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DETERMINANTS OF PARTICIPATION IN NON FARM ECONOMIC ACTIVITIES: THE CASE OF WOLMERA WOREDA WEST SHEWA ZONE OROMIYA REGION.

BY

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ACRONYMS

ADLI- Agricultural Development Led Industrialization

AIDS- Anti Immuno Deficiency Syndrome

WB - World Bank

CSA- Central Statistics Authority

DA- Development Agent

ECA- African Economic Commission

EPRDF- Ethiopian People Revolutionary Democratic Front

FAO- Food and Agricultural Organization

GDP- Gross Domestic Product

GIS- Geographical Information System

Ha- Hectare

HIV- Human Immune Virus

MDG- Millennium Development Goals

TLU- Tropical livestock Unit

RNF- Rural Non Farm

SDPRP- Sustainable Development and Poverty Reduction Programme

SPSS- Statistical Package for Social Sciences

SSA- Sub Saharan Africa

ABSTRACT

Nowadays the rural non farm economic sector in developing countries is growing substantially and it became an important source of employment and income for rural households. But not all rural households are enjoying the lucrative benefits of this sector. This paper investigates intensity and determinants of households' participation in non farm income generating activities in wolmera woreda,Oromiya region. The data was collected from randomly selected sample households and the information was analyzed and processed using simple descriptive statistical tools and logit regressive economic model. The result show that majority of rural households in the study area do indeed adopt multiple income sources driven by various demographic and socio economic factors. The economic model shows that factors like literacy, family size, and land size are happen to be the main determinant factors in households' decision to engage in different non farm income diversifying activities.

Main Words: Non farm, Diversification, Income

CHAPTER ONE

1.1. Introduction and Background

Africa being part of so called "third world" faces different multi dimensional challenges. More than 44% of the population live under absolute poverty, high rate of unemployment and under employment, high population growth rate, 2/3 of the people dwell in environmentally unsafe places, high external debt, political crisis, high capital flight and corruption, (ECA,2007). Both in terms of incidence and intensity, poverty remains a critical issue in Africa, where almost half of the people is severely affected by lack of food and exposed to drought and famine. Those challenges are serious particularly in rural Africa where the majority of the population resides and agriculture is a sole means of livelihood. African agriculture is characterized by traditional farming, low productivity, low modern input and equipment usage rate, subsistence farming on fragmented land and the like.

The contribution of Agriculture to GDP ranges from 33 percent in East Africa to less than 8 percent for southern Africa. It employs some 70 percent of the work force and generates on average 30 percent of Africa's GDP (ibid.). Even though agriculture is the main and dominant economic sector in most part of Africa, still it is characterized by low productivity and the sector is not in a position to ensure food security. Africa is considered as a net importer of food except for some countries like South Africa.

The World Bank report (2005) recognizes the many dimensions of poverty beyond the low level of income. The first dimension of poverty is material deprivation (lack of opportunity measure in terms of income or consumption threshold) while the second dimension is related to human capital which is expressed in terms of low achievements in education and health and the third

dimension of poverty is vulnerability-the probability to be poor someday, which is highly associated with well being, since it affects individual behavior in terms of investment, production patterns and coping strategies and perception of their own. The last but not the least component of poverty is being voicelessness and powerlessness.

The poverty dimensions do not stand by themselves; there is high level of interaction and reinforcement among each other. A low level of education and health can lead to low level of income which results in material deprivation.

For many years, African countries tried to develop the agricultural sector with different policy interventions and incentives. Reducing rural poverty has been a long standing concern motivating an array of initiatives by governments, non governmental organizations and development agencies. But the outcome and lesson learned are not as such promising, although the continent is showing some economic growth in recent years (5.2 % in 2004), 5.3 % in 2005, 5.7 % in 2006, 5.8 % in 2007), real economic growth rates have remained low relative to their development goals and few African countries are positioned to achieve the millennium development goals (MDG) by 2015(ECA 2007).

Compared to other region, Africa continues to lag behind in indicators of social development. Measure of poverty remains virtually unchanged over the past decades. Sub Saharan Africa (SSA) also lag behind in progress towards universal primary education and improvement in the health sector is also modest with the spread of HIV/AIDS already became a major health threat and it is projected that there will be 19 million additional deaths due to AIDS between 2010 and 2015 and malaria continues to be the number one killer in the continent (ECA, 2007).

Crowded by those multi faced development challenges and the inefficiency and inability of the main economic sector (i.e Agriculture) to fulfill promises, Africa is in need of alternative policies that could bring sustainable development ,food security and poverty alleviation. The traditional approach to reduce poverty had been through programs of land distribution and redistribution combined with integrated rural development programs aimed to increase productivity of the agriculture sector (Janvry and Sadoulet,2001), and this programs had met with limited success and had not been sustainable.

The traditional approach underestimated the multiplicity of activities in which rural people engaged to generate income, especially in those non farm activities and regarded the rural economy as homogenous and purely agricultural. For long time, the presence and role of non farm sector in rural economy had been neglected both as an alternative as policy intervention and academic discourse. But failure of the integrated rural development approach and deep changes in the context of rural development is pursued have led to experimenting different approaches that can entertain the new context and the need for sustainable development.

In due process, a comprehensive view of the multiplicity of household income sources has revealed the tremendous importance of non -farm activities (Reardon et al., 2001). Then, as viable alternative, promoting the generation of non-farm income generating opportunities and seeking to enhance access of these opportunities for rural people as means of diversifying income to alleviate poverty became one of rural development approaches and got policy and academic attention.

Indeed, the rural economy is heterogeneous; farmers do not entirely depend on farm income as a means of livelihood, rather they employ multiple sources of income to cope up with the seasonal nature of farm income and to fulfill all their food and non food requirements as well as to finance the purchase of modern agricultural inputs and equipments.

African farmers allocate their assets across on farm, off-farm and non farm activities so as to design livelihood strategies that achieve something at least close to an optimal balance between expected returns and risk exposure conditional on the nature of the agriculture system(Barrett et al., 2000).

The role of the non farm sector as a means of income generating activity has been immense and it constitutes 42 percent, 40 percent and 32 percent of household income of Africa, Latin America and Asian farmers respectively (Hung , 2006) and its importance and role is growing tremendously. Besides, Adugna, (2006) and Caswell(2002) were able to report the special significance of the non farm sector in poverty reduction endeavors, and those farmers who earned off farm income saw their poverty rate decline overtime.

1.2. Statement of the Problem

Being the number one developmental challenge and survival issue in most developing countries, poverty is the main headache of most states of the third world. Governments try to tackle poverty by implementing different policies and strategies that are driven by specific context of each nation and ideological orientation of leaders. Although there have been concerted effort from different national and multi national institutions to fight poverty around the world, the overall outcome has not been to the expectation

Irrespective of social, economic and cultural background and ideology, every Ethiopian understands the need to alleviate poverty once and for all. Different policy interventions were used and being used as a means to tackle poverty and backwardness in the country. But unfortunately and to the dismay of the mass the outcome is not as such promising and as expected. Still many Ethiopians constantly face drought and famine and many more live under absolute poverty and surprisingly rather than showing a promise to decline, poverty is getting momentum both in scope and scale.

The incumbent Ethiopian government adopted a policy of rural development (ADLI) as a means to fight poverty and enhance overall development in the country. According to this strategy, agriculture is expected to lead the national economy and agricultural transformation is sought as a means of fuelling growth of other sectors notably industry. By increasing agricultural productivity through the application of different intervention and thus by increasing rural farm income, the strategy intends to bring demand driven industrialization in the country.

Although there is ongoing debate on the success and failure stories of the strategy in fighting poverty, still there is a high gap between what is desired and what has been achieved and many Ethiopians are still living in absolute poverty.

Eventhough, the strategy recognizes the heterogeneity of the rural economy, it intends to bring the much needed rural development and transformation by entirely depending on agriculture, against a much documented evidences that support the claim that rural families do not entirely depend on agriculture as a means of livelihood. Different empirical evidences (Gashaw, 2007, Tesfaye, 2003, Adugna, 2006,Tassew,2001) reported the growing importance of the non farm sector in Ethiopia which boldly accounts for more than 35% of rural income and significant proportion of rural employment.

Though the non farm sector contribution in rural setting is vehemently significant, still it is crying for policy attention and there is a lack of information on different issues of the subject. Now it is a universal fact that rural households do indeed adopt multiple source of income and what is missing is the "why and how" factors like households motives to engage in income diversifying activities and what factors push/pull households to adopt multiple source of income.

Now days the role of the non farm economic activities in enhancing sustainable rural development is being highly emphasized and it is getting serious attention academic and policy wise. However, what is less clear is how these forces for diversification can be best harnessed to act as a catalyst for broader and inclusive pattern of development.

The existing literature in Ethiopian context highly focuses on the basic question of intensity of non farm activities in rural areas and more of the existing empirical evidences are generated from studies of the broader concept of

livelihood diversification. What matters most in the sense of sustainable rural development is not merely creating non farm opportunities, rather optimum use of the additional income and who are really participating. Unless the very poor got the access and control of non farm opportunities, it would be hard to imagine sustainable rural development,

This study was primarily initiated to show the extent and contribution of non farm sector in a specific locality that would help to learn some lessons about the subject and meanwhile it was intended to look for some of the determining factors in rural household's decision to diversify income by participating in different non farm activities, which ultimately help in designing a comprehensive policy intervention to best utilize the non farm sector in poverty alleviation endeavors and in bringing overall rural development.

1.3. Objectives of the Study and Research Questions

In general terms the overall objectives of this study was to examine the intensity and contribution of the rural non farm sector, and assessing the determining factors that force households to diversify income by considering the case of Wolmera woreda in West Shewa zone of Oromiya region.

Specific Objectives

- To assess income sources of rural households
- To examine participation of rural households in income generating off farm activities
- To investigate factors that determine households decision to diversify income activities
- To draw policy implication

Research Questions

- Do rural households adopt multiple income sources?
- What is the effect of initial household endowments on households' (land size, livestock size. education) decision to diversify income?
- What is the effect of demographic factors (age, sex, gender, family) on households' decision to diversify income?
- What is the effect of public facilities (market centers and road) on households' decision to diversify income?

1.4. Significance of the Study

Two decades have passed since the importance of rural non farm sector has got policy and academic attention especially in Latin America and some part of Africa. But surprisingly little is known about the subject in Ethiopian context, in spite of some concrete evidences that indicate its growing importance and significance as an alternative means of livelihood. This particular study anticipated to emphasize the role of the non farm sector by pointing out the extent and determining factors of income diversification so as to help both policy makers and academicians to further look at the subject and explore its full potential.

1.5. Scope and Limitation of the Study

1.5.1. Scope of the Study

It is a conventional wisdom that, this study has to be bounded by time and space and indeed the study reflects a finding of some particular time in which the data was collected and in addition it represents the views and conditions of those households that were included in the study in unique geographical setting. Care should be taken in case of generalization, since unlike other findings, diversification studies tend to be location and household specific and household asset conditions are volatile in nature and changes overtime. The scope of this study covers 5(five kebeles) in Wolmera woreda and with a limited sample size of 140(one hundred forty) households.

1.5.2. Limitation of the Study

It is obvious that rural households do not keep record of their year round revenues and expenditures which makes it difficult for this kind of study that largely depends on quantitative data. In addition due to some wrong assumptions and cultural factors households do not usually describe their total income. The fact that the data was generated from small number of sample households would limit level of generalization. This study tried to minimize the effect of the above limitations by employing development agents (DAs) as data collectors and it was assumed that the DA's know the socio economic status of the respective households plus farmers trust the DAs than strangers. But still there might be some incorrect information provided by households particularly about their income and assets.

1.6. Organization of the Thesis

This paper is organized in 5(five) chapters. The first deals with background and introduction issues, statement of the problem, objectives, significance, scope and limitations of the study. The second chapter deals with the existing empirical and theoretical literatures on the subject. The third chapter deals with the methodology part. The fourth chapter reports on the background information of the study area, findings and discussion while the last chapter presents conclusion and the way forward.

CHAPTER TWO

2. LITERATURE REVIEW

This chapter deals with definition and concept of the subject under study. It also reviews the existing theoretical and empirical literature on the subject written by different scholars from different parts of the world. Finally this chapter would look at the historical background and policy environment of Ethiopian in relation to non farm economic activities.

2.1 Definition and Concept

Many conceptual and theoretical issues appear on the surface of rapidly growing literature on rural economies and income diversification. But in most cases, the existing body of knowledge on the subject lacks common and standard definitions and well established method of data collection, classification, analysis and indicators to report observed diversification behaviors. The lack of standard approaches and convections impedes effective analysis and so often leads to mistaken inferences (Barrett et al., 2001).

For proper understanding of diversification behaviors and patterns, distinction should be made among assets, activities and income. Asset offers a store of wealth and it also serves as a source of income while activities are ex ante flows of services that map the stock concept of assets in to the ex post flows of income.

Asset can be productive such as human capital, land and livestock that can generate earned income, asset also can be non productive in a sense that it generates unearned income. Productive assets generate income indirectly through the allocation of activities such as farming; commerce etc. Different activities show individuals explicit diversification choices in the presence of shocks to productivity and thus income (ibid.)

