and agricultural products.

#### **4.3.3 Rural Micro and Small Enterprise Profits and Enterprise Size, Age and Gender**

Results in Section 4.2 suggested that the rural micro and small enterprise sector is dominated by strict self-employment activities, started in 1995/96 and owned by males.

**This sub-section presents a comparative analysis of average annual net profits of micro and small enterprises by size, age and gender of the owner.**

**Overall, self-employment enterprises, those with a single owner/worker, earn less annual net profits than those with two or more workers. Exception, however is found for Zambezia and Mutarara, the locations with higher incidence of enterprises employing additional workers, where single owner enterprises earn a bit more than those employing two or more workers (upper part of Table 4.16). Given that rural micro and small enterprises in Mozambique are mostly involved in labor intensive activities relying mostly on unpaid family labor, which allow them to increase the levels of activity without incurring in significant marginal costs of labor, these results are not surprising.**

**With the exception of Nampula and Zambezia where net profits between enterprises with 2 or less years and those with 2 - 5 years is quite similar, and Sofala where enterprises with more than five years earn as much as those with 2 or less years, overall, older enterprises tend to earn relatively higher profits than the newer ones (middle part of Table 4.16) still in the process of establishment in their respective businesses.**

**Comparative annual net profits by gender of the enterprise owner, in the lower part of Table 4.16, indicate that in all provinces male owned micro and small enterprises earn substantially higher annual net profits than their female counterparts. This result is consistent with what would be expected based in the relative profits across MSE sectors**

indicated in the previous sub-section and the gender structure of the different MSE sectors. Indeed, most females, especially in the central provinces, own manufacturing businesses whose returns are far lower than trading businesses. Trading businesses are relatively predominant only among female business persons in Manica Province. The fact that female owners also perform many other economic and household activities is also a likely limiting factor contributing to the profitability of their enterprises.

**Table 4.16 MSE Annual Net Profits by Size, Age and Gender, by Province**

Enterprise Categories	Location/Annual Net Profits					Overall Study Area
	Nampula	Zambezi a	Mutarar a	Manica	Sofala	
—— Mean \$ per year ——						
Enterprise Size						
1 worker	44	106	58	93	102	76
More than 1 worker	112	105	44	242	164	123
Enterprise Age						
Less than 2 years	44	101	37	85	99	81
2 - 5 years	43	105	53	173	198	94
More than 5 years	96	112	101	220	100	112
Gender of the Owner						
Female Owned	24	52	16	101	83	61
Male Owned	69	110	61	191	143	101

Source: 1996 MAP/MSU MSE Survey data

#### **4.3.4 MSE Profitability per Worker and Patterns of Household MSE Type Choice**

The following analysis focus on the levels of profitability of rural MSEs per unpaid worker by province and economic sector, and the patterns of household choice of types of MSEs they operate and the returns per worker attained.

##### **4.3.4.1 Levels of MSE Profits per Unpaid Worker**

The analysis in previous sections emphasis the comparative analysis of total annual MSE profits. An important indicator of MSE profitability is the level of profits per unpaid worker. Given the characteristics of the MSE sector in the region, dominated by business run by a single person working alone and the use of unpaid family labor, this measure can be interpreted in many cases as the return to the MSE owner or to household labor. Table 4.17 presents results across provinces and sectors of economic activity.

Given the size profile of the MSE sector in the region, these results are quite similar to those previously presented with respect to total enterprise profits.

##### **4.3.4.2 Patterns of Household MSE Propensity and Profits per Unpaid Worker**

Tables 4.18 through 4.21 present results on the household propensity to engage in MSE activity and the level of profits per unpaid worker, as a function of their land holdings per capita, agricultural income per capita and total income per capita.

An important issue of interest for policy purposes is the relationship between access to land, the household propensity to diversify into MSE activities, and the levels of profits



obtained when an MSE decision is made. An important question in this research is related to the issue discussed in the literature on whether land constraints push households into MSE activities. Recall that results in Chapter Three suggested that the correlation between land and involvement into MSEs appears to not be very strong but it is clear that land poor households are systematically less likely to engage in MSEs in the study zone.

Results in Table 4.18 suggest that there are no strong consistent patterns in the household propensity to engage in MSEs, given land endowments, though the relatively land poor are less likely than their land rich counterparts to get into many of the activities, with exception of overall trading and fishing. The types of activities land poor households are more likely to become engaged in, when compared to the other two terciles, include making sugar cane liquor, and retail activities like sea foods, foods/drinks/tobacco, charcoal and other retailing activities. However, among those activities, the retailing of sea foods is the only one where they get higher profits than the richer land terciles. Note that land poor households involved in services, like construction and electricity are obtaining higher profits per unpaid worker.

Land rich households in manufacturing activities like leather/textile and pottery, trading activities like wholesaling and retailing of agricultural products , services like repairing, and fishing obtain higher returns per unpaid worker than their land poor counterparts.

**Table 4.17 MSE Profits per Worker by Sector, by Province**

Sector	Industry Grouping	Provinces					All Areas
		Nampula	Zambezia	Mutarara	Manica	Sofala	
		————— \$ per worker per year —————					
Fishing, Gathering, Extraction Activities	Firewood & Water Gathering	12	83	2	18	173	79
	Fishing	420	173	89	-	18	222
	Sub-total	330	151	60	18	107	179
Manufacturing	Food/Beverages/Tobacco	28	28	9	46	51	32
	Wood, Grass & Cane	18	34	46	149	54	47
	Other Manufacturing	14	22	15	179	100	53
	Sub-total	22	28	16	120	60	40
Construction	Construction	6	184	81	18	85	49
Trade, Hotels & Restaurants	Wholesale Trade	14	435	6	193	75	156
	Retail Trade	124	138	61	122	141	131
	Restaurants/Hotels	-	173	-	-	324	270
	Sub-total	118	153	46	138	136	134
Services	Transport/Storage	21	267	-	14	-	177
	Social/Community Services	33	60	150	106	121	62
	Other Services	32	30	-	6	96	44
	Sub-total	32	73	150	42	107	60
Total	Total	53	82	36	117	94	74

Source: 1996 MAP/MSU MSE Survey data

Table 4.19 indicates that overall, there is a positive correlation between household agricultural income per capita and the propensity to engage in MSEs,. Across all households, those in the lowest agricultural income per capita tercile are less likely than others to engage in manufacturing, trading and services activities. Poor agricultural income per capita households are more like to engage in gathering activities. In the manufacturing sector, higher propensities for involvement in MSEs are typically found for the highest agricultural income tercile households, while trading and services are activities where middle tercile households are also likely to be involved in.

The levels of profits per worker earned are highly variable across agricultural income per capita terciles when activities are compared. Lowest agricultural income tercile households earn profits per unpaid worker as high as those in the highest tercile in cashew beer production, predominant in Nampula province, construction/electricity services, in the retailing of livestock, and in some other types of retail trade. Note, however, that the involvement of households in these particular activities is relatively low. In other activities, higher profits per unpaid worker are typically earned by middle and high agricultural income households.

Further analysis of the reasons for these differences and the investigation of barriers to entry that may prevent poor households from becoming involved in profitable activities is

necessary to better recommend specific actions that may help promote rural income growth through the promotion of MSEs in rural areas.

Table 4.20 indicates that in general, higher household income per capita is directly correlated with the propensity to engage in almost every MSE activity, and the levels of profits per unpaid worker attained as well. This association was expected given that household income levels are considerably higher among households with MSEs. However, some households that fall into the lower income tercile also engage in MSEs, although they receive relatively lower profits per worker per day. These results are particularly important to identify activities with potential to boost rural incomes, through MSE enhancement.

Chapter Five will give some more insights as to how MSE sectors affect the level of household income per capita.

