

DETERMINANTS OF WAGE LABOR PARTICIPATION AMONG THE AFAR
PASTORALISTS: THE CASE OF AMIBARA DISTRICT

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Abstract

Key words: Wage labor, Pastoralists, off-farm employment

The pastoral sector in Afar region has supported the community for many years in the past. However, it has been facing a challenge for the past five decades after commercial irrigated farming was considered as a development intervention in the area. Due to the intervention, the Afar pastoralism underwent major transformation mainly because of the changes in land use. These changes undermined the functioning of the pastoral system. The overall process contributed to impoverishment, resource scarcity, vulnerability to drought and deepening ecological crisis. The deteriorating living conditions have forced the pastoral communities to diversify their activities by engaging in non-pastoral pursuits to supplement their income. Among these subsidiary income-generating activities, wage labor in the irrigated farms is one formal option. The purpose of this study was to assess the overall features of farm wage employment in general and its determinants in particular. To meet this objective, a household survey was undertaken during March 2004. The survey covered six Kebeles of Amibara district of Afar region. A multi-stage random sampling technique was used to select sample households. Descriptive and econometric methods were used to analyze the data. The descriptive analysis used included independent t-test, Chi-square test, frequencies, means and percentages. The econometric analysis applied logistic regression model. The survey result provided a glimpse of the importance of the sector for employment and its role in the survival of the household. But given the insignificant number of Afars in stable and better paying jobs, it is difficult to conclude that wage employment has resulted in a greater improvement in household well-being. In this regard, socio-economic factors and local characteristics were found to influence wage labor participation. The logit model indicated age, wealth and distance determined significantly and negatively, whereas education and attitude determined significantly and positively the probability of engaging in wage employment. Considering the importance of alternative employment opportunities in the future, promoting education and training as well as giving support to the pastoral and transport sector were recommended as strategies for success in promoting wage employment.

CHAPTER ONE: INTRODUCTION

1.1 Background

Afar region is located in North-Eastern Ethiopia. Livestock rearing, mostly traditional pastoralism¹, is the dominant activity and the biggest occupation of the economically active population (CSA, 2003). According to CDEP (1998) estimate, over 93 % of people in the region are mainly dependent on pastoral livestock rearing.

Until 1950s Afar pastoralists predominately used to live closer to the Awash River. They managed the natural resources by periodic movement to wet season grazing areas for a few months in the rainy season; and by moving back near to the Awash River in dry period (Gamaledin, 1993; Kassa, 2001). Reasons for mobility could be associated with climatic variability and availability of feed and water for the livestock (Dawit, 2000). This opportunistic and low-cost management system of pastoralists was well suited to the fragile ecosystem and had provided the Afars sustained livelihood (Ali, 1997).

Besides the potential for livestock production, the region occupies a strategic location for irrigation development because of its vast area drained by Awash River (Ali, 1997). During the early 1950s, the government of Ethiopia considered irrigated farming as a strategy to bringing development in the Awash valley (EVDSA, 1989; Ali, 1997). According to Kassa (2001), this change regarding lowland areas development resulted from the mainstream view that many African governments' held at the time. To realize the implementation of the

¹ Traditional pastoralism is a mode of production that depends on periodic movement of people and their livestock to get access to disperse, ecologically specialized and seasonally varied forage needs of different livestock species (Markakis, 1993; Kassa, 2001)

strategy, the Awash valley authority was established in 1962 mainly to identify resources and attract foreign investors (EVDSA, 1989).

Following this, about 70,000 hectare of dry season grazing land from middle and lower Awash was placed under different development schemes (Ali, 1997; Kassa, 2001). These include irrigated farming of high value crops such as cotton, livestock and rangeland development as well as settlement programs (Kassa, 2001; EVDSA, 1989; Tafese, 2000). The four main objectives of these schemes were to: i) open more land for cultivation and thereby alleviate the country's food shortage, ii) provide raw materials for local industries, iii) expand agricultural export and iv) create jobs for pastoralists and landless farmers (Bondestam, 1974 as cited by Kassa, 2001).

However, the traditional pastoral system faced a challenge due to the changes in land use and management (EVDSA, 1989). An adverse outcome of this change was the appropriation of pastoral dry season grazing lands, which were hitherto critical for the successful maintenance of the long established and ecologically well adapted extensive grazing system (EVDSA, 1989; Kassa, 2001). The overall effect of the change erodes the functioning of the pastoral system with a net negative effect on the pastoralists (EVDSA, 1989; Ali, 1997).