Inconsistent terminologies are another source of confusion in diversification literature. The terms "off farm", "non farm", "non agricultural" often used in synonymous ways. Reardon et al.(2001) tried to standardize the conceptual and theoretical definition of these terms by classifying them using three approaches, namely Sectoral, functional and spatial. Sector wise:

Non Farm: represents an activity outside agriculture (own farming and wage employment in agriculture) that can be in manufacturing or service sector.
Farm income: represents income derived from the production, gathering of unprocessed crop, livestock, forest or fish products while
Non farm income: represents all other income sources including income from processing, transport, packaging and trading of unprocessed agricultural, forest and fish products.

The functional approach classify activities in to either wage or self employment, meanwhile a certain activity can be classified in spatial terms in accordance with a relative location where a specific activity is undertaken. An activity can be undertaken at home or away from home besides an activity can be carried out far away from home either in a kind of rural or urban migration.

Ellis(2000) define Diversity as the existence, at a point in time, of many different sources, typically requiring diverse social relations while diversification refers the creation of diversity as ongoing social and economic process, reflecting both pressure and opportunity that causes families to adopt increasingly intricate and diverse livelihood strategies.

2.2 Theoretical and Empirical Literature

Diversification Motives

For so many years growth in agricultural output and incomes are thought to be a catalyst for rural development and this basic assumption has dominated rural development discourses for so long. But in the last few decades, the thinking of rural producers as exclusively dependant on agriculture for their livelihood has been seriously questioned and met with continuous critics. Plenty of evidences across the board proved that the rural economy is not just farming. Rural households have activities outside farming and they adopt multiple source of income for their livelihood. In the past it has often been assumed that by concentrating on farm output growth it would be possible to create a non farm income generating activities through linkage effect, but this assumption is no longer feasible and for many poor families farming on its own is unable to provide a sufficient means of survival.

Though the contribution of Agriculture is still dominant, the significant role of the non farm sector in rural setting has been well pronounced and documented (Lanjouw and Lanjouw 2001, Zvyaginstev et al., 2006). Farm households across the developing world earn an increasing share of their income from non farm sources. Now a days the question is not whether rural households diversify or not, but rather what motivates them to adopt multiple sources of income and it is one of the hot issue and debatable issue on the subject.

Barrett et al.(2001) argued that multiple motives prompt households and individuals to diversify asset, income and activities. The first set of motives constitute what he called "push factors", expressed in terms of the need for risk reduction, response to diminishing factor return in any given use; such as family labor supply in the presence of land constraints and fragmentation, reaction to

crisis, shocks and liquidity constraints. Due to the nature of agriculture and lack of necessary rural institutions rural households are frequently exposed to different shocks and crisis that are inherently multidimensional and needs multiple strategies.

The second sets of motives are called "Pull factors" that arise from opportunities and understanding of the existence of complementarities between activities and specialization according to comparative advantage accorded by technologies, skills and endowments.

From push factors perspectives diversification is driven by limited risk bearing capacity in the presence of widespread shocks, risks and climatic uncertainty, mean while pull factors avail themselves as opportunities that can easily be utilized by rural households. Mostly a diversification activity driven by push factors result in an increase incomes and assets for households, though diversification resulted from pull factors has a potential to extract households from poverty it can be merely a risky pattern as the households adds the equivalent of subsistence level non farm activity to a poor agricultural income base (Reardon et al., 2001)

On another hand, Adugna(2006) stated that diversification at household level is a result of either a necessity or choice. by necessity it means that households engage in different non farm activities for survival, out of need to secure basic needs during times of shocks, whereas choice represents households decision to participate in diversification activities is determined by return to labor in the labor market. In general due to the presence of constant change in farm income determinants, farmers usually switch between necessity and choice as the basic determinants of participation in income diversification activities.

For Ellis(2000) diversification is a result of four concurrent variables. Namely: Seasonality, Risk strategies, Coping strategies as well as labor and credit market conditions. Seasonality refers to the nature of agriculture where there is high dependence on weather conditions (rain fed) and frequent fluctuations of agricultural out prices due to supply and demand conditions. The seasonal nature of agriculture and income would result in some slack time during which farmers may choose to engage in different income generating activities. As a risk strategy households diversify activities to ameliorate the threat to its overall welfare from failure inherent in concentrating on a single activity. Besides rural households tend to diversify income as direct response to some natural or man made crisis and shocks as a means of copping strategy.

In almost all parts of developing countries rural labor and financial market are inexistent or insufficient and are not working properly. Due to this there is a pervasive presence of market failures especially credit and labor and insurance market. In order to compensate these failures and to fill the missing link, rural households tend to participate on different non farm activities.

2.3. Linkage between the non farm sector and farm output

In the last three decades, the rural growth linkage model governed a large proportion of policy discussion concerning the relationship between farm and non farm activities in rural areas. The model originated in the mid 1970s in the work of prominent rural development writers (Johonston and Kilby, 1975; Mellor 1976 mentioned in Barrett,1997). Since then it has been used by many scholars from different parts of the world in the study of rural growth, employment and income.

The theme of growth linkage model lies in its firm belief in agriculture as a sector full of promises that can drive rural development and it also recognizes the special significance of the non farm sector in providing employment and income opportunities for rural families who find it difficult to participate in farm activities (Ellis, 2000).

The model anticipates a significant growth in agriculture provides a stimulus for the growth of the non farm sub sector through expenditure, backward and forward linkages. Growth in farm income is sought to create demand for locally produced commodities and services that would result in expenditure linkage between the farm and non farm economic sector. At the same time, the non farm sector is expected to provide modern farm inputs and technologies to the farm sector backward linkage, mean while a well established and furnished non farm sector can process and market different services and goods related to farm output that would facilitate the formation of forward linkages between the farm and non economic sector.

The presence of strong linkage multipliers and their concentration on labor intensive goods and services production paves the way for growth in agriculture

to fuel significant and parallel growth in the non farm sector that can benefit the poor through different opportunities.

But the question remains intact whether the rising demand resulted from farm output and income growth directly goes towards rurally produced goods and services. Empirical evidences reported dual findings. In most cases farm led growth tend to decimate the relatively traditional non farm sector against relatively cheap and modern goods and services imported from urban areas. Besides farm income growth can lead to increasing demand for modern input and output processing technologies, which are mostly located in urban areas.

Contrary to the above facts, some empirical studies reported the existence of high multiplier effect in the rural economy resulting from growth in agricultural output. When there are constraints on access to credit, the non farm sector can serve as an important source of income that can easily be invested in purchasing of modern agricultural inputs and equipments, in the same token saving generated from farm activities can be used as startup capital in non farm activities.

Asian experience revealed that for every $1 extra value added in agriculture results $0.8 parallel growth in the non farm sector. Though the comparing figure from Africa seems low, $0.5 growth in non farm income for each $1 extra agriculture income, it is possible to conclude that the two economic sectors can create a tangible linkages that ultimately drive for overall rural development (Ellis, 2000).

2.4. Income Diversification and farm output

Several factors including relative position of household assets, allocation of family labor and socio economic characteristics of the country determine the level and magnitude of impact of income diversification activities on farm output and productivity. The impact of non farm activities on agriculture depends on a host of factors operating with in household, rural and nation wide economic factors.

Ellis (2000, PP: 109) mentioned some of the negative impacts a non farm activity can impose on agriculture production as follows:

1. *Dynamic non farm labor market, whether rural or urban located, cause withdrawal of labor resources from the farm sector; therefore depending on how many and which member of the household members leave for distant labor market farm output may stagnate or even decline*
2. *The fundamental insecurity of urban as well as rural households means that families are reluctant to dispose of the access rights to land, even when there have become so small as to be unavailable due to successive subdivision at in heritance; therefore the land market is unable to consolidate or enlarge holdings and this may also contribute to agricultural stagnation as a concomitant of diversification*
3. *When rural livelihoods are permanently precarious, family members will devote a considerable proportion of their time and energy to maintaining and consolidating social networks in order to ensure further fall back positions in the event of crisis and this too may detract from agricultural investment.*

On another hand, diversification involves labor as an asset by reallocating it from farm to non farm activities during slack season or through the participation of those individuals who may not participate in farm activities for one reason or another, that makes diversification a viable alternative as a means of

supplementary income generating activity without impacting agricultural productivity and out put.

Empirical studies carried out in South Africa and Kenya reported two opposing findings on this issue. Low (1986) mentioned in Ellis,2000, found that a booming market for unskilled male labor in mining and factories in 1970s and 1980s, coupled with low prices for cereals had resulted in agricultural stagnation in South Africa. On the contrary Tiffen and Mortimore(1991) mentioned in Ellis,2000, reported an overall growth a rural district adjacent to Nairobi because of migratory income. More importantly Tassaw (2001) found out that on average when non farm income increases by 1 percent agricultural productivity increased by 0.34 percent in Adigudom and Enderta districts, in Northern Ethiopia and he attributed the finding to households' capacity to learn better managerial skills through experience gained from participating in different non farm activities.

Though the empirical evidences are spatially and temporarily specific and support both claims, the importance of diversification activities in rural settings is well documented and pronounced.

2.5. Poverty and Non Farm Economy

The existing literature on poverty distinguish the poor from the non poor by taking level of per capita consumption that just permits an individual to satisfy basic nutritional requirements expressed in calories, A poverty line is consumption level below which is regarded as inadequate to achieve minimally acceptable material standard of living.

The World Bank (1990) stated that between 65 and 95 percent of the total numbers living in poverty in selected African and Asian countries were located in rural areas. Poor people are characterized by a severe lack of assets such as land, livestock, skills, education and health. Lack of these productive assets is the most determining factors in poverty. Any poverty alleviation program must seek to identify those assets that can be made more accessible to the poor through different interventions.

Beginning from 1990s the World Bank employed a new approach that assumed to help in significant reduction of poverty world wide. This approach has came to be known as "the new poverty agenda" constituting three different strategies namely; promotion of labor intensive economic growth, access by the poor to social services and promotion of safety net programs that target the most vulnerable group of people.

In this regard, the first objective was to create enabling environment for the rapid growth of small scale, labor intensive production and service activities in both rural and urban areas, so that different opportunities could avail themselves for the poor. the second component of the 1990s poverty agenda was to improve provision of health and education opportunities, in the expectation that the poor would get the chance to enhance their human capital, thus giving them greater prospect of participating in different economic opportunities as well as creating own opportunities. Safety net programs were designed to ensure minimum survival standards of living for the most vulnerable group of people who were unable to secure a viable livelihood (Ellis, 2000).

Unlike its forerunners, this approach emphasized on people's survival strategies in local and specific contexts involving a holistic understanding of relationship between assets, mediating processes and strategies adopted by households for their livelihoods. In

addition the approach recognized a significance of the non farm economy and diversification options are thought to play an important role in the sense that a diverse livelihood is more resilient than the undiversified one.

The relationship between the incidence of poverty and income diversification activities is often subtle. A long term impact of the non farm economic sector on poverty is highly dependant on its potential in creating employment opportunities to the poor with high remunerative levels that can lift them out of poverty (Ferrera and Lanjouw, 2001). Empirical evidences from different part of the world repotted that due to lack of essential assets, the very poor often engage in those low labor productivity activities which serve only as a last resort source of income. Even if, the level of income generated from these kinds of activities tend to be low and offer no realistic prospect of lifting individuals out of poverty, it still plays a crucial role in reducing the severity of deprivation for many families.

Ferrera and Lanjouw(2001) found out two basic and distinct ways where the non farm sector can play an important role in poverty reduction efforts. First higher return activities seem to provide sufficient income to allow rural people with limited access to land to escape poverty altogether. Similarly the sector can also contribute in creating opportunities for poor households to supplement their income that can at least prevent further deprivation and destitution.

Lanjouw and Lanjouw (2001) argued that there is a very pronounced positive relationship between the non farm sector and rural poverty. He attributed the argument to the nature of rural agricultural labor market which is not flexible and segmented (due to the presence of inherent imperfections and distortions) with some subgroups of population, particularly women. The non farm sector is able to fill this gap by employing rural labor beyond the point where the marginal product of labor is equal to the prevailing agricultural wage.

A longitudinal study carried out by Adugna(2006) in Ethiopia, reported that poverty in terms of head count ratio reduced by 18 percent over a course of three years for those people who had been participating on different income diversification activities, thus he

concluded that participation in non farm activities directly and positively impact poverty reduction efforts by high proportion.

Most empirical studies also reported a positive relationship between non farm income and total household welfare. Block and Webb (2001) reported that income diversification activities are highly associated with higher welfare level measured in terms of income and nutritional terms in Ethiopia. Mean while Barrett et al(2000) reported a strong relationship between income diversification and higher wealth in Kenya and Ivory Coast.