**Table 4.18 Share of Households in Specific Activities and Annual Net Profits per Worker, by Total Area Per Capita tercile**

MSE Sectors	Share of HHs with MSEs by Land Area Owned per Capita Tercile <sup>1</sup>			MSE Profit per Unpaid Worker by Land Area Owned per Capita Tercile <sup>1</sup>		
	1	2	3	1	2	3
	(0.11)	(0.28)	(0.71)	(0.11)	(0.28)	(0.71)
	— percent of households —			— \$ per unpaid worker —		
<b>Manufacturing</b>	<b>16.78</b>	<b>20.67</b>	<b>22.71</b>	<b>33</b>	<b>34</b>	<b>51</b>
Sugar Cane Liquor (Cachaca)	<b>8.41</b>	6.82	7.16	29	35	<b>50</b>
Cashew Beer	0.97	1.25	<b>1.69</b>	19	17	13
Sorghum Beer	0.41	1.11	<b>1.69</b>	33	24	<b>52</b>
Other Drinks	0.97	1.95	<b>2.53</b>	6	37	<b>36</b>
Leather/Textile activities	1.10	1.39	1.26	24	22	<b>214</b>
Basket/Mattress making	2.21	4.45	<b>4.78</b>	30	29	27
Wood Furniture/wood products	1.38	<b>2.78</b>	2.53	<b>84</b>	81	<b>183</b>
Pottery	1.52	1.39	<b>2.81</b>	11	14	<b>32</b>
Metal/Art products	0.97	1.53	<b>1.83</b>	<b>93</b>	55	21
Other Manufacturing	0.55	0.42	<b>0.84</b>	30	57	<b>377</b>
<b>Trading</b>	<b>10.26</b>	<b>9.50</b>	<b>9.31</b>	<b>146</b>	<b>132</b>	<b>121</b>
Wholesale Trade	0.41	<b>0.83</b>	0.56	125	211	<b>483</b>
Retail of Livestock/Butchery	0.55	0.97	<b>1.55</b>	15	<b>99</b>	<b>79</b>
Retail of sea foods	<b>3.72</b>	3.06	2.53	<b>167</b>	<b>89</b>	<b>120</b>
Retail of food/drinks/ tobacco	<b>2.90</b>	2.36	2.39	76	<b>137</b>	31
Retail of clothes/charcoal	<b>1.38</b>	1.25	1.12	103	<b>220</b>	<b>154</b>
Retail of agricultural products	1.25	<b>2.65</b>	1.41	149	138	<b>211</b>
Other retail trade	<b>2.34</b>	1.81	2.25	<b>136</b>	<b>199</b>	<b>167</b>
<b>Services</b>	<b>3.88</b>	<b>5.87</b>	<b>5.36</b>	<b>80</b>	<b>20</b>	<b>67</b>
Traditional healers	0.83	0.97	<b>1.54</b>	24	35	<b>85</b>
Construction/electrician	0.69	1.25	0.70	<b>166</b>	17	33
Repair services	0.41	0.42	<b>0.84</b>	10	5	<b>40</b>
All other services	<b>0.83</b>	0.70	<b>0.98</b>	<b>163</b>	60	<b>155</b>
<b>Gathering and Fishing</b>	<b>2.64</b>	<b>3.07</b>	<b>1.55</b>	<b>147</b>	<b>198</b>	<b>197</b>
Fishing	1.93	<b>1.95</b>	1.12	<b>184</b>	<b>249</b>	<b>270</b>
Gathering of water/firewood	0.69	1.11	0.56	39	<b>117</b>	<b>49</b>

<sup>1</sup> The numbers in parentheses refer to mean total land (ha) per capita in each tercile.

The Bolded numbers refer to the highest propensity and profit per unpaid worker across terciles in each of the businesses.

Source: 1996 MAP/MSU MSE Survey data

**Table 4.19 Share of Households in Specific Activities and Annual Net Profit per Worker, by Agricultural Income Per Capita Terciles**

MSE Sectors	Share of HHs with MSEs by Agricultural Income per capita Tercile <sup>1</sup>			MSE Profit per unpaid worker by Agricultural Income per capita Tercile <sup>1</sup>		
	1	2	3	1	2	3
	(\$8)	(\$24)	(\$69)	(\$8)	(\$24)	(\$69)
	— percent of Households —			— \$ per unpaid worker —		
<b>Manufacturing</b>	<b>15.56</b>	<b>21.08</b>	<b>23.19</b>	<b>34</b>	<b>40</b>	<b>45</b>
Sugar Cane Liquor (Cachaca)	5.56	7.64	9.17	30	29	50
Cashew Beer	0.14	1.81	1.94	22	10	22
Sorghum Beer	0.42	1.25	1.53	33	44	39
Other Drinks	1.81	1.67	1.94	15	30	46
Leather/Textile activities	0.69	1.39	1.67	17	30	164
Basket/Mattress making	3.61	3.19	4.58	29	19	33
Furniture/wood products	1.81	2.36	2.50	74	161	114
Pottery	1.11	1.94	2.64	13	10	35
Metal/Art products	1.11	1.67	1.53	54	69	25
Other Manufacturing	0.00	1.25	0.56	-	32	196
<b>Trading</b>	<b>7.36</b>	<b>11.37</b>	<b>10.14</b>	<b>134</b>	<b>130</b>	<b>140</b>
Wholesale Trade	0.42	0.69	0.69	19	293	411
Retail of Livestock/Butchery	0.56	1.11	1.39	149	37	73
Retail of sea foods	2.08	3.75	3.47	103	150	122
Retail of food/drinks/ tobacco	2.22	2.50	2.92	53	79	104
Retail of clothes/charcoal	1.25	1.25	1.25	70	187	222
Retail of agricultural products	1.53	2.22	1.53	79	208	171
Other retail trade	1.94	2.36	2.08	285	88	138
<b>Services</b>	<b>4.03</b>	<b>6.10</b>	<b>5.00</b>	<b>84</b>	<b>45</b>	<b>48</b>
Traditional healers	0.69	1.67	0.97	62	69	26
Construction/electrician	0.69	0.83	1.11	88	26	69
Repair services	0.56	0.56	0.56	20	11	40
All other services	0.69	0.83	0.97	183	115	108
<b>Gathering and Fishing</b>	<b>2.50</b>	<b>2.64</b>	<b>2.08</b>	<b>177</b>	<b>232</b>	<b>117</b>
Fishing	1.39	2.08	1.53	218	337	90
Gathering of water/firewood	1.1	0.83	0.41	59	35	214

<sup>1</sup> The numbers in parentheses refer to mean agricultural income per capita in each tercile.

The Bolded numbers refer to the highest propensity and profit per unpaid worker across terciles in each of the businesses.

Source: 1996 MAP Smallholder Survey and 1996 MAP/MSU MSE Survey data

**Table 4.20 Share of Households in Specific Activities and Annual Net Profits per Worker, by Household Income Per Capita Terciles**