The problems of the pastoralists caused by land alienation, were further compounded by frequent droughts that have been occurring since 1970s (Kassa, 2001). Regarding the seriousness of the drought condition, Yirgalem (2001) noted that after suffering drought losses, the pastoralists are not in the position to rebuild to their original livestock holding before the occurrence of the next drought.

Because of the above problems, some Afars were forced to adopt reliance upon less supportive grazing area while others died in the struggle for survival (Gamaledin, 1993; Kassa, 2001; Ali, 1997). In general, the process contributed to impoverishment, resource scarcity, vulnerability to drought, and deepening ecological crisis (Kassa, 2001; Gamaledin, 1993). It also intensified inter- and intra-ethnic conflicts over the remaining resources that led to violent confrontations among the pastoralists, between the pastoralists and the neighboring highlanders and between the pastoralists and the government (Fasil et al., 2001; Ali, 1997).

1.2 Statement of the Problem

All the above-mentioned factors have made traditional pastoralism an unfavorable option for the Afar people (Fasil *et al.*, 2001). The deteriorating living condition has increasingly forced the people to take up non-pastoral pursuits. Different writers (e.g. Ali, 1997; Kassa, 2001) have reported the increasing involvement of the Afar in non-pastoral pursuits such as working for wages, cattle raiding, hunting, cultivation, sale of charcoal and trade. Most of these activities are new, some are socially unacceptable and informal, and others cause environmental degradation. For example, fuel wood and charcoal selling are informal, against Afar traditional rules (which prohibit the cutting of important trees) and cause of environmental degradation. Whatever forms they take, however, these subsidiary activities have become important in the lives of the pastoralists (Kassa, 1997).

Among these subsidiary activities, wage labor in the irrigated farms is one formal option available to diversify the pastoralists' income. Previous studies documented observed

changes with regard to wage labor participation of pastoralists in the study area. Kassa (2001) noted the increasing number of Afar pastoralists in search of employment at the irrigated farms. But, given high labor requirement of the said farms the level of pastoralists participation has been low (Ali, 1997; Kassa, 2001).

However, specific attention has hitherto not been given to the pastoralists participation in paid-works of the farms in the study area. Therefore, there are several research gaps that need to be addressed, the knowledge of which may help to enhance the sector's role in the local economy. First, the different factors that influence pastoralists' participation, as wage laborers are not known. Secondly, the benefits and the constraints of pastoralists, as wage-laborers are not well documented. In general, there exists little empirical evidence related to wage labor participation of pastoralists, the contribution of wage labor to pastoral income diversification and pastoralists' perception of such jobs. The purpose of this study is, therefore, to assess the overall features of wage labor participation of Afar pastoralists in the irrigated farm schemes.

1.3 Research Questions

Some of the questions this study seeks to answer are the following.

- i. What are the significant factors that influence participation of pastoralists in wage labor activities?
- ii. What are the major benefits and constraints that the pastoralists face with regard to participation in wage labor activities?
- iii. What are the gender dimensions of the employment opportunity?

1.4 Objectives

In order to answer the above questions, the study has the following major objectives:

- i. Identify determinants of decision to participate in wage labor activities among pastoralists.
- ii. Identify benefits and constraints of wage labor participation.
- iii. Draw policy implications of the finding for development.

1.5 Significance of the Study

Expanding employment is central to reducing poverty, as it is fundamental to achieve food security among the poor (Braun, 1995). As one strategy, for instance, in reducing vulnerability to natural and human-induced resource fluctuations, the development of alternative forms of employment is important. Working towards this goal via development interventions requires basic understanding of alternative means of livelihood. In this regard, this study will generate micro-level information on determinants, benefits and constraints of wage labor participation among the Afar pastoralists and contribute to filling information gap in this aspect.

1.6 Scope and Limitations

Among all other options of non-pastoral diversification strategies, the scope of this study is limited to wage labor participation in the irrigated farm schemes. The focus on wage labor in farms is partly justified by the relative importance of the sector in the study area. It was difficult to collect reliable and quantifiable data on income and expenditure that would help

to assess the role of wage income. This was mainly due to time and research fund constraint in generating relevant data under the settlement condition of the pastoralists.