Rural non farm employment has been traditionally seen as low productivity sector, producing low quality goods. The sector is expected to wither away as a country develops and incomes rise. But in recent years, opinion has been swinging away from this view due to many empirical evidences that suggest a significant and growing role of the non farm sector across the developing countries. It has been argued that this sector has a positive role in absorbing a growing rural labor force, in slowing rural urban migration, in reducing incident and magnitude of poverty and contributing to national income growth (Caswell, 2002)

2.7. Gender and the Non Farm Economy

Gender is basically defined as the social construction of roles and relationship between women and men. These roles are usually unequal in terms of power, decision making, ownership of resources and the like (Escobar, 2001).

Unequal distribution of assets and power between women and men particularly in rural areas define their livelihood relationship and this would make rural women poorer on average than their men counterparts. Two basic regularities are observed on the relationship between gender and diversification activities. On one hand female headed households tend to be poorer than male headed households and their chance to participate on diversification activities is very limited and even when has got the chance they tend to participate on low remunerative and low return activities.

The second observed regularity state that irrespective of the headship of households' inequality in the distribution of consumption within the household makes women poorer than men and it is argued that women are more likely than men to spend additional cash resources under their jurisdiction on basic household needs (Lanjouw, 1998).

2.8. The Role of Non farm Activities in Rural Employment and Income

There is growing evidence that the rural non farm employment and income is an important source of livelihood in different parts of the world. After many decades of concentration of policies in agriculture, it is now clear that many rural areas and households are finding few opportunities in agriculture for sustainable increase in incomes, in sufficient degree to substantially alleviate poverty (Berdegue,et.al, 2001).

RNF activities can contribute to agricultural development by providing rural families supplementary incomes that can be invested in purchase of modern agricultural inputs and equipments, besides the non farm sector can increase the profitability of agriculture by creating expenditure, back ward and forward linkage.

Table 2.1: **Share of non-farm income and employment in total rural income and employment**

Regions and sub regions	Non farm income share		Non farm employment share		Average per caput GNP, [2] 1995 ($)
	Mean[3] (%)	Coefficient of variation	Mean[3] (%)	Coefficient of variation	
Africa	42	0.45	-	-	726
East and southern Africa	45	0.47	-	-	932
West Africa	36	0.36	-	-	313
Asia	32	0.33	44	0.32	1 847
East Asia	35	0.19	44	0.29	2 889
South Asia	29	0.52	43	0.40	388
Latin America	40	0.20	25	0.33	2 499

Source; FAO, 1998

1. The data given are regional averages of country cases. The income shares represent the share of non-farm income in the total income of households that are mainly farm households (including the rural landless). The employment shares represent the share of households in the rural population (in both rural areas and small rural towns) for which non-farm activity is the primary occupation.
2. Average per caput GNP is calculated as the simple average over the countries covered by the case studies. It is based on estimates from World Bank. 1997. World Development Report 1997. Washington, DC.
3. The mean refers to the mean over the case studies considered for each region and sub region

The above table summarizes data on the shares of non-farm income and employment in total rural income and employment drawn from studies from the 1970s to the 1990s in the three regions. Average non-farm income shares are higher in Africa (42 percent) and Latin America (40 percent) than in Asia (32 percent). Even considering caveats about data quality and coverage, these findings are important and surprising for several reasons.

First, they show the significant importance of non-farm income relative to total income in rural households, and hence its valuable importance for purchasing power and food security. Second, one would expect the relative importance of non-farm income to be greater in relatively developed regions with higher levels

of GNP per caput. Indeed, richer regions tend to have better infrastructure and stronger agricultural sectors, both of which induce RNF development. Hence, the expected ranking would be Latin America, Asia, and Africa respectively. However, the fact that Africa is placed first in the ranking suggests that diversification incentives have an important role to play. In other words, although African households are poorer than those in the other regions, the incentive to diversify their incomes is strong (owing to inherent shocks, risks, low farm incomes, low level of assets and human capital, etc.). This runs counter to conventional wisdom that sees African peasants as being little inclined towards rural income diversification (FAO, 1998).

Nevertheless, within individual regions, the richer countries and sub regions do tend to show higher shares and levels of RNF income. The two poorest sub regions, West Africa and South Asia, nevertheless have fairly different non-farm income shares (36 and 29 percent, respectively).

In general the special significance of the non farm sector in overall rural development is well established and the sector is getting high recognition among policy designers and scholars.

2.9. Determinants of Income Diversification

The diversity of economic activity with in a local area is an important element of rural development mirroring the diversity of rural livelihood according to sustainable agricultural principle. A healthy local economy will produce and trade many of the things people consume in the area and it would develop a capacity to substitute for imports and will process products coming of the farms.

Because of differences in initial asset endowments, rich and poor households diversify differently. In most cases the rich engage themselves in more capital (including human capital) intensive and more remunerative activities, while the poor concentrate on labor intensive, highly congestive niches with low barriers to entry and low returns

The standard model of household employment in the non farm sector arises from labor supply literature: participation and level of labor supply is function of the incentives households face and relative returns and risks of farm and non farm activities. The rural non farm labor market is formed by the aggregate of household and farm labor supply and demand decisions. Individual labor supply over sector is depicted in economic theory as a function of two variables;

A) The incentives an individual or household faces, typically the relative return and risk of farm and non farm activities and less easily on observable factors such as cultural performances.
B) The individual or household capacity to undertake different activities determined by access to public assets such as roads and private assets such as education and landholding

Empirical evidences in many countries support the notion that agricultural wages are not perfectly flexible, and the rural agricultural labor market are segmented with certain subgroups of the population such as women and children unable to obtain employment at the market wage rate. Lanjouw and

Lanjouw(1995) found some empirical evidences that small farms in Ecuador obtained higher yields than large farms and a possible explanation for this observation could be that small farmers apply more labor per unit of land than large farmers. In these kinds of situations family labor is applied beyond the level where the marginal product of labor is equal to the market wage, because for at least some family members the market wage rate is not the opportunity cost of labor.

If indeed agricultural wage employment is not a viable option for certain family members, then rural non farm activities can fill the gap, even if they may not highly remunerative, still the non farm sector can play a significant role ,especially for those households who lack the necessary assets.

In general because of market imperfections and distortions, non farm activities are likely to employ labor beyond the point where the marginal product of labor is equal to the prevailing average agricultural or urban wage. The wide range of non farm activities in terms of labor productivity suggests that for some households and individual these activities provide a last resort safety-net function while for others they offer a genuine opportunity for sustained upward mobility (Lanjouw , 2001).

While the special significance and importance of non farm sector is widely recognized, not all households enjoy equal access to attractive non farm opportunities. Empirical evidences (Reardon, 1997) reported a strong and positive relationship between non farm income share and total household income and landholdings. Those rural families with least agricultural assets and income are typically also least able to make up the deficiency through non farm earnings because of entry barriers. In rural Africa, the presence of entry barriers in the more remunerative and high return non farm activities for those

marginalized sub populations caused to have distributional regressive effects of income.

Given the apparent empirical regularity of positive association between non farm income and total household income, the question remains whether the poor can successfully exploit such opportunities and used it as a ladder out of poverty. Much depends on households' capacity to diversify, and capacity is a function of capital assets such as human, social, financial, organizational and physical assets. There are two strands in the literature that can help to conceptualize the role of capital as a major determinant of RNF activity. On one hand, RNF income is based on activities each of which has a productive function of capital assets and there is a strong correlation between income from a certain activity and its capital requirements (Barrett,Reardon and Webb,2001). Different studies on the dynamicity of RNF capital investment reported a reinforcing factor, in which the initial investment in non farm activities can set a train of successive rural non farm differentiation over time and household.

In addition the presence of high stock of human, financial and physical capital enable rich households to obtain skilled employment and capture other high return opportunities in trade, processing and service(Reardon et al.,2006),by contrast due to their relative asset position poor households remain confined to low return segment of the rural non farm economy.

Access to basic infrastructure like road, electricity and proximity to towns and urban areas are found to be crucial determinants of non farm diversification activities (Reardon, Berdegue and Escobar,2001: Barnett, Reardon and Webb,2001). In some instances such access can compensate for lack of private assets such as education. In Thailand for example villagers living near to a silk garment center of Paktan chail district were able to work as household contract

weavers, earning wage rates eight times those of more remote rural households. Similarly, educated landless workers in the densely populated rural zones of the pacific regions of Nicaragua, well served by roads and port and adjacent urban areas were found to be top earners of non farm income compared to the rest of the country. In a similar token a set of organizational and social capital assets like social networks and linkage can be critical in reducing transaction costs and risks for RNF activity and increase a chance of participation in non farm activities.

Private goods, particularly human capital play a significant and an irreplaceable role in household's decision to diversify activities and income. Being the most determining factor, Education offers a potentially important route to higher return non farm opportunities. More educated rural families, particularly those living near roads and towns earn higher non farm incomes than the less educated who rely on low paying or low productivity non farm activities (Lanjouw and Sheriff,2002). The effect of education is more pronounced even in gender wise; a study in Ghana reported that participation on non farm activities is found to be higher for those educated women than their male counterparts.

The second set of private good is household land holdings and livestock size. The impact of landholding on RNF activity and income is multidimensional. On one hand land can be used as collateral where credit markets function and thus increases access to credit which in turn may be used to invest in acquiring physical capital needed for more remunerative non farm work. In the same token land holding can be key to enter to organizations and groups thus have social capital which aides in RNF activity. In addition land by its own right can be a significant determining factor of farm investment, access to working capital and income and most non farm activity investment s based on own liquidity.

In general a series of African diversification studies outlined a regular pattern of diversification behaviors in which, wealthier households often engage in non farm activities to maximize their income level, where as lower income households emphasize on risk management and income stabilization (Reardon et al., 2006).

Escobar (2001) reported that household initial asset endowments in terms of quality and quantity, access to basic public services are major determinants of participation in rural Peru.

De Janvry and Sadoulet(2001) from their study in rural Mexico, reported three factors namely: individual characteristics, endowments and position of the household and community and regional characteristics are mentioned as determining factors in households decision to diversify income sources.

Individual Characteristics: the spouse of a household head has a much lower likelihood of participating in wage employment and seasonal migration than the household head, only in self employment that they are likely to be engaged. Younger males (usually less than 35 years) are more engaged in agricultural wage work and seasonal migration than household heads

Household Assets: greater access to land and livestock assets and access to remittance income reduces the likelihood of participating in easy entry low paying activity and education increases the likelihood of participating on high productive and high return activities

Location: the density and number of urban centers with in 1 hour of travel by public transportation makes no difference across all individuals but increases the chance of females to participate in the high paying non farm activities (ibid).

Berdegue et al.(2001) identified that human capital expressed in terms of gender of household head, average age of the household head and average education of

the household members are found to be statically significant in determining participation in non farm activities. In addition access to credit has a positive effect on household's undertaking non farm self employment and most importantly location is found to be the most important factor that determines non farm earnings in rural Chile.

Reardon,et.al, (2001) were able to show that literacy and education are the most important determining variables to participate in relatively high productive and high return non farm activities in Nicaragua. Besides land scarcity and access to improved roads are also mentioned as determinant factors in households' quest to diversify income.

Hung (2006) reported that women are less likely to participate in non farm activities than men. Education also plays a considerable role in diversification decisions. The better educated individual are, the more likely to be employed in the RNFs. In addition household landholding is found as the most important determinant of non farm employment in rural Vietnam.

Adugna(2006) revealed findings from Ethiopia that participation in non farm activities is mainly influenced by demographic factors and not by asset holdings or seasonality of incomes. Households within more dependants and female headed tend to participate less in non farm activities, and age has positive but declining effect on participation (inverted U) in diversification activities. Households with poor land quality engage less in the non farm activities.

2. 10. Historical Background of Non Farm Sector in Ethiopia

Historically, the 1974 socialist revolution ended the feudalistic nature of governance and agricultural system in Ethiopia. The revolution was followed by a series of policy intervention aimed to achieve agricultural growth and then by overall economic development through the expansion collective and state owned farm and non farm enterprises. Rural farmers were restricted only to engage in agriculture and they were prohibited not to hire agricultural labor. Besides, farmers were forced to be members of producer and service cooperatives. Due to its centralist approach, the regime had been distributing industrial products through service cooperatives and rural traders were not officially recognized.

State owned public institutions were given the mandate for promoting and expanding the rural non farm sector. The Rural Technology Promotion Department (RTPD) was instituted to carry out promotion and development of modern farm and non farm technologies for rural households. The Handicraft and Small Industrial Development (HASIDA) was entrusted with the task of issuing licenses, organizing cooperatives and assisting marketing of products. Additionally Ministry of Education Adult training center attempted to teach various handicrafts, construction and farming skills in urban and rural areas (Tassew,1998). A decade and half effort did not pay a measurable success due to institutional and policies failures coupled with frequent climatic and man made shocks commenced from the very beginning.

The incumbent EPRDF government came to power by ousting the derg regime in 1991. From the very beginning a market based economy was advocated, farmers were granted freedom of diversifying their livelihood and producer and service cooperatives were abandoned.