MSE Sectors	Share of HHs with MSEs by HH Income per capita Tercile <sup>1</sup>			MSE Profit per unpaid worker by HH Income per capita Tercile <sup>1</sup>		
	1	2	3	1	2	3
	(\$12)	(\$30)	(\$91)	(\$12)	(\$30)	(\$91)
	— percent of Households —			— \$ per unpaid worker —		
<b>Manufacturing</b>	<b>10.69</b>	<b>20.67</b>	<b>28.47</b>	<b>16</b>	<b>31</b>	<b>83</b>
Sugar Cane Liquor (Cachaca)	4.58	6.94	<b>10.83</b>	11	22	<b>59</b>
Cashew Beer	0.14	<b>1.94</b>	1.81	3	11	<b>22</b>
Sorghum Beer	0.42	0.42	<b>2.36</b>	32	<b>43</b>	<b>41</b>
Other Drinks	1.25	1.39	<b>2.78</b>	10	13	<b>50</b>
Leather/Textile activities	0.83	1.39	<b>1.53</b>	14	29	<b>179</b>
Basket/Mattress making	2.08	4.58	<b>4.72</b>	11	20	<b>44</b>
Wood Furniture/wood products	0.56	2.50	<b>3.61</b>	8	45	<b>189</b>
Pottery	0.97	1.81	<b>2.92</b>	5	13	<b>33</b>
Metal/Art products	0.42	<b>1.94</b>	<b>1.94</b>	53	30	<b>68</b>
Other Manufacturing	0.00	0.69	<b>1.11</b>	-	19	<b>307</b>
<b>Trading</b>	<b>3.61</b>	<b>7.91</b>	<b>17.36</b>	<b>24</b>	<b>74</b>	<b>251</b>
Wholesale Trade	0.28	0.28	<b>1.25</b>	22	26	<b>387</b>
Retail of Livestock/Butchery	0.42	1.11	<b>1.53</b>	8	27	<b>125</b>
Retail of sea foods	0.42	2.64	<b>6.25</b>	40	62	<b>164</b>
Retail of food/drinks/ tobacco	1.25	1.94	<b>4.44</b>	18	21	<b>125</b>
Retail of clothes/charcoal	0.69	0.83	<b>2.22</b>	18	46	<b>248</b>
Retail of agricultural products	0.42	1.66	<b>3.19</b>	23	54	<b>233</b>
Other retail trade	0.69	1.81	<b>3.89</b>	13	48	<b>245</b>
<b>Services</b>	<b>1.67</b>	<b>4.58</b>	<b>8.89</b>	<b>15</b>	<b>61</b>	<b>92</b>
Traditional healers	0.42	0.83	<b>2.08</b>	27	22	<b>73</b>
Construction/electrician	0.28	0.97	<b>1.39</b>	10	13	<b>104</b>
Repair services	0.28	<b>0.69</b>	<b>0.69</b>	5	11	<b>44</b>
All other services	0.14	0.56	<b>1.81</b>	22	72	<b>158</b>
<b>Gathering and Fishing</b>	<b>1.25</b>	<b>2.50</b>	<b>3.47</b>	<b>26</b>	<b>55</b>	<b>380</b>
Fishing	0.56	1.53	<b>2.92</b>	30	50	<b>360</b>
Gathering of waste/ firewood	0.56	1.11	0.69	11	57	<b>167</b>

<sup>1</sup> The numbers in parentheses refer to mean household income per capita in each tercile.

The Bolded numbers refer to the highest propensity or profit per unpaid worker across terciles in each of the businesses.

Source: 1996 MAP/MSU MSE Survey data

## **Chapter 5**

### **Determinants of Rural MSE Profitability and Household Income**

#### **5.0 Introduction**

This chapter develops and tests econometric models of rural MSE profitability and net household income per capita. Section 5.1 explains the theoretical rationale for the MSE model and provides econometric results and interpretation. Empirical insights from the MSE model help to motivate the income model developed and tested in Section 5.2. For both models, the sample is divided by geographic area based upon the hypothesis that the structure of the rural economy differs significantly across the study zone. Three geographic areas are defined: 1) Nampula, 2) Zambezia Province and Mutarara District, and 3) Manica and Sofala Provinces.

#### **5.1 Determinants of MSE Profitability**

Three types of factors are hypothesized to be important in explaining the level of profits obtained by rural MSEs in the study zone:

- 1) factors associated with the enterprise and its owner;
- 2) factors associated with the household of which the owner is a member, and
- 3) level of infrastructure and other locational factors.



### **5.1.1 Enterprise and Owner Characteristics**

Six variables are included in the MSE profit model to capture the effect of enterprise and owner characteristics: sector of activity, participation in a rural group or association, firm age and size, human capital and gender of the owner.

The economic sector in which a rural entrepreneur is engaged has been shown previously to be associated with the level of MSE profits. For example, enterprises in trading earned, on average, \$161 during 1995-96 while those in the manufacturing and services sectors earned between 30 and 60 percent of this amount during the same period. To determine the extent to which there is a sector effect on MSE profitability, dichotomous variables are included in the MSE profit models where each firm is categorized into one of four sector categories: 1) gathering and fishing; 2) manufacturing; 3) trade; and 4) services.

MSE owners were asked about their participation in formal and informal business groups or associations. Participation in such groups is uncommon: only four percent of MSE owners belong to such groups. For those who do participate, respondents indicated that benefits included exchange of information, joint purchase of inputs and sale of output, access to credit and non-financial assistance and participation in influencing policies at the local level. Further, the mean profit level of group/association participants is \$200 compared to \$92 for non-participants across the entire sample, with this difference being significant at the 0.05 probability level. It is hypothesized that, *ceteris paribus*, group

membership contributes positively to MSE profits: a dichotomous variable is incorporated in the MSE profit models to test for this effect.

Enterprise characteristics such as the firm's age and size in terms of number of employees and value of equity capital invested in the business are each hypothesized to play a positive role in determining MSE profitability. Firm age, measured in terms of years of operation prior to the period of reference (September 1995), is included in the model. To capture the effect of firm size, the number of employees, both paid and unpaid who worked within the firm at the beginning of the period of reference, is included as an explanatory variable. The other key size variable - level of equity capital - is not incorporated into the model due to data limitations.

The level of education and gender of the entrepreneur are also likely to affect financial profitability. To proxy for an education effect, the number of years of formal education of the owner is included as an explanatory variable. Likewise, a dichotomous variable is introduced based on the gender of the owner. Recall that results in Chapter Four indicated that profitability of male-owned enterprises was 65 percent greater than female-owned enterprises.

### **5.1.2 Characteristics of the Entrepreneur's Household**

As discussed in Chapter Two, there is no agreement in the literature concerning whether land constraints push households into MSE activity. Results from Chapter Three showed

that land area - a proxy for a household's endowment of agricultural assets - is weakly, though positively associated with the propensity to engage in MSE activities. It is hypothesized that, once a decision is made to invest in an MSE, it is likely that agricultural assets play a positive role in influencing profitability. As such, land area owned (both cultivated and fallow) is tested as an explanatory variable in the MSE profit model.

### **5.1.3 Level of Infrastructure and Locational Factors**

The level of water resources, transportation, communication and other types of infrastructure are likely to influence the level of profitability of an MSE. For example, where road networks are relatively more developed, it is likely that input costs for entrepreneurs decrease and access to output markets improves. Within each of the three zones modeled, these conditions vary widely though precise relative measures are not available. Likewise, there may be significant variation in local effective demand for MSE-produced goods and services associated with infrastructure variation. To control for these differences and the effect they may have on MSE profitability, district-level dichotomous variables are included in the models.

### **5.1.4 The MSE Profit Model**

The following equation represents the MSE profit model run for each of the three zones:

#### **Equation 5-1**

$$\text{MSE\_PROF} = f(\text{GATHFISH, MANUFACT, TRADE, GROUPMEM, MSE\_AGE, MSE\_SIZE, GENDER, OWNR\_EDU, LAND\_AST, DIST\_1...DIST\_}(n-1))$$

The MSE equation is estimated through the ordinary least squares technique, using a linear model functional form. Given this formulation, the coefficients of the continuous variables are interpreted as the effect on profits (in\$) of a unit increase in the variable in question. The coefficients of the dummy variables indicate the differential effect of the groups considered in the level of MSE annual profits. In other words, it shows how much higher (lower) the mean annual profit line is for the class coded 1 than the line for the class coded 0, controlling for all other variables.

The MSE profit is estimated using the ordinary least squares regression. Table 5.1 provides the definition of each variable while Tables 5.2 shows descriptive statistics about each variable by geographic zone. Table 5.3 provides the definition of the district-level dichotomous variables.

#### **5.1.5 Results of the Micro and Small Enterprise Profit Model**

The MSE profit model, judged by the adjusted R-squared statistics, fits well for Nampula area, fairly well for Zambezia/Mutarara, but poorly for the Manica/Sofala area. Yet, analysis of the point estimators (Table 5.4) show that several factors identified in earlier tabular analysis and others included in the model, play an important role in explaining the variation in MSE profits in the three zones.