1.7 Organization of the Thesis

The thesis has five chapters. Following the introductory chapter, the second chapter presents literature review. This chapter presents conceptual and theoretical framework followed by a brief review of previous empirical studies. Chapter three provides methodology of the study. In this chapter the study area, sampling techniques and method of analysis are discussed. The fourth chapter presents results and discussions of the study. Finally, chapter five presents conclusion and recommendations.

CHAPTER TWO: LITERATURE REVIEW

This chapter consists of three sections. The first section presents theoretical background. This section briefly discusses theory of peasant household economic behavior to describe off-farm employment of rural households. Section two discusses some conceptual issues regarding classifications, motives and origins of diversification. Following this, the third section review previous empirical studies with regard to livelihood diversification, with particular emphasis to diversification in pastoral settings.

2.1 Theoretical Background

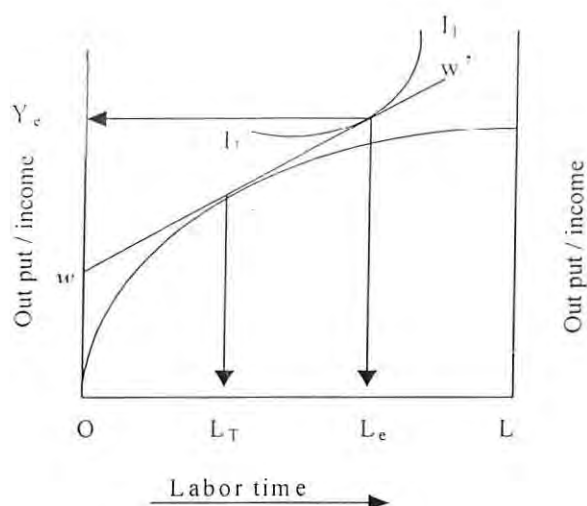
The theoretical basis that explains off-farm employment of farm operators is neoclassical labor supply theory. It is a theory of the allocation of time. Ellis (1993) outlined alternative theories of peasant household economic behavior. All the theories assume that the peasant household maximizes one or more of the household objectives such as profit maximization or risk aversion (Ellis, 1993). One of the models, which describe time allocation by a farm operator, is the Chayanov farm household model. The Chayanov model considers the subjective decision made by the household with respect to the amount of family labor to commit on-farm to satisfy its consumption needs. The subjective decision involves a trade off between "disutility" of work and the utility of income.

Ellis (1993) discusses subsequent development of the Chayanov model and tried to figure out the response when the household is permitted either to hire-out or hire-in labor from outside at the market wage rate. In such cases, all household members time are valued at the opportunity cost in terms of the market wage rate. Figure 2.1 shows the introduction of a

wage cost line (ww') in to the model in the presence of labor market. This wage cost line represents the opportunity cost to the household of alternative uses of family labor time, in home activity, farm work or wage work off the farm.

For example, in figure 2.1 the amount of labor, which the family is prepared to commit to production, is given by L_e hours of labor either to farm work or to wage work off the farm. Since L_e is greater than the optimum level of labor use in farm production, L_T , the difference between the two is the amount of off farm wage labor the household is prepared to supply to the labor market.

Figure 2.1. Farm Household Hiring Out Labor



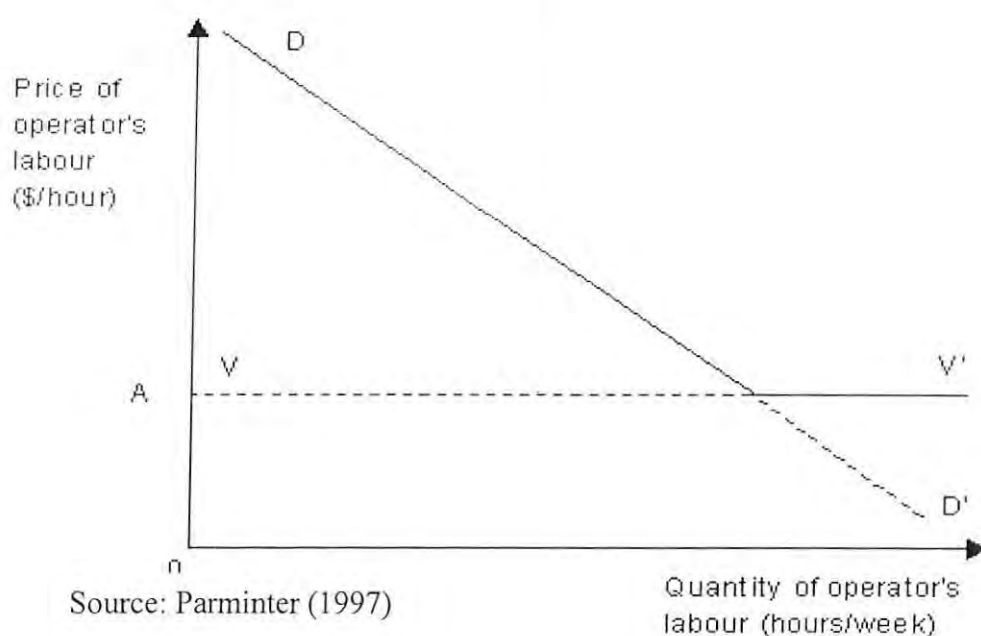
Source: Ellis (1993)