Immediately after taking state power and control, the EPRDF led government decided to liberalize the market and endured to promote investment in both agriculture and industrial sector. ADLI (Agricultural Development Led Industrialization) has bee instituted as main policy frame work for over all economic development in the country. ADLI strategy aimed to achieve sustainable economic development by promoting sustained growth in agricultural productivity and output. Growth in the agriculture sector is sought to be achieved through continuous supply of modern agricultural inputs and equipments, expansion of small scale industries and promotion and diversification of export products.

Even though ADLI recognized the heterogeneity of the rural economy, it tends to achieve over all economic development by entirely depending on agriculture. The non farm economic sector is sought to be emerge as a natural consequence of increased demand at a later stage of agricultural growth and concomitant income growth, in the form of expenditure, back ward and forward linkages.

Despite the neglect of non from sector from policy perspectives and discourses, various empirical studies conducted in different parts of the Ethiopia (Tassew and Oskam,2001;Caswell,2002; Holden,Bekele and Pender,2004;Block and Webb,2001,Dercon and Krishan,1996; Gashaw,2007;Adugna,2006) were able to show the growing importance and significance of this sector to over all economic development. Ethiopian Rural households like their counterparts in the developing world do not entirely depend on agriculture as a means of livelihood and they tend to engage on various non farm activities.

2.11. Policy Environment in Ethiopia

Similar to the rest of Africa, Ethiopia also experiences a heavy load of development challenges that ranges from poverty alleviation to ensuring sustainable development. The economic history of Ethiopia is more or less a history of how difficult it has been to fulfill minimum requirement of most of the people. Poverty, unemployment, high population growth rate and land degradation characterize the present day Ethiopia. Agriculture is the main life line for the majority of the people and harbors around 85 percent of the population and contributes more than 50 percent of the GDP. The sector is characterized by traditional subsistence farming on fragmented lands, low productivity, low modern input and equipment usage, acute land shortage for new entrants. The recent year's incidence and magnitude of famine has become challenging (Getnet, 2005)

According to CSA(2001) household expenditure and consumption survey report the proportion of Ethiopian people who were regarded as absolute poor(less than 2200Kcal per adult per day or $1.96 per adult per day) were 44 percent.

Table 2.2: Trends in Food Poverty Head Count Indices

Location	1995/1996	1999/2000	Changes over 1995/1999
Rural	0.47	0.45	-0.03
Urban	0.32	0.47	+ 0.04
Total	0.45	0.42	-0.02

Source; CSA,2001

As the above tables clearly depict poverty incidences and magnitude in Ethiopia is so serious and almost 45 percent of the total population live under absolute poverty. Even though there is some progress after that, still significant proportion of Ethiopian population live under absolute poverty. In addition, in

most part of rural Ethiopia, due to their social status poor people are usually neglected from cultural, economical, political, and social opportunities and they do not possess the access and control over public resources.

The other chronic issue of development in Ethiopia is unemployment, like most developing countries Ethiopia is characterized by high rate of unemployment and underemployment. The national labor survey conducted by CSA(1999) revealed 26 percent and 5 percent urban and rural unemployment rate respectively. Although the rural unemployment figure seems lower, the underemployment rate goes as high as 41% of the economically active people. This is attributed to the nature of agricultural system which is seasonal and marginal productivity of labor in the agriculture sector.

With the presence of high rate of unemployment and underemployment coupled with rapid population growth, fragmentation of land holding size and the industrial growth being at the infant stage, it is difficult to attain pronounced economic development both in urban and rural areas. In order to reduce poverty substantially, particularly in rural areas, there has to be a means of employing labor productive technologies and providing alternative means of income generating opportunities for the rural people.

2.12. ADLI and the rural Economy

ADLI(Agricultural Development Led Industrialization) has a been a policy of EPDRF government beginning from the early 1990's as an engine for overall development of Ethiopian and more specifically rural development.

The basic logic behind the strategy is the economic argument of static comparative advantage that advocates a policy of prioritization based on abundance of resources. Like most of developing countries, Ethiopia is characterized by the presence of abundant labor force and scarce capital. Accordingly, the economic sector that uses more labor and less capital is Agriculture; in addition this sector employs about 85% of total population. Apparently it seems natural to direct resources to this sector for the overall development of the country.

The strategy advocates and endorsed the usage of technological inputs and equipments as basic instruments of achieving overall agricultural development (Birhanu, 2003). In order to increase agricultural productivity and output, modern agricultural inputs and technologies, such as: fertilizers, improved seeds, research and extension service, introduction of new products, expansion of irrigation, formation of farmer cooperatives, promotion and production of modern agricultural inputs and equipments, fostering relationship between farmers and traders, construction of roads and the like were mentioned as basic instrumental factors to meet the overall objectives of the strategy(SDPRP,2002).

The strategy anticipate that ADLI would help farmers to increase their farm income and thus helping poverty alleviation efforts and meanwhile it contributes to a significant increase in the demand for manufactured products leading to demand driven industrialization. According to the strategy when the farmers income increases it contributes significantly to an increase in the demand for

manufactured products which in turn at later stages of the strategy will result in shifting rural surplus labor to those industries that will be created by increased demand from the agriculture sector. Based on this rationale the government has been investing a lot of human, financial and political capital in implementing this strategy for the last decade and half (Birhanu, 2003).

Although there is no much disagreement in main theme of addressing the critical issue of poverty alleviation in rural areas, there is ongoing debate and critics among scholars and practioners about the efficiency of ADLI in achieving its stated objectives and whether the strategy is able to generate the much needed rural transformation and overall economic development.

It has been difficult to assess the success and failure stories of ADLI because of the absences of a clear monitoring and evaluation framework and comprehensive data on household asset and strategies. Critics present their argument depending on various grounds that range from questioning the empirical soundness of the claimed success of the strategy to doubting the validity of the theoretical assumption used to construct the strategy.

The ADLI strategy focuses on increasing land productivity. Taking low land productivity as the major bottleneck of agriculture, the strategy intends to increase output per unit area by using yield increasing technologies and inputs and by avoiding institutional constraints inherent in the sector and critics question this assumption by stating that it is hard and impossible to raise land productivity without considering labor productivity and the main bottleneck of agriculture in Ethiopia is low labor productivity than land productivity. Berhanu(2003) argues with the above claim of ADLI by stating that Ethiopia has one of the lowest value added per agricultural worker while its valued added per hectare of land is better than many countries in the African continent.

Senait (2003) mentioned in Birhanu,(2003) questioned the success of ADLI, on the ground of fragmentation of land and landlessness. between 1991/92 and 1999/2000, the number of households with holdings of less than 0.1ha increased by a spectacular 137% from close to 400,000 to over a million. During the same period, the number of households with less than 0.5ha of land increased slightly from over 2 million to almost 4.4 million. This trend is expected to continue in the future due to uncontrolled population growth and parallel expansion of urban centers.

Land size fragmentation is becoming a serious and fatal issue in rural areas and it is expected that households with less than 0.5ha production is likely be below subsistence level. With the presence of rapid population growth coupled with fragmentation of land holding size, it is hardly possible to think that ADLI will meet its stated objectives.

By stating a positive link between farm and non farm income, Tassaw (2001) argues that increasing agricultural output and increasing agricultural productivity cannot be done in isolation He argued that unless considerable attention is given to the importance of non farm income in the rural economy, sectoral approaches that are solely aimed at raising agricultural output and productivity are less likely to achieve the intended goals.

The rural economy is heterogeneous. It incorporates a number of economic activities apart from the major sector-agriculture. But unfortunately until recently the common view among the different stakeholders about the rural economy is that of a sector drawn entirely by agriculture. In most cases rural income is equated with farm income, even more with agricultural income. Due to this narrow view policy maker direct state efforts to combat rural poverty through policies intended to enhance farm productivity. Despite this, there is growing

evidence in developing regions that the rural sector is much more than just farming.

Reardon et al. (2001) was able to report the growing importance of rural non farm activities by stating that, the non farm sector accounts for roughly 25% of employment and as much as 40% of the incomes generated in rural Latin America. Besides, data from other region of the world also indicates that the non farm sector contributes 32% and 42% of rural income in Asia and Africa respectively.

Even though ADLI recognized the heterogeneity of rural economy, the strategy entirely focuses on the agriculture sector:

"Rural development is not solely confined to agricultural development; it embraces a number of activities outside agricultural development proper. However in Ethiopian context agricultural development is central to rural development." (SDPRP, 2002.PP:50)

CHAPTER THREE

3. Research Design and Data Collection

This study employed a household sample survey method of data collection to gather a wide rage of information regarding households' demographic and physical characteristics, general economic conditions and economic activities, agricultural production, credit and the like.

3.1. Sampling Procedure

Wolmera woreda was selected purposefully because of two concurrent factors. On one hand, due to its proximity to Addis Ababa (35KM), the woreda was expected to generate a wide range of non farm opportunities to rural families. Secondly the expansion of agro processing industries in the area, particularly floriculture farms were considered as a potential opportunities for rural households to engage in non farm income generating activities.

The Woreda consists of 24 rural kebeles among these 5 kebeles were purposefully selected in anticipation of heterogeneity of households in terms of the kebeles location to the main road. Among the five kebeles 2(two) were nearer to the main road in south and north direction, 1(one) keble lies in a mid distance from the main road, while the rest 2(two) kebeles lies far from the main road. The total number of household in the selected 5(five)kebeles were 376. Due to time, space and budget constraints, only 140(37.6%) sample households were randomly selected and included in the study.

Table 2.1: localities included in the study

No.	Name of the Kebele	Total sample selected	Percentage
1	Garsu Seda	40	28.57
2	Wolmera Choke	29	20.71
3	Elala Gojo	21	15
4	Bekeka	26	18.57
5	Gelgel Kuyu	24	17.14
	Total	140	100

After identifying sample Kabele's, and size of sample households for each Kebele random sampling method of data collection was employed and the require data was collected by hiring data collectors, who were development agents (DA's) who happen to know the specific localities in detail.

3.2. Method of Data Collection

For detailed and full coverage of the subject under study, both primary and secondary data sources were used. As a primary data tools, structured questionnaire was administered to sample households, besides unstructured interview was employed to generate socio economic data from the woreda governmental organs. Different journals, books, policy documents, newspapers were used as a secondary data sources.

In order to ensure validity and soundness of data, 4(four) enumerators were hired who happen to know each localities in detail as they were serving as development agents (DAs) in the respective kebeles, and educational wise all of them possess collage Diploma. For effective administration of the questionnaire

them possess collage Diploma. For effective administration of the questionnaire two days of training was given to data enumerators to familiarize them with the context and techniques of the questionnaire. Although the questionnaire was prepared in English, Data enumerators were given with copies of "Oromiffa" version in case they need it. Before the actual survey was officially conducted, pre-testing was administered to ensure the relevance, effectiveness and clarity of the questionnaire. Accordingly some amendments were made to the questionnaire.

3.3. Data Analysis

This study used both descriptive statistics and regression analysis. Various attributes of household demographic and socio economic characteristics were described statistically. Besides the qualitative data were processed using simple descriptive statistical analysis methods. The logit econometric Model is used to examine a relationship between various determinant variables and participation in non farm activities, for this effect, Statistical Package for social Science (SPSS) version 15 was used to process and analyze the data.

3.4. Hypothesis and Definition of Variables

Generally this study hypothesized that those literate farmers would show higher tendency to participate in non farm income generating activities than the illiterate one, besides those farmers who owe relatively big size of land would not be motivated to participate in non farm economic activities.

Accordingly, those households who participate in various non farm activities are termed as diversifiers and represented by 1, while those rural households who entirely depend on farming as a source of livelihood are classified as non diversifiers and represented by 0. The explanatory variables and their probable relation with dependant variable are described below.

SEXHH: Dummy for sex of the household head. 1 if a household is headed by female and other wise 0. This research anticipated that female headed households show higher tendency to participate in non farm income generating activities.

AGEHH: Represents age of the household head. It is expected that, as the age of the household head increases the tendency to participate in non farm activities will decrease.

LITHH: Dummy for literacy for household head, 1 if the household is headed by literate (read and write) and 0 illiterate. It is anticipated that households headed by literate person tend to diversify their economic activities than those households headed by illiterate person.

FAMMR 15-60: Refer to the number of family members in the age range of 15-60 years. It is anticipated that as the number of family members in the age range of 15-60 increases, households tendency to participate in non farm activities increase.

LANDSIZ: Represents land size possessed by an individual farmer in hectare. It is hypothesized that as the size of own land increases; households tendency to participate in non farm economic activities will decrease.

LIVSIZ: Refers the total number of livestock (TLU) owned by household. It is anticipated that as livestock size increase, households' tendency to diversify income sources will decrease.

MARKDIS: Refers distance from market places. It is hypothesized that households who reside near to market areas tend to diversify economic activities than those who live far from market areas.

ROADDIS: Refers to distance from main roads. It is anticipated that those households who reside near to a main road show higher tendency to participate in non farm economic activities than those who reside far from main roads.

CREDACCE: Refers to the amount of cash taken from financial in situations. It is anticipated that households who took larger amount of credit show higher tendency to engage in non farm economic activities.

Model Specification

Over the years different models has been developed to study a correlative and directional relationship between two Variables. Among these models Logit regression economic model is one frequently used among researchers to study a mathematical relationship between a dependant and a predicator variable.