**Table 5.1 Definition of the Variables Included in the MSE Profit Model**

<b>Variables</b>	<b>Definition</b>
<b>Dependent Variable:</b>	
<b>MSE_PROF</b>	Enterprise annual net profits in \$
<b>Independent Variables:</b>	
<b>Enterprise and Owner Characteristics:</b>	
<b>GATHFISH</b>	Gathering/Fishing and extraction activities (1=if gathering/fishing enterprise, 0=otherwise)
<b>MANUFACT</b>	Manufacturing activities (1=if manufacturing enterprise, 0=otherwise)
<b>TRADE</b>	Trading activities (1=if trading enterprise, 0=otherwise)
<b>MSE-AGE</b>	Age of the Enterprise at the time of the survey in years
<b>MSE-SIZE</b>	Number of workers including the owner at the beginning of the period of reference
<b>GENDER</b>	Gender of the owner (1=if owner is female, 0=otherwise)
<b>OWNR_EDU</b>	Years of Schooling of the owner
<b>GROUPMEM</b>	Participation in business groups/associations (1=if owner participates in group, 0=otherwise)
<b>Household Characteristics (Land Assets)</b>	
<b>LAND_AST</b>	Total area per economically active adult in the owner's household
<b>Location</b>	
<b>DIST_1...(n-1)</b>	See Table 5.3 for definitions
Source: 1996 MAP Smallholder Survey and MAP/MSU MSE Survey	

**Table 5.2 Mean and Standard Deviation of Variables in MSE Models**

<b>Variables</b>	<b>Nampula</b>		<b>Zambezia/ Mutarara</b>		<b>Manica/ Sofala</b>	
	<b>Mean</b>	<b>S.D.</b>	<b>Mean</b>	<b>S.D.</b>	<b>Mean</b>	<b>S.D.</b>
<b>MSE_PROF</b>	63.0	201.0	100.0	190.0	136.0	249.0
<b>GATHFISH</b>	3.3%		8.5%		2.7%	
<b>MANUFACT</b>	64.6%		53.3%		53.7%	
<b>TRADE</b>	19.9%		32.6%		37.5%	
<b>SERVICES</b>	12.2%		5.6%		6.1%	
<b>MSE_AGE</b>	7.7	10.3	6.4	9.6	5.8	9.1
<b>MSE_SIZE</b>	1.3	1.7	1.3	1.3	1.2	1.1
<b>GENDER</b>	12.0%		13.0%		36.0%	
<b>OWNR_EDU</b>	1.8	2.0	3.1	2.8	2.2	2.2
<b>GROUPMEM</b>	0.4%		7.4%		1.9%	
<b>LAND_AST</b>	1.1	0.8	0.8	0.7	1.0	0.9

Source: 1996 MAP Smallholder Survey and MAP/MSU MSE Survey

**Table 5.3 Description of District Level Dichotomous Variables**

Locational Variables	Zones		
	Nampula	Zambezia/Mutarara	Manica/Sofala
<b>District Dichotomous Variables:</b>			
Dist_1	Malema	Alto Molocue	Gondola
Dist_2	Meconta	Ile	Guro
Dist_3	Mogovolas	Inhassunge	Sussundenga
Dist_4	Moma	Lugela	Tambara
Dist_5	Monapo	Maganja da Costa	Buzi
Dist_6	Murupula	Milange	Chemba
Dist_7	Nacala-a-Velha	Mucuba	Cheringoma
Dist_8	Nampula	Mopeia	Chibabava
Dist_9	Ribaue	Murrumbala	Marromeu
Dist_10	Namapa	Namacurra	
Dist_11		Namarroi	
Dist_12		Pebane	
Dist_13		Nicoadala	
Dist_14		Mutarara	
Source: 1996 MAP Smallholder Survey and MAP/MSU MSE Survey			

With respect to sector of economic activity, trading has largest effect on profits in Nampula, yielding annual profits \$125 higher than the omitted category (services); meanwhile there are no statistical differences between any of the other sectors. By contrast, in Zambezia/Mutarara manufacturing is the least profitable sector (on average \$70 less profitable than the omitted category), though again there is no statistical difference in profits between the other sectors. In Manica/Sofala there is no sector effect on profits.

Participation in business support groups (or informal business networks such as women's groups and cooperatives) has a statistically significant effect on MSE profits in the Zambezia/Mutarara area, the zone which shows the highest proportion of MSE owners participating in such groups. On average, participation in such groups in Zambezia/Mutarara increases MSE profits by \$63. From a policy and programmatic perspective, both Government agencies and NGOs attempting to promote MSEs through the formation of rural associations should look further at the reasons behind the apparent successes in Zambezia/Mutarara. The group variable was not statistically significant in the other two zones.

The size of the enterprise, as measured by number of employees prior to the period of reference has a positive and statistically significant impact on enterprise profits in each



zone. An additional worker adds, on average, \$35 in Zambezia/Mutarara, \$40 in Manica/Sofala and \$69 in Nampula to MSE annual profits.

An MSE owner's gender has a significant effect on MSE profits in Zambezia/Mutarara and Manica/Sofala. Male-owned enterprises in Zambezia/Mutarara, earned \$44 more, *ceteris paribus*, than female-owned enterprises. In Manica/Sofala male-owned enterprises earned about \$54 more than their female neighbors.

The owner's level of schooling has a significant effect in Zambezia, where one additional year of schooling adds \$11 in the average annual enterprise profits. In this particular zone, the positive effect of owner education on MSE profits complements results from Chapter Three which showed a positive correlation between education and the propensity to engage in MSE activity.

The level of agricultural assets, as measured by amount of land area owned per adult in the owner's household, is not statistically related to MSE profits.

Finally, regression results suggest that MSE profits are not statistically different across many of the districts. However, there are some exceptions. In Nampula, MSE profits in Moma, a very populous area, are statistically higher than in Namapa (the omitted District). In Zambezia/Mutarara, only in Pebane and Murrumbala annual profits are statistically higher than in Mutarara. In Manica/Sofala, results suggest that, except for the

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case of Guro district, profits in other districts are not statistically different, when compared to the Marromeu. The differences in profits across districts are assumed to reflect differences that exist in the level of infrastructure, differentials in effective demand and other factors. Further interpretation of the results require more information regarding those factors.

**Table 5.4 Regression Results on Factors Associated with MSE Income**

Independent Variables	Dependent Variable: MSE_PROF (MSE Annual Net Profits)					
	Nampala		Zambezi/Mutarara		Manica/Sofala	
	Coefficients	t  ratio	Coefficients	t  ratio	Coefficients	t  ratio
Constant	- 111.789	- 1.816	24.019	0.499	60.855	0.805
GATHFISH	91.009	1.190	12.331	0.260	- 9.318	0.091
MANUFACT	14.778	0.431	- 69.503**	1.752	- 5.011	0.076
TRADE	124.833**	3.118	23.298	0.560	42.048	0.609
MSE_AGE	0.610	0.533	0.033	0.035	- 1.198	0.721
MSE_SIZE	68.655**	10.030	35.085**	4.988	40.095**	2.990
GENDER	- 24.882	0.720	- 43.706**	1.672	- 54.040**	1.632
OWNR_EDU	- 7.328	1.181	3.726	1.082	11.002*	1.432
LAND_AST	0.273	0.020	- 0.846	0.068	17.506	1.151
GROUPMEM	181.242	1.368	63.262**	1.877	5.129	0.058
Dist_1	65.743	1.045	33.728	0.934	- 26.118	0.430
Dist_2	66.741	0.974	25.760	0.674	161.512**	2.364
Dist_3	41.016	0.675	16.224	0.351	- 31.537	0.544
Dist_4	118.148**	2.028	18.119	0.377	52.508	0.685
Dist_5	80.418	1.184	- 17.117	0.373	- 3.511	0.059
Dist_6	31.452	0.496	38.507	0.670	- 79.058	1.244
Dist_7	- 0.682	0.010	41.499	0.867	- 12.449	0.176
Dist_8	83.925	1.274	34.722	0.748	- 9.084	0.133
Dist_9	85.581	1.328	127.654**	3.339		
Dist_10			9.400	0.231		
Dist_11			- 17.425	0.345		
Dist_12			129.884**	3.092		
Dist_13			53.800	1.572		
N	287		357		303	
F-Statistic	12.027		4.741		2.559	
Significance	0.000		0.000		0.001	
Adj-R2	0.409		0.237		0.080	

\*\* coefficients are statistically significant at the 10% level.