In general, the farm operator makes time allocation decisions between farm work, off farm work and leisure activities in order to maximize utility. The utility depends on consumption goods and leisure subject to budget constraint. The optimal allocation of time is achieved

when the marginal values of time devoted to all of these activities are equal (Gunter, 1990; Ellis, 1993).

Parminter (1997) used a demand and supply framework to summarize the allocation of off farm labor. The framework uses the concept of kinked demand curve for labor. Parminter (1997) graphically illustrate the concept of a kinked demand curve for labor as follows. In Figure 2.2, the kink in the demand curve for the operator's labor occurs where the wage rate for off-farm work ($V-V'$) exceeds the return to labor expended on the farm ($D-D'$).

Figure 2.2: A kinked Demand Curve for the Operator's Labor



This framework has the following assumptions: i) production function for the farm has diminishing marginal returns to the operator's labor, so the operator faces a downward sloping demand function for labor for on-farm work; ii) operator is a price taker with respect

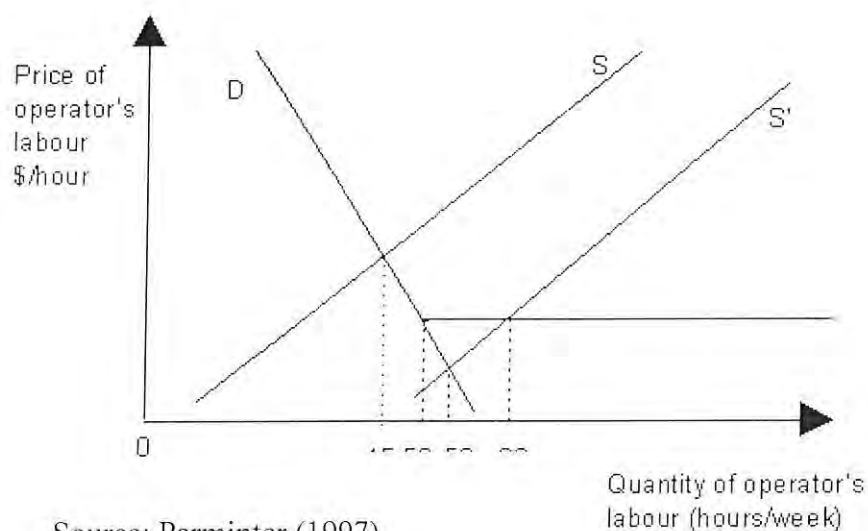
to the off-farm wage rate and the wage rate is exogenously determined; iii) operator can work as many hours in an off-farm job as desired; iv) operator is indifferent between working on his or her own farm, and working off the farm, at any given rate of return on the farmer's labor (Parminter, 1997).

The price of the operator's labor in this framework is best understood as the opportunity cost of *not* performing an hour of work. Given diminishing marginal returns to the operator's labor: the first hour's farm work has a very high opportunity cost, and therefore a very high price: the second hour has a lower opportunity cost, and so on. Once the opportunity cost of the marginal hour worked on-farm is equivalent to the wage rate for the same hour worked off-farm, the farmer will allocate the subsequent hours to off-farm work (Parminter, 1997).

In order to establish whether the farmer will allocate time to off-farm work or not, the supply curve for the farmer's labor must also be derived. Under the assumption that the more the farmer earns per hour, the more hours he or she will work, then the supply curve is upward sloping (Figure 2.3).