Gujarati (2006) states that logit and probit regression economic models can estimate a likelihood occurrence of an event, for its simplicity this study preferred to use logit economic model in such away that, for a single independent Variable:

$$\text{Probability (event-y)} = \frac{e^{\beta_o+\beta_i x_i}}{1+e^{\beta_o+\beta_i x_i}} \quad \text{or} \quad \frac{1}{1+e^{-(\beta_o+\beta_i x_i)}} \text{ ----------1}$$

For multiple independent variables the logistic regression model can also be put as:

$$\text{Probability (event-y)} = \frac{e^{\beta_o+\beta_i x_i+\beta_2 x_2+\cdots+\beta_i x_i}}{1+e^{\beta_o+\beta_i x_i+\beta_2 x_2+\cdots+\beta_i x_i}} \text{ ----------2}$$

$$\text{Probability (event-y)} = \frac{1}{1+e^{\beta_o+\beta_i x_i+\beta_2 x_2+\cdots+\beta_i x_i)}} \text{ ----------3}$$

Where Z = Natural logarithm

X_1, X_2, X_i = independent variables

β_1, β_2 = coefficients

Then equation # 3 can be rewritten as follows

$$\text{Probability (event-y)} = \frac{1}{1+e^{-z}} \text{ ----------4}$$

On the other hand the probability of an event not occurring can be found as follows:

$$\text{Probability (no event-y)} = 1 - \text{probability (event-y)}$$

$$\Rightarrow 1 - \left\{\frac{1}{1+e^{-z}}\right\}$$

$$\Rightarrow \frac{1+e^{-z}-(1)}{1+e^{-z}}$$

$$\frac{1}{1 - e^{z}} \text{ ---------- 5}$$

The odds ratio value can be found by putting equation (#4) and equation (#5)

Probability of and event occurring (event-y)

Probability of an event not occurring (event-y)

$$\Rightarrow \quad \frac{\left\{\frac{1}{\quad}\right\}}{1 + e^{-z}}$$

$$\Rightarrow \quad \frac{e^{z}}{1 + e^{-z}}$$

$$\Rightarrow \quad \frac{e^{z}}{\quad}$$

Since $Z = \beta o + \beta_2 x_2 + \text{---------- } + \beta_i x_i$

Then Probability (event-y)

Probability (no event-y)

$= e\ \beta o + \beta_1 x_1 + \beta_2 x_2 + \text{---------- } + \beta_i x_i$ ---------- 6

Finally, this model can be rewritten in terms of the natural logarithm as follows:

$$\text{Log} \left\{\frac{\text{Prob (event-y)}}{\text{Prob (no event-y)}}\right\} = \beta o + \beta_1 x_1 + \beta_2 x_2 + \text{---------- } + \beta_i x_i = k$$

When the disturbance term U_i is added, the Logit model becomes

$K = \beta o + \beta_1 x_1 + \beta_2 x_2 + \text{---- } + \beta_i x_i + U_i$ ----------7

CHAPTER FOUR

4. Results and Discussion

4.1 Brief Description of the Study Area

The Oromia region was instituted in 1992, as per the, Proclamation No. 7/1992 (G.C.), which was issued to establish national regional self governments in the country.

The administrative structure of the Oromia Regional State consists of the Regional Government, zones, woredas and kebeles. Presently, the region is divided into 20 zones (among which 3 are special zone) and which are further subdivided into 267 woredas. Organs of the Regional State comprise the 'Caffee' or parliament, which is vested with the legislative power and is the supreme organ; the Administrative Council, in which the executive power is vested and is accountable to the 'Caffee' and the Court, in which the judicial power is vested.

4.1.2. Physical Features

Oromia is one of the nine regional states that constitute the Federal Democratic Republic of Ethiopia. It extends from 30 40'N to 10035'N and from 34005'E to43011'E. Thus it is located in tropical zone, though subject to modification by variation in altitude.

On the basis of the current border delineation, the land area of the region is estimated to be 359,619.8 square kilometers. The region occupies over 30 percent of the country's total area and is contiguous with all but one regional state - Tigray. The region can be categorized into three distinct geographical areas: the western highlands and associated lowlands, the eastern highlands and associated lowlands and the Rift Valley. Generally, the elevation varies from less than 500 meters to 4,000 meters above sea level.

The climate of Oromia is affected significantly by variation in altitude, its latitudinal position, prevailing winds and air pressure and circulation and its proximity to the sea. In general, about 30 percent of the lowlands of eastern sub-region has arid climate. Over 35 percent of the intermediate highlands of central and western Oromia have hot tropical rainy climate, while the highlands have warm temperate rainy, tropical rainy and arid climate. The mean annual temperature of Oromia is about 19.30c with a range of mean maximum over 300c in lowland areas. The rainfall pattern of the region is bimodal, receiving the greatest share of rainfall in "Meher" and the smallest portion in "belg". The distribution of mean annual rainfall varies from place to place and from year to year, decreasing in all directions from the western highlands (1600-2400mm) towards the eastern and south eastern arid lowlands (less than 400mm)(Oromiya Region Information Bureau,2008).

4.1.3. Population

Oromia is the most populous regional state in the country. Based on the 2007 Population and Housing Census, the population of the region is 27,158,471(twenty seven million one hundred fifty eight thousand one hundred forty seven) accounting for over 36.7 percent of the population of the country. Out of the population of the region about 12.2 percent live in urban areas, whereas the remaining 87.8% resides in rural areas. Generally the level of urbanization is very low and is found at infant stage.

The population of the region is characterized by high population growth, increasing at a rate of 2.9 percent annually (CSA,2008). The size of the region's population is expected to reach 33,649,000 by the year 2015. The age structure of the region shows that over 47.6 percent of the population is less than 15 years of age, while the economically active age group is about 49.3 percent.

4.1.4. Economy

Agriculture is the foundation of the economy of Oromia. It provides employment for an estimated 89 percent of the population and accounts for about 65 percent of the region's gross domestic product. Exports of agricultural products originating in Oromia, such as coffee, hides and skins, pulses, horticulture and floriculture products and oil seeds, make up the lion's share of the country's exchange earnings.

West Shewa Zone, one of the 20(Twenty) zones of Oromiya region, is located 120 kms north of Addis Ababa. The zone is divided into 20 weredas hosting 2,072,485 people (CSA, 2008).

Agriculture is the most dominant economic sector and means of livelihood for majority of the population, where farmers practice mixed farming (i.e. growing crops and rearing animals). It is one of the 6(six) *belg* producing zones of the region. About 20 - 25% of the annual crop production comes from the *belg* while the remaining balance is from *meher* production. Farmers grow teff, wheat, barely, maize, sorghum and etc. in the area. livestock's also plays a significant roles as a means of food, income, transportation and plowing in the area, some of the major types of livestock are oxen, cow, sheep, horse and chickens(Source: West Shewa Zone Agriculture and Rural Development Bureau, 2008).

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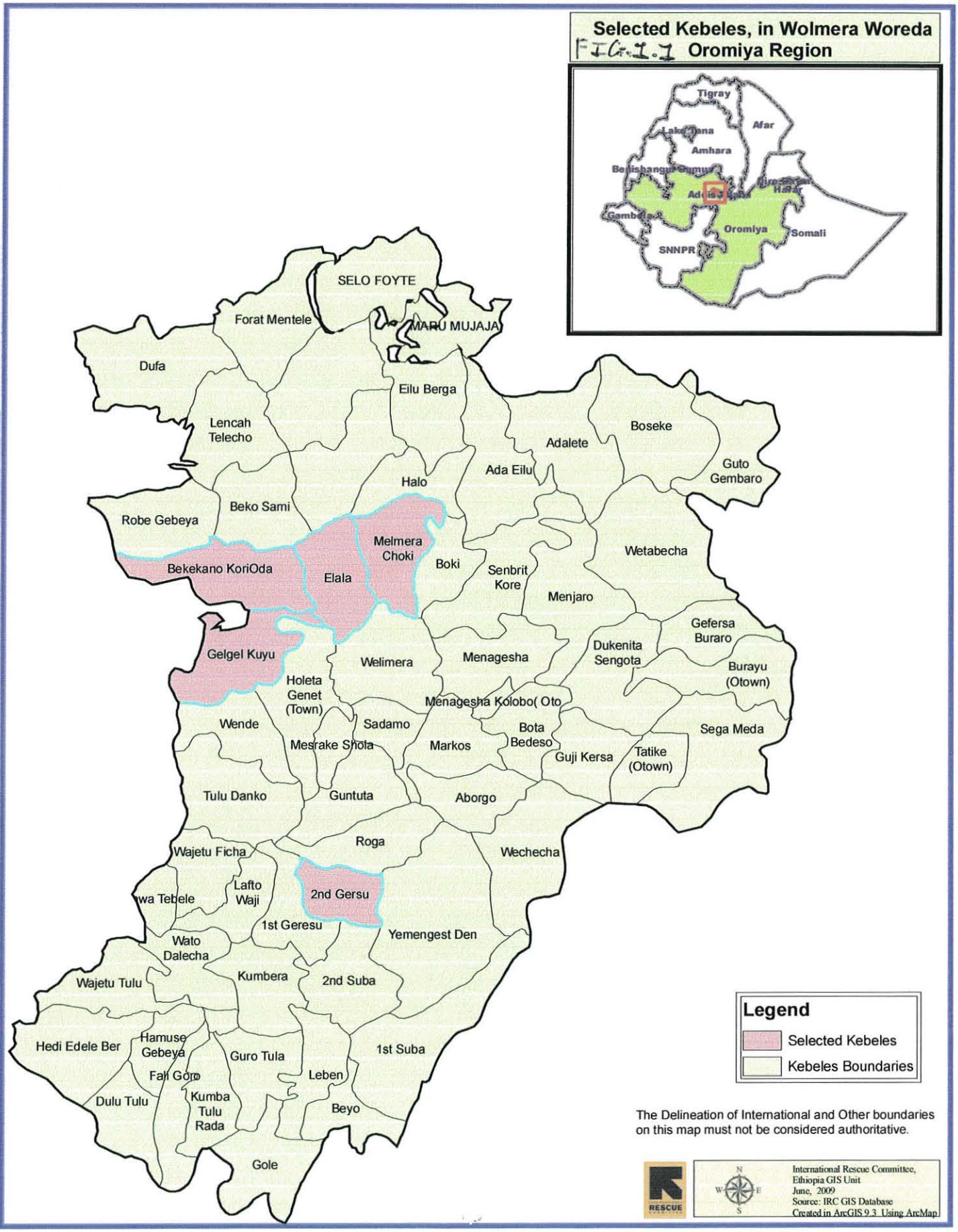
Wolmera is one of the 20 (Twenty) woredas found in this zone, with a total population of 83784 of which 80434 live in rural areas. Regarding sex the woreda's population accounts 50.23% and 49.77% male and female respectively. There are about 19272 households in the woreda, among these 83.5 percent households are headed by men and the rest 18.5 percent by women. The woreda is also sub divided in to 24(twenty four) kebeles. The woreda is categorized under two different climatic zones, namely: dega(61%) and woina dega(39%) ,

with an altitude that ranges from 2060-3380m a.s.l. the mean annual temperature and rainfall ranges from 28°c-5°c and 834mm-1300mm respectively (source: ibid).

Similar to the rest of the region and country in general productivity and out put of agriculture in the area is hindered by different human, technological and natural factors, like traditional farming methods, natural resources degradation and limited use of modern technologies. Furthermore, rapid growth of population has resulted in fragmentation and reduction of farm sizes, negatively impacting on the production and productivity of food crops.


Selected Kebeles, in Wolmera Woreda
FIG.1.1 Oromiya Region
Tigray
Afar
Amhara
Oromiya
Somali
SNNPR
SELO FOYTE
Forat Mentele
MARU MUJAJA
Dufa
Eilu Berga
Lencah Telecho
Adalete
Boseke
Guto Gembaro
Ada Eilu
Halo
Beko Sami
Robe Gebeya
Melmera Choki
Bekekano KoriOda
Elala
Boki
Senbrit Kore
Wetabecha
Menjaro
Gefersa Buraro
Gelgel Kuyu
Welimera
Menagesha
Dukenita Sengota
Burayu (Otown)
Holeta Genet (Town)
Menagesha Kolobo(Oto
Wende
Sadamo
Bota Bedeso
Sega Meda
Mesrake Shola
Markos
Guji Kersa
Tatike (Otown)
Tulu Danko
Guntuta
Aborgo
Roga
Wajetu Ficha
Wechecha
Lafto Waji
2nd Gersu
wa Tebele
1st Geresu
Yemengest Den
Wato Dalecha
Kumbera
2nd Suba
Wajetu Tulu
Hedi Edele Ber
Hamuse Gebeya
Guro Tula
1st Suba
Fali Goro
Leben
Dulu Tulu
Kumba Tulu Rada
Beyo
Gole
Legend
Selected Kebeles
Kebeles Boundaries
The Delineation of International and Other boundaries on this map must not be considered authoritative.
RESCUE
International Rescue Committee,
Ethiopia GIS Unit
June, 2009
Source: IRC GIS Database
Created in ArcGIS 9.3 Using ArcMap

4.2. Descriptive Analysis

4.2.1. General Demographic and Socio Economic Features of Sample Households

Age: mean age of household head across the study was found to be 44.36 .with minimum age of 23 and maximum 80.