Source: TIA-96 and MSE Surveys.

## **5.2 Determinants of Household Per Capita Income**

The level of net income per capita attained by rural households in Central and Northern Mozambique is hypothesized to be determined by a number of factors that interact in many complex ways. As noted by Tschirley and Weber (1994), the complexity of this process is such that any two households of apparently similar endowments might enjoy fairly different levels of well-being. The relative importance of those factors, and their relationship to each other can change over time and across geographic regions.

Essentially, four sets of factors are hypothesized to explain the levels of income per capita by rural households in the study zone:

- 1) sectors of MSE in which the household (and/or its members) chooses to operate;
- 2) factors associated with household structure;
- 3) factors associated with household assets;
- 4) level of infrastructure and locational factors.

### **5.2.1 MSE Sectors in Which the Household Chooses to Operate**

Analysis in previous chapters indicates that MSE income has a positive effect in household income per capita. Yet, different MSE sectors are likely to have a different impact in magnitude and statistical significance on household income per capita. To test for these effects, dichotomous variables for each major MSE sector in which the household is involved are included in the income per capita equation.

### **5.2.2 Household Structure**

To capture the effect of household structure in the levels of household income per capita, four variables are included in the models: dependency ratio, age of the household head, education and gender of the household head.

As discussed in Chapter Three, dependency ratio refers to the number of dependent members per economically active adult in the household. Additional dependents brought to the household, *ceteris paribus*, increase the dependency ratio implying increasing consumption needs without adding the productive capacity of the household. Additional economically active adults, while increasing the household consumption needs, lowers the dependency ratio in the sense that additional adults increase the household productive capacity. It is hypothesized that higher dependency ratios contribute negatively to the level of household income per capita.

The age of the household head is believed to be important in determining the level of household income per capita. The age variable is tested with the inclusion of age of the head of the household at the time of the survey.

The level of education and gender of the household head are also hypothesized to be important in determining the level of household income per capita for reasons analogous to why they were included in the MSE profit model.

### **5.2.3 Household Assets**

To capture the effect of household assets on the levels of household income per capita, three variables are included in the models: total land owned by the household per economically active adult, percent of household total land area with cash crops, and number of cashew and/or coconut trees per economically active adult in the household.

Results from other research in Southern Africa (Jayne, 1992) suggest that households with larger land holdings are more likely to grow cash crops, which is often associated with higher household income. The results in Chapter Three suggest that land scarcity is not a major push factor for households to diversify into micro and small enterprises in Central and Northern Mozambique, in the sense that households with less land were not found to diversify at a higher rate than the land abundant ones.<sup>28</sup> Given these hypotheses and also the increased output likely to be generated in households with larger amounts of land including from cash cropping, it is hypothesized that household income per capita is positively associated with total land area and cash cropping area. To test for the effects of these two factors, total area owned per economically active adult, and the percentage of total area used for cash cropping are include as independent variables. Likewise, to test for the effect of perennial crops on household income per capita, the number of trees

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<sup>28</sup> Reardon et al. (1994) found the same result in the West Africa Semi-Arid Tropics , while Walker and Ryan (1990) and Liedholm and Kilby (1989) found the opposite result in South Asia. Other studies reach inconclusive results (Reardon and Taylor, 1996). Evidently, poor land households may feel the need to diversify but may be unable to do so by other correlated constraints such as the lack of human, physical and financial capital.

hypothesized to be most important in determining income - cashew and coconut - owned by the household is included as an explanatory variable.

#### **5.2.4 Level of Infrastructure and Locational Factors**

To control for variation in rural infrastructure, agro-climatic conditions, soil quality and other factors associated with variations within a particular province, the same set of district-level dichotomous variables used in the MSE profit model (Table 5.3) is included in the household income model.

#### **5.2.5 The Household Per Capita Income Model**

The following equation represents the household per capita income model, run for each of the three zones:

##### **Equation 5-2**

$$\ln(\text{INCPC}) = f(\text{GATHFISH}, \text{MANUFACT}, \text{TRADE}, \text{SERVICES}, \text{EDU\_HHH}, \text{AGE\_HHH}, \text{GENDER}, \text{DEP\_RAT}, \text{LAND\_AST}, \text{LAND\_CSH}, \text{NTREE\_AD}, \text{DIST}_1 \dots \text{DIST}_{(n-1)})$$

The household income per capita model is estimated using a log-linear model functional form. Given this formulation, regression coefficients of the continuous variables in this model are interpreted as the percentage change in household per capita income given a unit change in the independent variable evaluated at its mean. The percentage change



implied in the dependent variable by the coefficients,  $B$ , of the dichotomous variables is equal to  $e^B - 1$ .

Table 5.5 provides the definition of each variable included in the model while Table 5.6 provides descriptive statistics about each variable (with the exception of the district-level dichotomous variables) by geographic zone.

### **5.2.6 Results of the Household Income Per Capita Model**

The household income per capita models perform reasonably well, explaining between 27 and 34 percent of the variation in per capita income. Analysis of the point estimators of this model show several results (Tables 5.7).

**Effect of Participation of Household Members in MSE Activities.** Involvement of household members in MSE activities has a positive effect on household per capita income in nearly every sector.

Undertaking **Gathering/Fishing activities** increases per capita incomes in 139 percent in Nampula and 103 percent in Zambezia/Mutarara. This translates to an increase in annual per capita income of \$70 and \$38, respectively. The impact is mostly associated with the relatively high returns yielded in fishing activities in the study area. The coefficient of this variable is not statistically significant in Manica/Sofala.

**Table 5.5 Definition of the Variables Included in the Income Per Capita Model**

<b>Variables</b>	<b>Definition</b>
<b>Dependent Variable:</b>	
INPC	Household annual income per capita
<b>Independent Variables:</b>	
<b>MSE Sectors</b>	
GATHFISH	Gathering/Fishing and extraction Activities (1=if gathering/fishing enterprise, 0=otherwise)
MANUFACT	Manufacturing Activities (1=if manufacturing enterprise, 0=otherwise)
TRADE	Trading Activities (1=if trading enterprise, 0=otherwise)
SERVICES	Services enterprises (1=if trading enterprise, 0=otherwise)
<b>HH Structure</b>	
EDU_HHH	Years of schooling of the household head
AGE_HHH	Age of the household head in years
GENDER	Gender of the household head dummy (1=female, 0=male)
DEP_RAT	Household dependency ratio
<b>HH Assets</b>	
LAND_AST	Total area owned by the household per economically active adult in the household
LAND_CSH	Percentage of land with cash crops
NTREE_AD	Number of cashew and coconut trees per economically active adult in the household
<b>Location</b>	
DIST_1...(n-1)	See Table 5.3 for definitions

Source: 1996 MAP Smallholder Survey and MAP/MSU MSE Survey

**Table 5.6 Mean and Standard Deviation of Variables in Income Per Capita Models**

Variables	Nampula		Zambezia/ Mutarara		Manica/ Sofala	
	Mean	S.D.	Mean	S.D.	Mean	S.D.
INCPC	50	56	37	50	48	59
GATHFISH	1.4%		3.2%		1.5%	
MANUFACT	23.7%		20.5%		24.3%	
TRADE	8.1%		11.5%		16.1%	
SERVICES	4.9%		2.3%		3.5%	
EDU_HHH	1.7	2.0	1.9	2.1	1.9	2.2
AGE_HHH	42	14	43	13	43	15
GENDER	10%		13%		21%	
DEP_RAT	1.01	0.62	0.89	0.53	0.90	0.56
LAND_AST	0.64	0.61	0.45	0.41	0.63	0.57
LAND_CSH (%)	4.91	14.15	0.46	4.27	0.45	3.99
NTREE_AD	10.93	23.61	5.08	14.79	2.60	10.70