The intersection of the kinked demand curve with the operator's supply of labor determines whether the operator participates in off-farm work. If the supply curve cuts the demand curve to the left of the kink in the demand curve (S in Figure 2), then no off-farm work will be undertaken. If the supply curve cuts the demand curve to the right of the kink in the demand curve (S' in Figure 2), then some off-farm work will be undertaken. Shifts in these three curves determine changes in the status of part-time farming, full-time farming and "farming" (Parminter, 1997)

Figure 2.3 Demand and Supply Curves for the Operators Labor



Source: Parminter (1997)

The framework developed above may be used to predict circumstances under which the amount of time devoted to off-farm activities is likely to increase or decrease. According to Parminter (1997), changes in the demand curve for on-farm work, changes in the demand curve for off-farm work, changes in the farmer's labor supply curve are some of the factors that are likely to increase hours devoted to off-farm work. This demand and supply framework suggests that individuals will work and invest off their farms if the return (at the margin) is higher. In relation to off-farm work, the framework suggests that the hours devoted to on-farm work, and farm output, will fall as a result of engaging in off farm work, and that total hours worked are likely to increase (Parminter, 1997).

2.2 Conceptual Framework

People in most part of the world (rural or urban) diversify their income. They collect their income from different sources, hold their wealth in different assets or use their assets in more than one activity. This diversification patterns reflect individuals' allocation of assets to achieve an optimal balance between expected returns and risk exposure subject to constraints they face (Reardon, 1997; Barrett *et al.*, 2001).

Different terms such as off-farm, on-farm and non-farm are used to show diversification of activities and incomes. According to Barrett *et al.* (2001), a rural household income can be grouped using a three-way classification of earned income (i.e., income from productive assets) by sector (e.g., farm versus non-farm), function (wage versus self-employment), and space (local versus migratory).

The sectoral classification follows the distinctions of national accounting systems as primary (agriculture, mining, and other extractive activities), secondary (manufacturing), and tertiary (services). This leads directly to the distinction between "agricultural" or "farm" income and "non-agricultural" or "non-farm" income. Therefore, sectoral (farm/non-farm) assignment concerns only the nature of the products and factors used in production. It does not matter where the activity takes place (on the farm premises, in town or abroad), at what scale (in a huge factory or by a single person), with what technology, or whether the participant earns profit or labor income (wages or salary) from the activity (Barrett *et al.*, 2001).

In the second functional classification, there exist two categories, which are wage-employment (i.e., involving a wage or salary contract) and self-employment (e.g.,

entrepreneurial activity). The word "functional" is used because this is the word from classical economics used to describe the distribution of income over wages, profits, and rents (Reardon, 2000; Barrett *et al.*, 2001).

A third level of distinction, given a sectoral and functional category, is locational, separating local from migratory (Figure 2.1). This spatial classification has two broad categories with some sub-categories (Reardon, 2000; Barrett *et al.*, 2001). First, an activity can be "local", with two sub-categories: (a) at-home (or "on farm"); and (b) local away-from-home, with subcategories of (i) countryside or strictly rural, (ii) nearby rural town, and (iii) intermediate city. Second, an activity can be "distant away-from-home" (or "migratory"), with subcategories: (a) domestic rural (e.g., inter-zone migration), (b) domestic urban (such as to a distant metropolitan area), and (c) foreign.