Family Size: average family size of the studied households was 7.01. Out of this 3.61 family members were found to be categorized under economically active age (i.e 15-60 years). The demographic feature of households is summarized below:

Table 4.1: Demographic Characteristics of Households (n=140)

Variable	Mean	Minimum	Maximum
Age of household heads	44.36	23	80
Family size	7.01	2	14
Active Labour(15-60 years)	3.61	1	9

Source: own survey; 2008.

As it can be seen from the table, the mean age of sample households was 44.36, and on average each household consists of more than seven family members.

Ownership of Farm Assets (Land, Livestock, Oxen)

It is true that land and live stock are the two fundamental assets any farmer can be proud of and use as a means of livelihood in any part of the world. In Ethiopian case these assets are not only means of survival but also regarded as a means of fixed asset accumulation and a symbol of one's social status in a given society. Due to the economic and social implication of these assets, Ethiopian

farmers have every reason to seek to increase and maintain the stock balance of their primary land and livestock assets. But now days because of ever increasing population size and depletion of resources and other reinforcing factors, there is a trend of dwindling in land and livestock size in rural Ethiopia. In the study area, average land holding and livestock size was found to be 2.87 hectares and 5.07 TLU. The following table summarizes land holding and livestock size of the study area.

Table 4.2: Land holding and Livestock size

Variable	Mean	Standard deviation	Maximum
Land size(ha)	2.87	1.73	13
Livestock , TLU*	5.07	2.09	12.8
Oxen , number	2.82	1.66	7

Source: own survey, 2008

*Cattle=1TLU,GoatandSheep=0.1TLU,Horse=1TLU,Mule=1.15TLU,Donkey=0.65TLU , Camel=1.45TLU, and Poultry=0.005TLU(Ramakish and Assefa,2002)

The study reveals that, 77.14 percent of households believe that the amount of land they currently owe is not enough to support their family in addition 57.85 percent of respondents claim that due to population growth, shortage of arable land and other factors land holding size is decreasing year by year. In relation to this 23.57 percent of respondents reported that the pattern of land productivity is decreasing due to various factors such as; soil erosion, land degradation, inadequate agricultural extension service, crop diseases and pests.

Due to continuous fragmentation of land, uncontrolled population growth and other related factors, the area is becoming prone to some natural and man made

disasters and majority of the farmers could not ensure livelihood from agriculture.

Food Availability

By taking the simple standard of food availability and the number of times food is available per day for household members, this study tried to learn condition of food security in the study area. The study revealed that 14.2, 17.14, 65.71 percent of households eat food once, twice and three times per day respectively. Besides 47.14 percent of household respondents indicated their annual production is not enough to cover food requirements of their respective family for duration of one year.

Almost half of the respondents indicated that their year round production was not enough to cover food requirements and this might be related to the size of agricultural land and livestock they owe, farming system or owning to big family size.

4.2.2. Livelihood Strategies and Sources of Household Income

In most part of the world, particularly in the so called third world rural people employ different livelihood strategies to cope up with the volatile nature of their day to day living. Because of this fact, source of family income is quite diversified. Due to different pull and push variables households are constantly facing positive and negative incentives to diversify their income. This study found out that out of 140 sample households about 60 percent of them were participating in different non-farm income diversifying activities including: selling of beverages, livestock and grain trading, daily laborer, firewood selling, rural crafts and etc. This finding supports the previous studies conducted by Tesfaye(2003), Gashaw(2007),Tassew(1998) and Adugna(2006) in different parts of Ethiopia that a significant portion of farmers employ different kinds of non farm strategies to diversify income. The following table summarizes household's livelihood strategies.

Table 4.3: Livelihood Strategies of Households

Livelihood strategy	Number of households	Percentage
Farm and non Farm	84	60
Farm	56	40
Total	140	100

Source: own survey (2008), figures in parenthesis show percentages.

As the above table clearly depict majority of the households in the study area do indeed adopt multiple sources of income. The non farm activities range from simple petty trades to some lucrative businesses. It is absolutely clear that income derived from non farm activities constitutes a significant part in household's income portfolio. Income accrued from this sector varies across the board showing great differences by the nature of activities, location, purchasing power, infrastructure, proximity to market areas and the like.

Table 4.4: Non farm Activities and Mean Annual Income

Activities	Mean	Median	Sta.dev.	Minimum	Maximum
Beverage n=22, (26.4%)	851.47	720	1472.95	60	7000
Rural crafts, n=5(6%)	1956	500	2557.47	100	6000
Daily labour n=23 (27.3%)	3613.13	2880	2781.90	510	13800
Petty trade n=4, (4.76%)	3900	3000	5046.29	2400	7200
Livestock Trade, n=7,(8.33%)	4528.57	2800		720	14400
Rural trading, n=8 (9.5%)	4005	1170	5819.40	520	16000
Sale of fire wood, n=5 (6%)	964	600	2545.66	120	2400
Sale of poles, n=8 (9.5%)	2833.75	2700	1990.90	120	5000
House rent, n=2 (2.3%)	3700	3700	3230	540	7000
Land rent, n=1,(1.19%)	14542	14542	14542	14542	14542

Source: own survey 2008

1. **Beverage sale**: Like most part of the rural Ethiopia, women around the study area try to diversify income by selling traditional beverages like *"arkake, tella , tej."*Beverage selling is a least important source of income with mean income of Birr 851.47. Beverage selling is one of the most important non farm economic activities in the area and this factor is attributed to easy entry requirement and the business can be done in home without incurring additional costs in travel.

2. **Rural Crafts**: This study tried to categorize different activities like pottery making, blacksmithing, carpentry, wood work and weaving under rural crafts. The study revealed that rural people engage in different kinds of craft making to diversify income. Not all rural households participate in

different crafts making, as this needs special skills, it is only some segment of rural households enjoy the benefits of crafts making.

3. **Daily Labor** : Because of location factor (Proximity to Holeta town , Burayu town and Addis Ababa) farmers in the study area, particularly those who reside near to Holeta town enjoy a privilege of working as a daily laborers in different enterprises , working as guards, cart drivers, on different construction sites. In addition this study was able to identify that floriculture farms in the study area play a significant role in hiring farmers as a daily laborers.

4. **Petty Trade**: These activities include trading in rural small shops, trading in chicken ,egg, and the like and relatively it is one of the better sources of supplementary income for farmers with mean annual income of Birr 3900.

5. **Livestock Trade:** Livestock trading in the area was found to be lucrative business Farmers engage in livestock trading by buying different livestock from the rural people and selling it in Holeta town and Addis Ababa city.

6. **Rural Trading** : Basically rural trading includes an activity of buying and selling ,grains, vegetables , pulses and the like and it was found that rural trading generates a mean annual income of Birr 4005.

7. **Sale of Fire wood** : this activity includes collection and selling of firewood and straw and mainly carried out by women and it was found that in terms of income it is low yield but it is time and labor consuming.

8. **Pole Selling:** Farmers in the area grow Eucalyptus, "Tid and other trees that can be used for different construction and wood work purposes and sale it to various customers.

9. **Rental income:** This activity is mostly associated with renting out extra land and to some extent renting extra houses and it was found that it is the most lucrative business in the area with mean annual income of 7000.

4.2.3. Demographic and Educational Characteristics of Household Members and Income Diversification.

Different demographic characteristics of household family members like age of the household head, family size, literate family members, male family members and the like are among the factors that force a household to adopt multitude sources of income. The following table summarizes the role each of the above factor played in farmers' decision to diversify income.

Table 4.5: Demographic and Educational Characteristics of Household members and income diversification.

Variables	Diversifier households		Non diversifier households		Significance at Z value
	Mean	SD	mean	SD	
Age of household head	42.78	11.1	47.58	12.14	2.37**
Family size	6.58	2.55	8.44	2.61	4.86*
Family member between the age of 15-60	3.98	2.27	3.25	1.72	2.14**
Literate family members	4.5	2.57	4.34	2.34	0.38

Source: own survey, 2008,*and** and value at 1 and 5 percent significant level respectively.

Age of a household head: Households headed by relatively younger people have a tendency to participate in off farm income generating activities and this particular study supported this view (the Z-test is significant at 1 percent significant level). Younger farmers are more eager to diversify their income because of different push and pull factors. They are not expected to possess vast

land size because the land they owe should come from inheritance, land distribution or redistribution, besides, unlike the old ones younger farmers enjoy better access to information and education.

Family Size: Contrary to what the literature said and some other findings, this particular study reported that non diversifier farmers have more family size and it is statistically significant.

Literate family Members: In relative terms diversifier households tends to have more literate family members but the difference is not statistically significant. This is attributed to the fact that there are a number of elementary and intermediate secondary public schools in the area and farmers send their children's to these schools.

Family members between the ages of 15-60: It is believed that if a majority of family members are between the economic age (i.e 15-60) farmers' tendency to diversify income would increase both to accommodate the slack time and fulfill all the requirements of the family. In this particular study diversifier households tend to have more family members categorized under the economic age and the difference is statically significant at one percent significant level.

Non Farm Income and Gender

Gender is one of the very sensitive issues in modern diversification literature. Both participation and level of income accrued from income diversification activities significantly vary across the board for men and women. In most case women participation in income diversification schemes is restricted by different cultural, social, economic and political entry barriers. Even those who overcome the entry barriers usually participate in low income yielding and time and labor

consuming activities like beverage fire wood selling. The following table summarizes participation in income diversification activities gender wise and income accrued accordingly.

Table 4.6: Participation by Gender and Mean Annual Income Accrued

Source of income	Mean income for Male	Mean income for Female
Beverage	0	851.47
Rural Crafts	1956	0
Daily labor	3876.133	3100
Petty Trade	4800	3000
Livestock trade	4528.57	0
Rural trading	6920	1090
Sale of fire wood	0	964
Sale of pole	2833.75	0
Renting out land	14542	0
Renting House	3700	0

Source: own survey, 2008

The above table clearly depict the fact that women are disadvantageous both in participation in the most lucrative income sources and even they get less than what the men got in the same activities. As women have triple roles and lack the required human capital and assets, it is extremely hard for them to engage in non farm economic activities, particularly those non farm opportunities with high return.

Income Diversification by Sex of Household head

Due to socio economic and cultural variables, sex of a household head is a prominent factor in household's decision to participate in off farm income generating activities. Because of the social status of women in the society and lack of the required asset endowments, female headed households find it

difficult to participate in off farm activities. The following table summarizes income diversification endeavors by sex of household head.

Table 4.7: Income Diversification and Sex of Household Head

Sex	Diversifier households	Non diversifier households	Total
Male	82(62.6)	49(37.4)	131(100)
Female	2(22.2)	7(77.8)	9(100)
Total	84(60)	56(40)	140(100)
Sample X^2			
5.72			

Source: own survey, 2008, figures in Parenthesis show percentages, * value at 10 percent significant level.

As the above table clearly demonstrates, the number of female headed households who were included in the study was so small, and even though it is hard to conclude depending on this data, it can be said that female headed households were not asuch involving in income diversification activities and this situation is may be attributed to their relative social status and the corresponding socio economic characteristics of the household they lead. In a similar line, 73.57 percent of respondents state that women's participation in non farm activities was much less than their men counterparts and this was attributed to women's high work over load, cultural and social impacts and lack of asset endowments like land, livestock and education.

4.2.4. An Analysis of Asset Endowment of Households

The initial asset position is a determining factor in household's pursuit to diversify income sources. Households with relatively small size of land and livestock, better education, extended family and the like will most likely participate on income diversification activities. Livelihood strategies of rural people are highly dependent up on specific socio economic and socio culture context of the location and household.

Some of the most notable socio economic and cultural factors that play a significant role in shaping rural households desire to choose livelihood strategies include; age, education and martial status of household head, family size, land and livestock size, access to road, market places, information, location, access to credit, access to extension services and the like. The cumulative effect of these factors would force each household to choose its own livelihood strategy. This study tried to analyze the effect of some of the above mentioned variables on farmers' decision to participate on income diversification activities.

Education Status and Income Diversification

The role of education in accessing non farm employment and income is quite clear. Both formal and informal education helps farmers to be better equipped with skills and information which ultimately help them to access every available off farm opportunity. Table 4.8, summarizes educational status of household heads:

Table 4.8: Educational Status of Household heads

Educational status	Diversifier households	Non diversifier households	Total
Literate	73(68.86)	33(31.14)	106(100)
Illiterate	11(32.36)	23(67.64)	34(100)
Total	84(60)	56(40)	140(100)
Sample X^2			
14.30			

Source: own survey, 2008, figures in parenthesis are percentages, * value at 1 percent significant level.