Source: 1996 MAP Smallholder Survey and MAP/MSU MSE Survey

**Table 5.7 Regression Results on Factors Associated HH Income per capita**

Independent Variables	Dependent Variable: HH Annual Income per capita (lnINPC)					
	Nampula		Zambezia/Mutarara		Manica/Sofala	
	Coefficients	t  ratio	Coefficients	t  ratio	Coefficients	t  ratio
Constant	2.673	17.583	2.294	12.406	2.690	12.818
GATHFISH	0.874**	4.142	0.706**	4.435	0.343	1.118
MANUFACT	0.295**	4.448	0.463**	6.289	0.469**	4.845
TRADE	0.548**	5.559	0.707**	7.126	0.827**	6.914
SERVICES	0.153	1.278	0.483**	2.431	0.667**	2.962
EDU_HHH	0.037**	2.486	0.030**	1.858	0.041**	1.899
AGE_HHH	0.007**	3.320	0.006**	2.439	0.002	0.779
GENDER	-0.110	1.258	0.108	1.210	0.195**	1.768
DEP_RAT	-0.373**	7.797	-0.310**	5.034	-0.237**	3.276
LAND_AST	0.499**	10.797	0.709**	9.511	0.465**	6.425
LAND_CSH	0.007**	3.221	-0.002	0.256	0.015**	1.913
NTREE_AD	0.004**	2.754	0.014**	6.262	0.02**	3.360
DIST_1	0.559**	4.581	0.129	0.842	0.193	1.122
DIST_2	0.512**	4.161	-0.009	0.571	-0.070	0.406
DIST_3	0.473**	3.681	0.164	1.060	0.163	0.937
DIST_4	0.417**	3.849	-0.006	0.391	-0.209	1.221
DIST_5	0.445**	3.513	0.221	1.425	0.203	1.148
DIST_6	0.267**	2.166	0.288**	1.900	-0.304**	1.697
DIST_7	0.134	1.070	0.523**	3.449	-0.251	1.482
DIST_8	0.698**	5.638	0.158	1.038	-0.099	0.583
DIST_9	0.515**	4.118	0.354**	2.321		
DIST_10			0.377**	2.444		
DIST_11			0.143	0.941		
DIST_12			0.005	0.035		
DIST_13			0.304**	2.002		
N	700		886		567	
F-Statistic	18.848		14.424		12.497	
Significance	0.000		0.000		0.000	
Adj-R2	0.338		0.267		0.278	

\*\* Coefficients are statistically significant at the 10% level.

Source: TIA-96 and MAP/MSU MSE Surveys.

Involvement of household members in **manufacturing activities** increases incomes per capita by 34 percent (\$17) in Nampula, 59 percent (\$22) in Zambezia/Mutarara and 60 percent (\$29) in Manica/Sofala.

The impact of household participation in **trading activities** is remarkably important in all zones. The effect of household involvement in trading activities, *ceteris paribus*, is to increase smallholder per capita income by 73 percent (\$37) in Nampula, 103 percent (\$38) in Zambezia/Mutarara and 129 percent (\$62) in Manica/Sofala. This result supports findings in Chapter Four that indicated that profits in trading activities in Manica/Sofala tend to be higher than in other areas, therefore likely to have a significant impact on household incomes. The relatively better marketing infrastructure and enabling environment in that area may be a key reason for this finding.

Participation in **services enterprises** also have a positive impact on household per capita income in Zambezia/Mutarara and Manica/Sofala and is not significant in Nampula Province. It increases per capita income in 62 percent (\$23) in Zambezia/Mutarara and 95 percent (\$46) in Manica/Sofala. It appears that the business environment in Manica/Sofala is highly favorable for the development of not only trading and Manufacturing activities, but increasingly the demand for services is also important.

**Other factors associated with household income per capita.** Household structure and the level of agricultural assets also play a role in explaining the levels of household per capita income.

With respect to the impact of **household structure variables**, the models show that level of education and age of the household head have a positive effect in each zone. On average, one additional year of education increases incomes per capita between 3 percent in Zambezia/Mutarara to 4 percent in Manica/Sofala. As expected, age of the household head has a positive and statistically significant effect in Nampula and Zambezia/Mutarara, although with a very small order of magnitude.

Female headed household are significantly worse off, *ceteris paribus*, than male-headed household incomes per capita in Nampula as expected. Unexpectedly, the effect of female headed households is positive in the other two zones. However, the only statistically significant estimator of this variable is found in Manica/Sofala, where being female headed adds about 20 per cent to incomes per capita.

As expected, additional dependents brought into the households, or the reduction in the number of economically active adults, reduces household income per capita. A unit increase, at the mean level of the household dependency ratio variable, reduces income per capita in 37 percent (\$19) in Nampula, 31 percent (\$11) in Zambezia/Mutarara and 24 percent (\$12) in Manica/Sofala.

The analysis of the impact of household **agricultural assets'** variables indicate that land owned by the household has a positive and statistically significant effect in incomes per capita in each zone. One additional hectare in land owned per economically active adult in the household increases income per capita by approximately \$25 in Nampula, \$26 in Zambezia/Mutarara and \$23 in Manica/Sofala. This result is consistent with earlier studies undertaken in Northern Mozambique (Tschirley and Weber, 1994; Strasberg, 1997; and Marrule, 1998).

The percent of land owned used in cash cropping has apparently no effect in incomes per capita in Zambezia/Mutarara, but a positive and statistically significant effect in other zones. For instance, one percent increase in cash cropping land increases income per capita by \$0.35 in Nampula and 0.72\$ in Manica/Sofala. This results reinforce findings from previous MAP/MSU research on the important role played by cash crops in rural incomes and household food security (Tschirley and Weber, 1994 and Strasberg, 1997).

In all zones, the number of cashew/coconut trees owned by the households has a positive and statistically significant effect on household incomes per capita. In Nampula, where cashew is an important crop, one additional tree increases incomes per capita by \$0.18. In Zambezia/Mutarara, major coconut areas, the figure is approximately \$0.51, and in Manica/Sofala, where both crops are important the effect of an additional tree on per capita income is about \$0.96. It is obvious that these impacts vary widely within each zone, with a higher impact in districts that are more endowed with cashew and coconuts.

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Unlike in the MSE model, locational effects are much more important in explaining per capita income levels in the study area, which suggests that agricultural related locational factors, such as soil quality, rainfall, etc, may have a key role in the region. For instance, in Nampula, incomes per capita in all districts but Nacala-a-Velha are statistically higher than incomes in Namapa district. In Zambezia/Mutarara, incomes per capita in Milange, Mocuba, Murrumbala, Namacurra and Nicoadala are significantly higher than in Mutarara. In Manica/Sofala, income per capita in Chemba is significantly lower than in Marromeu. As referred in the MSE model, a detailed discussion of specific reasons explaining these differences requires additional information.

The findings in this chapter, along with results presented in previous chapters, are summarized and used to draw broad policy implications in the next chapter.

## **Chapter 6**

### **Summary of Conclusions and Policy Implications**

#### **6.0 Introduction**

There is considerable conventional wisdom that in a poor country like Mozambique rural household welfare is largely determined by activities in production agriculture. The principal purpose of this study was to better understand rural household economic behavior and income earning strategies, and the factors determining income levels. Special emphasis was given to studying the role of MSEs in rural household income strategies, through the analysis of MSE income contribution to total household income, as compared to other sources. Furthermore, a detailed description of the MSE sector was undertaken by analyzing the profit levels in the sector and their determinants. The central objective of the study is to link broad policy implications to detailed findings in order to help policy makers better address rural development programs aimed at increasing rural incomes, with special emphasis on strengthening the role of the MSE sector.

The study uses data from a random sample of 2,176 households interviewed in the 1996 Agricultural Sector Survey (TIA-96). For the same households, detailed information on MSEs owned by household members was gathered concomitantly in the 1996 Micro and Small Enterprise Survey for the Mozambique's Central and Northern Provinces of Nampula, Zambezia, Manica, Sofala and the District of Mutarara (Tete Province).

Section 6.1 summarizes research findings and conclusions. Section 6.2 presents policy implications, recommendations and suggestions for further research.