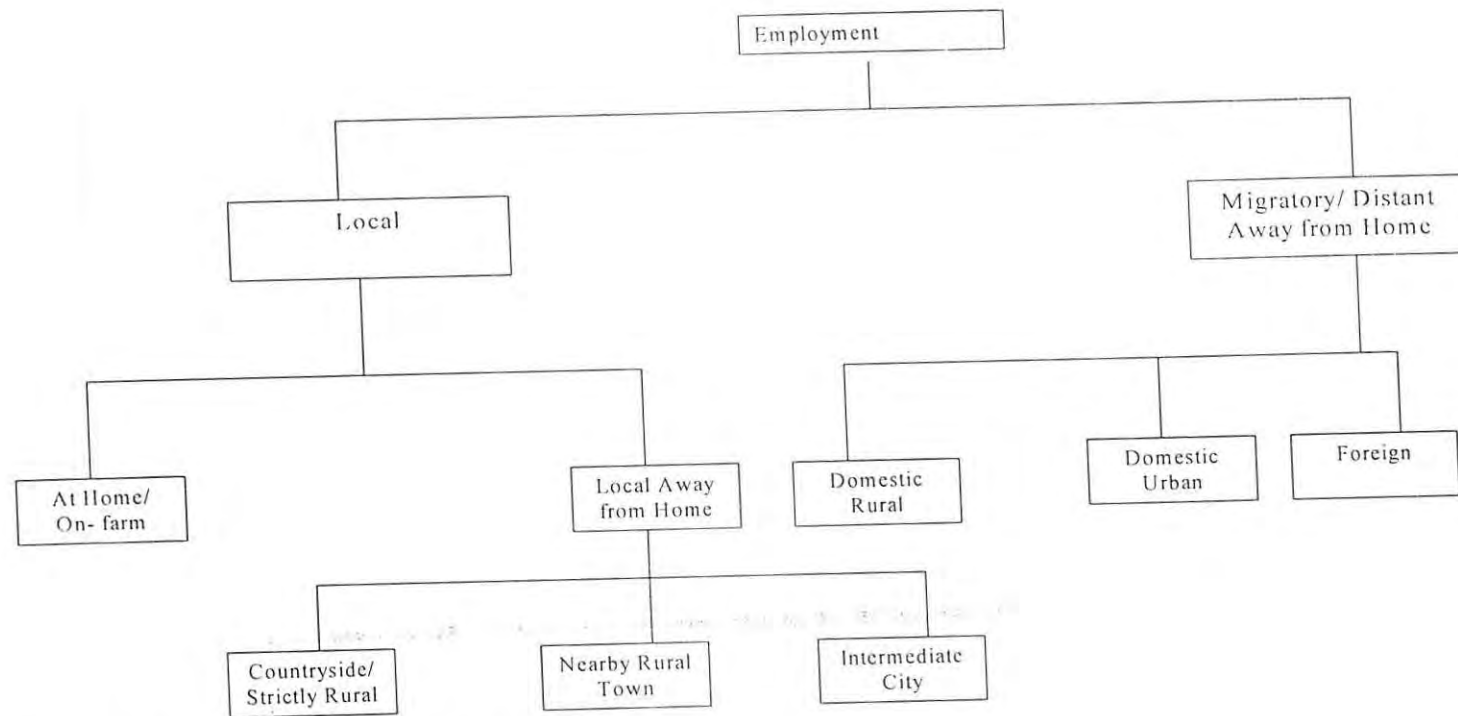


Figure 2.4: Locational Classification of Employment

The above three-way classification being a general one, in pastoral areas income can be classified as pastoral and non-pastoral. Little *et al.*, (1999) pointed out the different classifications used by anthropologists and economists. According to anthropologists, petty trading including milk sale is considered as non pastoral; economists on the other hand, tend to take a more sectoral approach and treat any income earned from livestock as on farm pastoral income.

Since the focus of this thesis is primarily about pastoralists' participation in agricultural wage labor employment, the subject of this study can be classified as primary (agricultural), wage-employment and local away from home (not on-farm) by sectoral, functional and spatial classifications respectively. Therefore, the emphasis in this study is on spatial classification (on-farm/off-farm type) focusing on the interaction between pastoralism and household's wage labor employment outside the pastoral sector.

Having seen the basic classifications of incomes and activities, the next few paragraphs presents the reasons that prompt households and individuals to diversify their income. Barrett *et al.*, (2001) and Reardon (2000) discuss two sets of motives for diversification of activities by rural households.

The first set of motives comprises what are termed as "push factors". These factors are response to diminishing factor returns in any given use (Barrett *et al.*, 2001). Push factors include bad conditions or relatively worse returns in one activity, relative to other activities. According to Reardon (2000), bad conditions include: (1) inadequate agricultural output (e.g., a drought or land constraints) (2) missing or incomplete agricultural insurance (which

necessitates diversification to use for ex-post coping mechanism during drought that cause loss of herd or harvest shortfalls); (3) riskiness of agriculture (which necessitates the need to manage income and consumption risk through diversification strategies, by undertaking activities which have returns with a low or negative correlation with returns to agriculture); (4) absence or failure of agricultural input credit markets (which necessitates diversification to pay for agricultural inputs such as veterinary inputs or crop inputs). Therefore, from the “push factor” perspective, diversification is driven by limited risk-bearing capacity that creates strong incentives to select a portfolio of activities in order to stabilize income flows (Barrett *et al.*, 2001).