The above data revealed that those households who diversify their livelihood are relatively better educated and this finding supports the notion that education plays a significant role in creating conducive situation for farmers to engage themselves in off farm supplementary income generating activities. Farmers who has equipped with some technical skills and formal education do have a very good chance of utilizing non farm opportunities and also they can easily begin their own businesses.

Access to Land and Livestock and Income diversification

Being the most pronounced and dominant asset for rural people, possession of land and its size hugely influence farmer's decision of livelihood strategy. Those farmers who owe relatively big size of land tend to confine and specialize on farming while for others owning a small size land is an incentive and push factor to look for other options of income diversification. The following table summarizes land holding size and pattern of income diversification. Table 4.9 table summarizes land and live stock size of diversifier and non diversifier households:

Table 4.9: Land and Livestock Size and Income Diversification

Variable	Diversifier households		Non diversifier households		Significance At Z value
	Mean	S.D	Mean	S.D	
Land holding size	2.49	1.5	3.42	1.96	3*
Livestock in TLU	5.13	0.66	4.98	0.69	1.25
Number of oxen	2.76	1.49	2.89	1.76	0.46

Source: own survey, 2008, * value at 1 percent significant level.

The above table clearly shows that diversifier households tend to owe significantly small size of land compared to the non diversifiers'. This finding agree with the previous works of different scholars (Gashaw,2007, Adugna 2006,) who reported that the diversifier households tend to owe small size of land compared to the non diversifier, besides it can be said that diversification decision in the area was much influenced by push factors.

Livestock Ownership: Since rural families do not record revenues and costs, it is difficult to measure the level of wealth in rural settings. But in most part of rural Ethiopia, livestock ownership and size serves as a proxy measure of wealth and it is a good indicator of farmers' social status among the community. The above data depict that, there was no as such a significant variation in terms of livestock ownership in the study area, between income diversifiers' and non diversifiers. But in relative terms those diversifiers tend to owe big livestock size, and this might be attributed to the fact that incomes derived from non farm economic activities would might be invested in livestock purchases as farmers in the study area did not have a habit of formal saving.

Access to Financial Assets and Income Diversification

In most part of developing countries the unavailability of financial institutions that support farmers by providing funds that would be used to purchase modern agricultural inputs and technological equipments has long been regarded as one of the critical inhabiting factors of raising productivity of small scale agriculture (Ellis,2001). Apart from loan/credit, livestock (sheep, goat, pack animals, cow, oxen etc) can be used as contingency source of finance whenever the need arises and whenever financial institutions cannot fulfill the gap.

Table 4.10: Access to Credit and Mean Loan

Asset Type	Diversifier households		Non diversifier households		Significance level at Z value
	Mean	S.D	Mean	S.D	
Loan	1730.76	879.75	1852.70	1286.75	2.25**

Source: own survey, 2008, ** value at 5 percent significant level

Credit: Provision of credit to rural households plays a significant role both in terms of strengthening the farm sector (credit facilities would equip farmers with additional money that can be invested on purchasing modern farm inputs and equipments) and it help farmers to diversify income by opening up small businesses and undertake rural trade. The credit data in particular study depict the fact that, there was no as such significant variation on credit amount taken by both the non diversifiers and diversifier farmers. Besides majority of the farmers 68.57 percent of households who were included in this study did not have the interest to borrow loan from financial institutions and while 15.2 percent of the respondents state that even though they have the interest to borrow, it was hard for them to meet the collateral requirements.

Distance from Market Places and Main Roads

Even if farmers do not enjoy direct control and influence over those publicly owned facilities like road, electricity and market places, access to these public assets raises the profitability of both farm and non farm activities, especially to the non farm sector by creating easy access to market and different opportunities that can potentially benefit rural people. The following table summarizes distance from market places and main road and income diversification.

Table 4.11: Distance from Market Places and Main road and Income Diversification.

Description	Diversifier households		Non diversifier households		Significance
	Mean	S.D	Mean	S.D	
Mean Distance from market places(KM)	7.39	4.49	11.34	4.79	2.8*
Mean Distance from main road (KM)	11.24	9.46	18.4	15.53	2.6*

Source: Own survey, 2008,* value at 1 percent significant level.

This study reported that an average diversifier should travel a mean distance of 7.39KM to reach to market places and trade what he/she can offer to the market, besides 56.42 and 20.71 percent of respondents stated that they were willing to travel about half an hour and a hour respectively, each day by walking on foot if there is a chance of non farm income.

As it can be seen from the table, diversifier households tend to travel less distance than the non diversifiers and this indicates the irreplaceable role of public infrastructures in creating the access and opportunities of non farm economic activities for rural people.

4.3. Economic Analysis of Determinants of Livelihood Diversification

Logistic Regression Results

In this study logistic regression model was used in order to learn the determinants of income diversification in rural contexts. In due course the dependant variable; income diversification was regressed against multiple explanatory variables. The Result of all explanatory variables is discussed below:

Sex of a Household Head

In rural Ethiopian context it is natural to expect that women are in disadvantageous position due to multiple and self reinforcing factors. Due to cultural and socio economic factors women's are devoid of basic endowments like land, livestock and etc. considering their poor economic and social status, this study predicted a high motive of diversification for women headed households, but contrary to the expectation, the result of logistic regression revealed that the coefficient of the variable sex of head of households for was statistically insignificant.

Two basic factors can be mentioned as a reason; firstly among those households who were included in this study only 6(six) percent were women headed households, which is quite a small figure. Even those women's who were spouses of male headed households adopt diversification strategies by engaging in low return and time and labor taking activities.

Age of a Household Head

Age being one of the explanatory variables in farmers' decision to diversify income sources, this study hypothesized that as the age of farmers increases the tendency to participate in non farm activities decreases meaning that in relative

terms younger farmers have more propensity to participate in non farm activities than the old ones, this is usually associated with the fact that as the age of household head increases, he/she would concentrate on agriculture, since at old age it is hard to afford labor requirements of the non farm sector. Besides the existence of idle labor among the relatively young farmers and their readiness to learn and try new ideas and opportunities would drive them to look for additional income sources. But contrary to this, the logistic regression result confirmed that the coefficient for the variable age was statistically insignificant. This can be attributed to the fact that, the age distribution of those diversifying households was so much skewed with a standard deviation of 11.1.

Family Members in the Age Range of 15-60

As it was anticipated, the logistic regression result revealed that the coefficient for the variable productive family members was found to be statistically significant at 10 percent level. Having more productive family members (between the ages of 15-64) was found to be one of a motivating factor for rural households to seek for multiple income sources both for survival and to lead better life. Those rural households who have relatively big size of productive family members is likely engage in non farm income diversifying activities by a factor of 1.562, cetrius paribus. More family members in the productive age means more idle labor, as a push factor, this would drive household members to look for non farm economic activities that would bring additional income. Table 4.12, summarizes the economic model results:

Table 4.12: Maximum Logistic Regression results

Explanatory Variables	B Coefficient	S.E	P- Value	Odds value
SEXHH	.264	.278	.271	0. 793
AGEHH	.005	.021	.459	0.984
LITHH	.342	.186	0.37***	2,484
FAMMR 15-60	.265	.108	.005*	1.562
LANDSIZ	-.583	.347	.004**	2.945
LIVSIZ	- .243	.104	0.347	0.837
MARKDIS	-.014	.007	0.024*	1.735
ROADDIS	-.006	.003	0.043**	2.081
CREDACCE	.296	.371	0.285	0.847
CONSTANT	- 2.753	2..401	.273	0.334

Source: own data and calculation, year 2008, *, **, *** significant at 10, 5, 1 percent respectively , R^2 = 67%

Literacy Status (Education)

Across different corners of the world, the positive effect of education on farmers' decision to participate in non farm economic activities is well pronounced and documented. This study also confirmed the popular view that farmers who were literate and had some years of schooling showed a likelihood of diversifying their income sources across the board. The better educated farmers are the more likely to be employed in rural high remunerative jobs and self employed. The coefficient for the variable education was statistically significant at 1 level. The odds ratio implied that if the head of a household is literate, the chance to participate in non farm income diversifying activities will increase by factor of 2.48, cetrius paribus.

Land Size

Being the most important asset, the effect of land size on diversification pattern is one of a hot issue in development literature. Different empirical studies conducted in various parts of the world presented ambiguous evidences on the effect of land holding size on farmers' decision to engage in non farm activities. Some argue that big land holding size may raise the probability of diversification through a wealth effect as land can be readily used as collateral for credit. On the other hand having more lands may also drift households away from non farm diversification as it increases their concentration in agriculture.

By taking the second view, this study predicted that as the size of own land increases the tendency to participate in non farm economic activities would decreases and the coefficient for the variable land size was found statistically significant at 5 percent level. The negative sign suggests as land size decrease, households' tendency to diversify income sources will increase. The logistic regression result revealed that a one hectare decrease in the land size of a household will increase the households' probability of engaging in non farm activities by a factor of 2.94, cetris paribus. This finding reveal the fact that push factors play a significant role in households' decision to engage in different income diversification activities.

Livestock Size

In rural context, livestock's play an irreplaceable role as a means of food, ploughing, income, transportation, prestige, capital accumulation and collateral. In some instances income generated from livestock's can serve as a visible substitute where there is a credit constraint and there are no other alternative income diversification opportunities. And this in turn may reduce households' motive to look for additional income sources, thus this study anticipated that

possession of large livestock size can reduce the propensity of diversifying income. But contrary to the expectation, the coefficient for the variable livestock size was found to be statistically insignificant. It was able to learn that there was no significant variation in livestock size (in terms of TLU) between diversified and non diversified farmers in the study area.

Access to Credit

Availability of access to credit in rural areas plays a significant role both in promoting the development of the agriculture and non farm sector. Credit can be used to procure modern agricultural inputs and equipments and it can also be used to open up new businesses and expand the existing ones. But in most parts of the third world rural areas are deprived of the access to formal credits and even in some instances high collateral requirements prevent farmers from properly utilizing the existing ones. It was anticipated that households who took large amount of credit on average could develop the motive to engage in non farm income diversifying activities.

Contrary to the expectation, the logistic regression coefficient for the variable access to credit was found to be statistically insignificant at 1, 5, 10 percent levels. This is due to lack of institutions that can lend credit in the area and even the existing ones did not adopt a mechanism of reaching the very poor because of the nature of the business that requires high collateral.

Distance from Nearest Market Centre

Non farm activities that take place in the form of self employment in small household businesses and petty trades, having a common market in near by produce a positive effect on promoting non farm income diversification activities. This study hypostasized those households who resides near to local

market areas show more tendency to diversify their income. The logistic regression coefficient for the variable distance from nearest market centre was found statistically significant at 5 percent significant level. The odd ratio value suggests that a decrease of 1km distance from a local market place will increase the probability of participating in non farm income diversifying activities by a factor of 1.35, cetris paribus.

Distance from Main Road

Infrastructure such as, roads, electricity, postal offices and etc are positively correlated with the non farm economic sector. Households with access to different infrastructures are more likely to be involved in the non farm income diversifying activities. It was projected that those households who reside near to a main road show high propensity to participate on non farm income diversifying activities. The logistic regression coefficient for the variable distance from the main road found to be statistically significant at 5 percent level. The odd ratio value suggests that a decrease of a distance by 1km from a residence will increase the probability of participating in non farm income diversifying activities by a factor of 2.08, cetris paribus.

Generally the economic model pointed out five major factors, namely land size, family members in the productive age group, literacy (education), roads and local market centers that have a strong influence in farmers' decision to engage in income diversifying economic activities. The predictive power of the model is found to be 67%.

CHAPTER FIVE

5. CONCLUSION and POLICY IMPLICATIONS

5.1. Conclusion

The assumption which has dominated developing countries over the years, namely that rural economic sector depends excessively on agriculture has been seriously questioned lately amongst huge empirical evidences that suggest heterogeneity of the rural economy. Now days rural farmers do not entirely depend on agriculture as a means of livelihood and food security, rather they adopt multiple sources of income so as to ensure livelihood and better life.

This study revealed that around 60(sixty) percent of households in the study area adopt a multiple source of income that includes: beverage selling, petty trade, rural crafts and the like. Households' decisions to participate in income diversification schemes are driven by push and pull factors, but in the study area push factors were predominant.

Individual Characteristics like Sex of the household head, age of the household head, family size, family members between the ages of 15-64, literacy status (education) were among the factors that can influence households' decision to participate/ not participate in income diversifying activities

Asset endowments mainly size of own land and livestock were among the most important push factors on diversification behavior. In the study area those households with relatively small size of land happened to diversify their income sources than the ones who owe relatively large size of land.

Public infrastructures like roads, electricity, market centers and others play a significant role in promoting non farm economic activities in rural areas. This study found out that those farmers who reside near to main roads and market centers showed high propensity to engage in an income diversifying economic activities.

By using a logistic regression model, this study was able to identify the most important determinants of diversification behavior across the sample households; land size, family members between the ages of 15-64, literacy status (education), access to market centre and access to main roads were found to be strongly correlated with diversification strategies.

Generally the role of the non farm sector as a viable source of additional income is expanding in importance and magnitude all over the developing countries like Ethiopia.