### **6.1 Summary of Research Findings**

**Diversification into MSEs and characteristics of the MSE sector.** Thirty six percent of rural households in the study zone were found to have at least one member engaged in some kind of MSE activity. As indicated in summary Table 6.1, manufacturing is the most common type of activity among households, followed by trading, services and gathering/fishing. Importantly, even some 30 percent of households with relatively low levels of agricultural income are becoming involved with MSEs. Yet, lower level agricultural per capita income are still less likely to be engaged in all types of MSEs, with the exception of gathering/fishing, the less common type of business in the region. Some 40 percent of households in the highest per capita agricultural income tercile have MSEs.

The study likewise finds that households with relatively smaller land area owned are less likely to be engaged in MSE activity.

Analysis at the enterprise level estimates that there are some 650,000 MSEs in the study area, providing employment to an estimated total of about one million people. The majority of the households with MSEs are engaged in manufacturing (56.9%) and trading (29.5%) activities, most with forward linkages from local agriculture.

**Table 6.1 Summary of Findings on Diversification into MSEs and Annual Profits Per Worker, by Agricultural Income Per Capita Terciles**

MSE Sectors	HHs with MSEs by Agricultural Income per capita Tercile <sup>1</sup>				MSE Profit per unpaid worker by Agricultural Income per capita Tercile <sup>1</sup>			
	1 (\$8)	2 (\$24)	3 (\$69)	All HHs <sup>2</sup> (\$34)	1 (\$8)	2 (\$24)	3 (\$69)	All HHs <sup>2</sup> (\$34)
	— percent of Households —				— \$ per unpaid worker —			
<b>Households without MSEs</b>	70	59	60	64	-	-	-	-
<b>Households with MSEs</b>	30	41	40	36	75	78	67	74
<b>Manufacturing</b>	16	21	23	20	34	40	45	40
<b>Trading</b>	7	11	10	9	134	130	140	134
<b>Services</b>	4	6	5	5	84	45	48	60
<b>Gathering and Fishing</b>	3	3	2	3	177	232	117	179

<sup>1</sup> The numbers in parentheses refer to mean agricultural income per capita in each tercile. They do not include income from labor sales from household members, and profits from MSE activity.

<sup>2</sup> Total household income per capita in the study area average \$44.

Source: 1996 MAP Smallholder Survey and 1996 MAP/MSU MSE Survey data.

When compared to households whose members are without MSE activities, households with members engaged in MSEs appear to be larger in size, more likely to be headed by males and relatively better educated, and hold relatively larger areas of land.

The participation of households in agricultural markets (as suppliers) is more common among households whose member(s) own MSEs. For instance, among households with MSEs, 47 percent market food crops, while among those without MSEs, only 43 percent do so. Finding are also that households with MSEs have greater involvement with cash cropping the figures (52 versus 46 percent). Likewise, the propensity to diversify into MSEs is relatively higher among individuals whose households grow cash crops, when compared to those that do not. Among households with cash crops, 38 percent are

involved in some type of MSE, while among those that do not grow cash crops, only 33 percent are engaged in MSE activity. This suggests that under conditions of weak or missing credit markets, cash cropping may increase household liquidity, and the ability to diversify incomes. As expected, given the near absence of landless households, and the extensive use of own household labor, participation in farm and non-farm labor markets is of negligible importance. Households without MSEs do supply more labor market days per year than those that diversify into MSEs.

**Profits in the MSE sector.** MSE total profits vary widely by province, enterprise and household characteristics. Results from individuals that own MSEs indicate that MSE profits in the region are, on average, approximately \$94 per year per enterprise, and at the household level, \$118 per household, when multiple enterprises are taken into account. Enterprises in Manica Province yield the highest profits (\$145 per enterprise and \$217 per household) followed by Sofala (\$122 and \$179), Zambezia (\$105 and \$123), Nampula (\$64 and \$76) and finally Mutarara (\$44 and \$72).

Summary Table 6.1 shows MSE profits per worker by sector, across agricultural income terciles. Results indicate that, overall profits are relatively higher in trading and gathering/fishing (predominantly fishing) enterprises followed by services and manufacturing. Across per capita income terciles, results indicate that middle tercile households earn the highest profits per worker in gathering/fishing. Higher tercile households earn the highest level of profits per worker in trading and manufacturing.

Lower agricultural income tercile households that engage in services (especially construction and repairing) earn relatively higher profits per worker than other households. Lower tercile households engaged in gathering/fishing earn higher profits per worker than the higher tercile households. This suggests that households with uncertain cropping incomes can reduce their income risk by engaging in services and gathering/fishing activities. However, the ability to do so may be limited in many areas, due to various reasons, including lack of liquidity to invest in capital intensive services. Fishing activities depend on natural endowments that are not present in all locations.

**Determinants of MSE total profits.** Econometric analysis indicates that MSE total profits are positively associated with enterprise size in all zones. An additional worker adds to annual profits, on average, \$35 in Zambezia/Mutarara, \$40 in Manica/Sofala and \$69 in Nampula. While age of the enterprise is not a factor determining profits in all zones, the level of education of the owner is an important factor affecting profits in Zambezia/Mutarara. Gender of the owner also has an effect on profit differentials. In Zambezia/Manica and Manica/Sofala, male-owned MSEs earned, *ceteris paribus*, \$44 and \$54 more than their female-owned counterparts. The relationship between land holdings and MSE total profits was found to not be statistically significant. Coefficients of district-level dichotomous variables indicate that MSE profits, with few exceptions, do not differ much across districts.

An important result from a policy perspective, is the positive effect on profits of entrepreneur participation in business support groups in the Zambezia/Mutarara zone. Controlling for all other factors, participants in such groups earn yearly profits \$63 higher than non-participants in that zone. Government agencies and NGOs involved in the promotion of MSEs in these areas through the formation of rural associations need to look at the reasons behind this apparent success, and find ways to extend this effort elsewhere.

MSE sector effects were found in Nampula, where trading enterprises earn annual profits that are statistically higher than enterprises in the services sector. In Zambezia/Mutarara, manufacturing activities earn profits statistically lower than the services sector.

**Household total and per capita income levels.** Annual household and per capita incomes in the study region appear to be extremely low. On average, household income for the region is \$201, varying from \$169 in Mutarara and Zambezia to \$295 in Sofala. Per capita incomes average \$44 for the region, varying from \$27 in Mutarara to \$50 in Nampula and Manica. Income ratios between households with MSEs and those without, indicate that those with MSEs earn twice as much in terms of total household income and 1.7 more in terms of per capita income. This result suggests that the promotion of MSEs in rural areas has a potential to boost incomes, but prospects to MSEs are clearly not independent of other investments at the household level and in local infrastructure.

**Household income shares.** Analysis of total household income shares by household

income per capita terciles, among all households in the study area, indicate that:

- i) the majority of income is generated on-farm, in each zone, predominantly in the form of retained agricultural production, although this share falls as households get richer;
- ii) despite the fact that about 45 percent of the households sell some of their staple food production, the share of income from household staple food marketed is surprisingly low. Moreover, the share of income from cash cropping is systematically low, except in Nampula Province where cash crop income is the major source of household cash income;
- iii) off-farm (farm and non-farm labor market and MSE activity) income is dominated by MSE activity which has a systematically higher share than net labor sales;
- iv) the share of MSE income averages 10 percent for the entire region, varying from as low as 7 percent in Nampula to as high as 14 percent in Manica and 15 percent in Sofala. MSE income shares by household income per capita tercile show a monotonically increasing relationship, i.e., the share of MSE income increase geometrically from the poorest household group to the richest. A similar result was reported in studies in Nigeria (Matlon, 1979), Tanzania (Collier, Radwan and Wangwe, 1986) and Burkina Faso (Reardon, Delgado and Matlon, 1992). This result suggests that diversification by poor households into MSEs may have been limited by barriers to entry into profitable businesses. Attempts to specialize in agriculture by poor households may also be limited, leaving them at the lowest income strata. Further analysis is necessary to better understand this phenomenon.