The second set of motives comprises “pull factors”. Pull factors include, for example, better returns in one activity, relative to others (Barrett and Reardon, 2000). From the “pull factor perspective,” local engines of growth such as commercial agriculture or proximity to an urban area create opportunities for income diversification (Barrett *et al.*, 2001). In general, this illustrates why poor livestock owners often diversify in to particular income-earning strategies out of necessity to survive, while wealthy pastoralists pursue non-pastoral activities as an accumulation or investment strategy and often take on more attractive options (Little *et al.*, 1999)

The consequence of the presence of the above motivating factors led to a widespread diversification. Under the broad framework of “push” and “pull” factors of motives for diversification, there are different origins of diversification that led individuals take different activities to earn income.

According to Barrett *et al.* (2001), farm household diversification into off-farm and non-farm activities emerges naturally from diminishing or time-varying returns to labor or land. Where returns to productive assets vary across time (e.g., land, labor or capital across dry and wet seasons) individuals will exhibit diverse assets, activities and incomes. Such aggregation likely accounts for a substantial proportion of the diversification reported in empirical studies.

Another explanation for diversification is the existence of incomplete markets (e.g., for land, labor, credit, or insurance). Missing land markets, for example, may explain why a skilled handcraft man continues farming although his comparative advantage lies in smith-work. If there were land market, he might rent out or sell his land and devote all his time to his handicraft work. Observed diversification of labor activities and income for this hypothetical individual would then be attributable primarily to the absence of markets (Barrett *et al.*, 2001; Reardon, 2000).

Similarly, a smallholder household endowed with much labor but relatively little land will, in the absence of well-functioning land markets, typically apply some labor to its own farm, and hire some labor out for off-farm wage employment. Because of diminishing return to factors of production, in the absence of well-developed markets to achieve the optimal mix, diversification becomes the common response. Accordingly, individuals allocate assets across activities to equalize marginal returns in the face of quasi-fixed complementary assets (e.g., land) or mobility barriers to expansion of existing (farm or non-farm) enterprises. For the poorest, this typically means highly diversified portfolios with low marginal returns (Barrett *et al.*, 2001; Reardon, 2000; Little *et al.*, 2001).

Diversification could also emerge as ex-ante risk management strategy. It is widely understood as a form of self-insurance in which people exchange some foregone expected earnings for reduced income variability achieved by selecting a portfolio of assets and activities that have low or negative correlation of incomes (Little *et al.*, 1999; Reardon *et al.*, 1997). If risk aversion is decreasing in income and wealth, then the poor will exhibit greater demand for diversification for the purpose of ex-ante risk mitigation than do the wealthy (Barrett and Reardon, 2000).

A related but distinct role of diversification is to cope ex post with shocks to income. When crops fail or animals die, households must reallocate labor to other pursuits, whether formal employment off-farm (e.g. wage labor), informal employment off-farm (e.g. hunting), or non-agricultural activities on-farm (e.g. weaving, brewing). Much as risk preferences and differential access to wealth likely contribute to greater demand for ex ante diversification by poor people, so too are the poor more likely to diversify ex post as a coping response to shocks (Barrett *et al.*, 2001, Little *et al.*, 1999).

2.3 Review of Previous Studies

In recent years, there has been increasing emphasis in the rural development literature on the multiple income-generating activities undertaken by rural households. Different studies conducted on diversification behavior of households showed the crucial importance of off-farm employment for the rural poor.

Reardon (1997) and Barrett *et al.*, 2001 showed from different study that off-farm and non-farm earnings account for a considerable share of farm household income in rural Africa.

Citing different writers (Bryceson and Jamal, 1997; Reardon, 1997; Little *et al.*, 2001) Reardon (1997) indicated in Africa, non-farm sources account for as much as 40-45% of average household income.

Similarly, for rural Mexico, Aurajo (2003) indicated that off-farm jobs absorb an increasing proportion of the rural labor, and income from such activities represents a significant share of the total income of rural households. In this study, Aurajo concluded that participation in off-farm activities offers a diversification strategy for the households and off-farm incomes provides a source of liquidity in area where many are credit constrained.

The importance of diversified income and activities is not only observed in developing countries. For example, a study by Swidinsky (1997) reported the increasing incidence of off-farm labor supply and labor mobility of farm operators in Canada. The study indicated that an increasing proportion of operators work off-farm, and have allocated greater amounts of time to the labor market.