5.2. Strategic and Policy Implications

Agriculture is no longer the single source of income for rural families. In order to increase family income rural households have been searching for different ways, particularly in the non farm economic sector. The current Ethiopian regime has introduced an Agricultural Development Led Industrialization (ADLI) to fuel overall development in the country. Even though ADLI recognizes the heterogeneity of the rural economy, its entire attention focuses on increasing the productivity of the agricultural sector.

Whether non farm diversification should be considered as distinct objective or an associated outcome of overall development is highly influenced by the nature of agriculture in a given state. In countries like Ethiopia where agriculture holds a large share of the economy, absence of commercialized farming, high population pressure, subsistence farming, low usage of modern inputs and technologies and pervasive market failures for agricultural products, it is hard to imagine sustainable rural development without the promotion and utilization of the non farm economic sector.

Even though ADLI, recognizes the heterogeneity of rural economic activities, tries to advocate the much needed rural transformation by entirely depending on agriculture but contrary to this, this study found out that majority of rural households do indeed diversify their economic activities and the income derived from the non farm sector contributes a significant amount of households total income portfolio. Policy wise it is advisable to create a favorable environment for dynamic diversification of the rural economy, that ultimately creates windows of opportunities for rich and poor alike. Even though majority of households in the study area do diversify, not all enjoy the lucrative non farm income and for most the additional income serves as a survival strategy.

In order to use the rural non farm economy as engine for sustainable rural development, much investment is needed in rural education and health to upgrade poor farmers' human and physical capital, so that they would get the access to the most remunerative and high return jobs. Similarly credit facilities should be expanded in rural areas both to help the farm and non farm sector by providing cash that can readily be invested on modern agricultural inputs and technologies and to open up and expand non farm business opportunities.

Due to continuous fragmentation of land, coupled with dynamic population growth rate, the amount of land households' is not enough for their livelihood. It is advisable to design policies aimed towards the expansion of non farm economic activities that can absorb the growing rural idle labor.

Investments on public infrastructures like road, electricity, market centers and the like would help the very poor to utilize non farm opportunities. In this study it was reported that those farmers who reside near to main roads and market centers participated on different income diversification endeavors than the rest. Proximity to towns and access to different infrastructures are crucial capacity determinants of rural non farm employment and income levels.

It is advisable to invest on further research on this relatively new topic so as to learn the determinants, issues, best practices and institutional gaps and requirements.

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Part I – Household and Individual Characteristics

Kebele .....
Gote.....
Village.....
Country side.....
Climate .....

1. Household head martial status
   1. Married
   2. Single
   3. Divorced
   4. Widowed
2. Language skills
   1. Only oromifa
   2. Amharic and oromifa
   3. Only Amharic
   4. Other.....
3. Household head
   1. Men
   2. Women
4. Household size and other features of household members

Ser. No.	Family member	Sex	Martial status	Age	Literacy status	Primary occupation	Secondary occupation
	1.husband 2.wife 3.son 4.daugther 5.grandson 6.grangdaughter 7.nephew 8.cousin 9.labourer 10.others	1.M 2.F	1. married 2.single 3.divorced 4.widowed 5.others		1.illiterate 2.only read and write 3.priest/sheikh 4.grade1-6 5.grade7-8 6.grade 9-12 7.certificate 8. diploma 9. degree 10. above	1.farmer 2.trader 3.pottery 4.daily labourer 5.carpenter 6.weaver 7.beverage 8.tailor 9.student 10.other.....	1.farmer 2.trader 3.pottery 4.daily labourer 5.carpenter 6.weaver 7.beverage 8.tailor 9.student 10.other.....

5. Do you own agricultural land?
   1. Yes 2. No
   5.1. If yes how many in hectares? ----------
6. Do you think that the land you currently owe is enough for the household livelihood?
   1. Yes 2. No
7. What is the trend of land holding size per household during the last two or more decades?
   1. Increasing 2. Decreasing
   3. Decreasing 4. I don't know

8. If decreasing what do you think the reason could be ?
   1. Continuous land redistribution
   2. Shortage of arable land
   3. Population growth
   4. Other .....
9. How do you assess the trend of land productivity during the last 10 years?
   1. Increasing 2. Decreasing
   3. Decreasing 4. I don't know
10. If increasing, what do you think are the reasons?....

No.	Reasons	response	Rate the response	
	Relatively stable pattern of rain			
	Use of modern inputs and technologies(fertilizers, weed and pest control, improved seeds, ...			
	Use of traditional methods (compost.....			
	Other.....			
	Adequate extension service			
		1.Yes 2.No	1.very significant 2.significant 3. not significant	

11. If decreasing, what do you think are the reasons?.....

No	Reasons	response	Rate the response
	Land degradation (soil erosion, fertility loss....)		
	Inadequate extension service		
	Drought		
	Crop disease and pest		
	Lack of labour and ox		
	Other....		
		1.Yes 2.No	1.very serious 2.serious 3. not serious

12. Food security

requency of eating er day	rank	Source of food	rank	Adequacy	borrowed grain or food in the (last 12 months)	Do you accept any relief food assistance(last12'months)
once twice three times four times It depends up on the ason and income of e family.		1.purchased from market 2.own production 3.both from market and own production 4. Relief assistance. 5.borrowing from neighbourhood/others 6. other		1.yes 2.no	1.yes 2. no	1.yes 2. no

13. Household utilities

No.	Types	Response	Do you think that what you have is adequate in terms of number and standard?	
1	Bed(made of wood, home made(mud))			
2	Chairs and tables			
3	Kitchen and dining equipments			
4	Floor/cub board			
5	Sheet and Blanket			
6	Mattress and pillow			
7	Kitchen equipment floorboard			
8	Radio			
9	Television			
11				
12				
13				
14				
15				
		1.yes 2.no	1. yes 2. no	

14. Housing

	The house you live in is	The house is made of	Do you have separate kitchen	Do you have toilet
	1. your own 2.relative's house 3. inherited 4.rented 5. other	1.corrugated iron 2.hut(grass thatched) 3.both types 4. Other.....	1. yes 2. no	1. yes 2. no

15.Do you think that, the land and livestock assets you currently own will be enough for your family in the future?

1. Yes 2. No

15.1 If No, why?

1. I owe very small amount of land and livestock assets
2. Since the farming pattern depends on nature(rain fed) I cannot guarantee that
3. Land productivity is decreasing
4. Other,specify_____.

15.2 If No, what do you think is the way out?

1. Expansion of modern agriculture practices
2. Expansion of irrigation
3. Expansion of income diversification activities
4. Other ,specify_____

16. Do you think that you and your family are vulnerable to drought and famine?

1. Yes 2. No

16.1. If yes, it is due to

1. The farming pattern depends on nature (rain fed)
2. I do not have additional income source
3. I possess small amount of land and livestock
4. Other, specify_____.

Part II_1.. What kind of crops you grew during the last twelve months?

No	Area of land cultivated		Total production (in quintal /KG)	Total sold (in quintal /KG)	Total consumed(in quintal /KG)	Amount of income obtaind(in Birr)
	Belg season	Mher season				
1	Teff					
2	Maize					
3	Barely					
4	Sorghum					
5	House beans					
6	Field peas					
7	Lentils					
8	Sorghum					
9	Lentils					
10						
11						

2. Type and number of livestock

No.	Type of livestock	Number currently owned	Income obtained by selling livestock and livestock products during the last twelve months	
			Type	Birr
	Cow			
	Ox			
	Bull			
	Heifer			
	Calf			
	Horse			
	Donkey			
	Mule			
	Sheep			
	Goat			
	Bee hive			
	Chicken			
	Other specify			

3. Did you get a credit (from formal and informal sources) in the last 12 months?

1. Yes 2. No

3.1 If yes, name the institution and amount of money? ----------

3.2 If yes, mention in what ways you invest the money?

	Investment on	Rank
1	Household consumption	
2	To run petty trade	
3	To cover school and medical costs	
4	To buy agricultural inputs	
5	To buy different livestock	
6	To buy different household and personal utilities	
7	Saving	
8	Loan replenishment	
9		
10		

4. If no, why?
   1. lack of interest
   2. unable to fulfill the collateral requirement
   3. such institutions are not available in the area
   4. other, specify----------

5. Did you receive any technical assistance on optimum use of income in the last 12 months?
   1. Yes 2. No

6. Did you receive any remittance from elsewhere in the last 12 months?
   1. Yes 2. No

6.1 If Yes, how much? ----------.

6.2 If yes, how did you spend it?

	Investment on	Rank
1	Household consumption	
2	To run petty trade	
3	To cover school and medical costs	
4	To buy agricultural inputs	
5	To buy different livestock	
6	To buy different household and personal utilities	
7	Saving	
8	Loan replenishment	
9		
10		

7. Did you receive any money gift from individuals or institutions in the last 12 months?
   1. Yes 2. No

7.1 If yes, how did you spend it?

	Investment on	Rank
1	Household consumption	
2	To run petty trade	
3	To cover school and medical costs	
4	To buy agricultural inputs	
5	To buy different livestock	
6	To buy different household and personal utilities	
7	Saving	
8	Loan replenishment	
9		
10		

8. Part III.1.Involvement in non farm economic activities and Income obtained in the last twelve months.

N o.	Type of activity	participants	For how long stayed	Distance from home	Income obtained	
					monthly	Yearly
	Trading in grains and pulses					
	Trading in livestock					
	Selling of beverages					
	Trading of chickens					
	Trading of honey					
	Weaving					
	Spinning					
	Blacksmith					
	Pottery					
	Carpentry					
	Tailoring					
	Daily wage labourer					
	Food selling					
	Share cropping out of own land					
	Renting out land					
	Renting out animals					
	Grain mills					
	Trading in vegetables					
	Sale of firewood					
	Sale of straw					
	Sale of pole/trees					
	Petty trade					
	Other specify					

2. What are the reasons that force you to participate in off farm income generating activities?

	Reasons	Rank
1	To diversify income	
2	There is no credit service in the area	
3	Availability of much slack time	
4	The farm income is not enough for consumption	
5	Desire to shift from agriculture to other paid jobs	
6	To fulfill household utilities/amenities	
7	To cover cost of schooling and medical care	
8	To cover miscellaneous costs	
9	To cover costs of using external agricultural inputs	
10		
11		

3. What do you think are the main reasons that hinder farmers not to participate in off farm income generating activities?

	Reasons	Rank
1	Lack of interest	
2	Lack of capital	
3	Language	
4	Education	
5	Age	
6	Lack of organizations that employ rural labor in the area	
7	Location	
8	Lack of information and technical assistance	
9	Gender	
10		
11		
12		

4. How much hour you are ready to travel by bare foot to find off farm job?

1. 0.5 hour 3. 2 hours
2. 1 hour 4. 3 hours
5. _____

5. Do you think that women are at disadvantageous position in participating in off farm income generating activities

1. Yes 2. No

5.1 If yes, what do you think are the reasons?

1. Because of their triple role, they face time constraints to participate
2. They do not possess the required qualification
3. Culturally, women are not allowed to work outside the house 4
4. Most of the available jobs favor men
5. Other, specify_____.

6. If the government is willing to offer you a permanent job outside farming, will you accept it?

1. Yes 2. No

6.1 If yes, what would be the ideal monthly salary?

1. 300-500 2. 500-700

3. 700-1000 4. Above 1000

Part IV. 1. Spending pattern

Crop income expenditure(1)	Livestock income expenditure(2)	Off farm income expenditure(3)	Rank (1)	Rank (2)	Rank (3)
.for purchasing food .for saving(formal and nformal) .for house construction .to pay tax and loan . to cover school cost .to buy consumable items .to run petty trade .to buy modern agricultural nputs/technologies .to buy household utilities 0.to replenish loan 1.to cover medical cost 2.to buy cloths 13. social contribution 14. to cover miscellaneous osts 15. Other.....	1.for purchasing food 2.for saving(formal and informal) 3.for house construction 4.to pay tax and loan 5. to cover school cost 6.to buy consumable items 7.to run petty trade 8.to buy modern agricultural inputs/technologies 9.to buy household utilities 10.to replenish loan 11.to cover medical cost 12.to buy cloths 13. social contribution 14. to cover miscellaneous costs 15. Other.....	1.for purchasing food 2.for saving(formal and informal) 3.for house construction 4.to pay tax and loan 5. to cover school cost 6.to buy consumable items 7.to run petty trade 8.to buy modern agricultural inputs/technologies 9.to buy household utilities 10.to replenish loan 11.to cover medical cost 12.to buy cloths 13. social contribution 14. to cover miscellaneous costs 15.Other.....			

2. If governmental and non governmental institutions arrange good credit schemes for you, will you stop your current off farm job?

1. Yes 2. No

3. Do you think that, you are getting what you deserve from the off farm job?

1. Yes 2. No

4. How do you describe yourself in rural context?

1. Absolutely poor
2. Relatively poor
3. Poor
4. Not rich, not poor
5. Rich

Declaration

This thesis is my original work and has not been presented for a degree in any other university, and that all sources of materials used for the thesis have been duly acknowledged.

Declared by:

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