**Effect of participation of household members in MSE activities on household per capita income levels.** In summary, econometric analysis shows that the involvement of household members in nearly all MSE sectors has a positive effect on per capita incomes (Table 6.2). Controlling for all other factors, results in this study suggest that gathering/fishing<sup>29</sup> is particularly important in Nampula, where it has the strongest overall

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<sup>29</sup> This category is mostly dominated by profitable fishing enterprises.



income effect, followed by trading businesses, and in Zambezia/Mutarara , where it has the same effect as trading businesses. In Manica/Sofala, trading enterprises have the relatively strongest income effect followed by service enterprises.

**Table 6.2 Summary of Estimated Effects of MSE Sectors on Household Income per Capita, by Zone**

MSE Sectors	Nampula		Zambezia/Mutarara		Manica/Sofala	
	Percent Impact on HH Income per Capita	Absolute Amount (\$)	Percent Impact on HH Income per Capita	Absolute Amount (\$)	Percent Impact on HH Income per Capita	Absolute Amount (\$)
Gathering/Fishing	139	70	103	38	not significant effect	
Manufacturing	34	17	59	22	60	29
Trade	73	37	103	38	129	62
Services	not significant effect		62	23	95	46

Source: Derived from econometric estimation found in Table 5.7

The impact of manufacturing, the most common business group in the region, and services is relatively weak overall. In Nampula manufacturing yields a stronger impact than services (not statistically significant). In Zambezia/Mutarara it has a similar impact, while in Manica/Sofala services yield a higher impact than manufacturing businesses. Relatively low contribution from manufacturing may be related to the relative saturation of the major manufacturing businesses, essentially foods and beverages and the exclusive reliance on local markets which makes returns to these activities relatively low. Given the current stage of rural development, demand for many services is still low. Higher local incomes

may lead to an increasing demand that may encourage households to get increasingly involved in such businesses and receive higher returns.

**Effect of household structure and level of agricultural assets on household per capita income levels.** Results indicate that per capita income levels are positively associated with household head age and years of schooling. Gender of the household head was not found to be a statistically significant factor in Nampula and Zambezia/Mutarara. In Manica/Sofala, controlling for all other factors, being female headed has an unexpected positive effect on per capita income.

Household agricultural assets are also important factors associated with the level of household income per capita. First, a positive and statistically significant relationship is found between total land area owned per adult and the level of household per capita income in each zone. Second, the percent of land owned which is used in cash cropping has a positive effect on household income per capita in Nampula and Manica/Sofala. Third, the number of cashew and coconut trees owned per adult in the household has a positive effect on income per capita in each and every zone. The magnitude of these impacts is variable across zones, and an even wider variation is likely across districts. These results are consistent with earlier studies undertaken in the region that stress the importance of land access and cash cropping in household food security (Weber and Tschirley, 1994, and Strasberg, 1997).

## **6.2 Policy Implications, Recommendations and Further Research**

This study has confirmed the importance of micro and small enterprises in rural household income in Central and Northern Mozambique. Policy makers and researchers need to pay more attention to MSEs as part of rural development strategies. Yet the study also shows why rural development policies aimed at increasing rural incomes should focus on an integrated activity approach that promotes increases in agricultural production while enhancing the role of MSEs.

Also, the current insignificance of the local farm labor market as a reliable cash income source, in a labor abundant setting, makes investment in MSEs by rural households a viable income enhancing alternative. MSE promotion can complement other efforts to facilitate agricultural development, and as food and cash cropping is intensified, there will be more demand for hired labor. Therefore, over time, agricultural and farm labor sales income are likely to be increasingly complementary.

As research results indicate, the majority of MSE activities that have started to emerge in relatively significant numbers in rural areas are very small in size and yet have important linkages with local agriculture, through the use of inputs (manufacturing) and agricultural commodities (trade). The level of infrastructure and demand conditions present in the areas where these enterprises are located are likely to be very important for the growth of the sector. However, there is effective demand for MSE goods and services in other areas, but the lack of information on business opportunities, a missing credit market and a poor

transport infrastructure prevent households (especially the poorest) from investing in MSEs, due to very high transactions costs involved. Richer households, some already involved in MSE activity, are often discouraged from investing in more capital intensive MSE activities even though they have more financial ability, due to the lack of information/know how and basic tools to start up activities such as blacksmithing, building materials, repair services, etc. As the economy grows, these activities are likely to be in increasing demand.

Therefore, local Governments and NGOs designing and implementing rural development programs should emphasize strategies that:

- i) Identify and support MSE activities with potential to increase rural incomes. Activities with linkages to agriculture through input/output markets should be given special attention, but other types of businesses opportunities should also be considered. The benefits of such support can be potentially maximized if emphasis is given to the support of business associations or other informal groups, that have the potential to minimize transactions costs, through facilitated access of participant MSEs to input and output markets, as well as access to credit, non-financial assistance, etc. The present study clearly documents the payoff to such assistance.
- ii) Resist trying to control MSEs. Instead, create an enabling business environment for the middle-person to operate in, through dissemination of information about business opportunities, reduction of official rules and regulations, and focus on the availability of very-short term credit, principally for working capital. Promote group lending schemes already experienced in other countries, especially among female operators. As results indicate, female operators are still poorly involved in MSEs in rural Mozambique, but typically female businesses have shown very high repayment rates in other countries.
- iii) Given the positive association between agricultural cash income and MSE activity, the promotion of cash cropping and efforts to improve the performance of food markets in rural areas should continue to be considered through both public and private policies and programs that improve input supply systems and marketing services. Households that participate in cash crop production, or successfully

participate in food crop markets, are typically more likely to engage in MSEs, often self-financing their investment. The identification of business opportunities is of great need for these potential operators. Basic training and “start-up” guidance is also essential. Much could be done with efforts that focus on training and MSE technical assistance;

iv) Promote actions that strengthen MSEs but also emphasize linkages with Government and NGO agricultural programs. Too often, agricultural development projects overemphasize agricultural production and pay too little attention to the possible complementary role of MSEs in overall household income strategies. Now that the country is beginning to reach national food self-sufficiency, food security has improved in many areas, but there are still deficit areas where agricultural goods need to flow. Strategies to promote trading activities to fill that gap, and manufacturing activities with linkages to agriculture should be given top priority in complementing agricultural investments. Fishing businesses should also be given special attention, especially among land poor households in coastal areas;

v) Investment in public roads and the availability of market information, not only for the agricultural sector, is of great importance in this process to facilitate access to distant markets in rural and urban areas where there is effective demand. Furthermore, promotion of trade fairs and construction of permanent market places where MSE operators pay a minimum fee for maintenance proposes, is also very important. Consultation with local authorities and potential beneficiaries in the process is recommended.

In summary, as results suggest, rural incomes are affected by multiple factors that interact in many different ways. It is clear that MSE businesses flourish as rural incomes grow.

More sustainable rural development will be achieved in a multi-sectorial fashion. However, the success of such strategies depend in part on how well these complex factors are understood by policy makers and economic agents. The empirical data collected in this study is an important contribution, but is not enough to answer all questions and recommend specific policies and programs. Therefore further research is recommended.

Important applied research themes include:

i) Study in more detail the relationship between land access, household income and household income diversification. This includes the study of farm and non-farm

labor markets and MSE investment and returns. This study provides initial insights that show the importance of improving access to land in order to raise smallholder income, and support further income diversification. These results need to be complemented with more research on the land allocation system in order to better recommend how and why policy makers can improve smallholder land policy and overall rural development.

ii) Study ways to enhance agricultural sector intensification of both food and cash crops, and study the relationships between agricultural cash income and sources of MSE investment, income levels and applications. Understanding the dynamics of the capital flow in the rural economy is very important in designing rural growth oriented policies;

iii) Study in more detail activities identified in this study as having potential to increase household incomes, and identify and study sub-sectors that can potentially generate rural employment and income growth focusing on specific regions, resources/commodities and opportunities;

iv) Study rural financial markets for the design of sustainable credit schemes, either individual leading type or business associations. As the economy grows and becomes increasingly monetized, micro-finance issues are of key importance in addressing rural development policies.

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