In pastoral areas, various writers (Hogg, 1980; Little 1992; Kassa, 2001; Bulli, 1997, Ali, 1997, Fasil *et al.*, 2001) indicated various forms of pastoral diversification². A review of previous studies by Little *et al.* (1999) also indicated increasing participation of East African pastoralists in non-pastoral strategies. In areas where agriculture is feasible, an expansion of agriculture in to formerly rangeland areas is observed. These include areas of Borena plateau (Coppock, 1994; Solomon, 2000), middle and lower Awash valley of Afar (Kassa, 2001;

² Diversification refers to households' subsidiary engagements in various non-pastoral income earning activities such as trade, farming or wage employment.

Ali, 1997; Beruk and Tafese, 2000; Yakob, 2000); in Ethiopia and around Baringo and Leroghi plateau in Kenya (Little *et al*, 1999). Some of this expansion has been by pastoralists themselves and others by non-pastoralists. Hogg (1980) estimate less than 13 % of Borena/ Sakuye are directly involved in cultivation.

For areas where agriculture is not feasible, diversification mainly has entailed wage labor and trading. Various writers (Kassa, 2001; Getachew, 2000, Buli, 1997; Little *et al*, 1999) indicated various level of pastoralists engagement in wage labor employment in Ethiopia and Kenya. Little (1999) showed an increasing involvement of the Chamus agro-pastoralists of Kenya in wage employment. In the study he found that about 41 percent of homestead have one or more members employed for wages and estimated that less than 10 percent of the working age population is employed.

In Ethiopia, different forms of pastoral diversification were documented. For example, Ali (1997) indicated the involvement of the Afar pastoralists in hunting, sale of charcoal and fuel wood to minimize the effect of drought. Buli (1997) pointed out the involvement of Karrayu pastoralists in commercial agriculture as wage laborers. Kassa (2001) also indicated the increasing involvement of Afar households in opportunistic farming and wage labor employment in the farm schemes. According to Kassa (2001), before the 1960s, the only form of employment in the pastoral sector were contractual herding and escorting traders. They were not used to engage in manual labor to generate income. Moreover, Kassa (2001) noted low level of Afar participation in wage employment.

Previous studies showed that different reasons motivated diversification in different localities. For example, Barrett *et al.* (2001) cited Barrett and Arcese (1998) to show that wildlife poaching in Tanzania in part is a response to agro-climatic shocks that affect farm labor productivity. A case study conducted by Parminter (1997), indicated that farmers forced to off-farm work when the farm failed to support household's livelihood.

This diversification due to different motives helped households to cope difficult times. Little *et al.* (1999) indicated diversification in East African pastorlists is mainly to meet their consumption requirement and to support themselves against shocks caused by climatic fluctuations, animal diseases, market failures and insecurity. This study shows the important role economic diversification plays in pastorlists risk management. Barrett *et al.* (2001) cited Reardon *et al.* (1992) and Webb and Reardon (1992) and showed that households' capacity to cope with the drought shocks of the mid-1980s in Burkina Faso were strongly associated with the extent of their non-farm diversification patterns. Little *et al.* (1999) also indicated the Maasai agro-pastoralists were less affected by the 1977 drought than the pure pastoralists, and less dependent on famine relief than other pastoralists.

Even though, reliance on diversified income and activity is widespread, not all households in a given area enjoy equal access to attractive opportunities. The decision to participate in wage labor or to exercise another off-farm activity is influenced by a number of factors. The next few paragraphs will discuss factors that affect participation of households in diversified activities.

Wealth or asset ownership is one factor that explains operators' participation in off-farm work. Araujo (2003) cited Janvry and Sadoulet (2001) study in Mexico and indicated that the asset position of the household has a significant positive effect on household participation in income-generating activities. But for off-farm work participation, Swidinsky. (1998) for Canada showed, operators working off-farm have less income than non-participants. Moreover, he found out that participants of off farm work have smaller farms than non-participants. Gunter *et al.* (1990) found farm income as important determinant of operator participation on off farm work. The same study also found that as per capita other family income increased, estimated off farm earnings declined. The same study was also found that as per capita of household income increases, estimated off-farm earning declines. Gunter *et al.* (1990) also tried to see off farm employment in relation to sex and found out that females tend to earn less than their male counterparts in off farm employment.

Education is another variable, which affects diversification behavior. Barrett (1997) found out that educational attainment is the most important determinant of non-farm and off-farm employment opportunities, especially in more remunerative salaried and skilled employment. Swidinsky (1998) also showed that off farm work participants are more educated than non-participants. Gunter et al (1990) also found association between higher educational attainment and higher off farm earnings. Parminter (1997) also showed the importance of extra training to obtain off-farm jobs.

Age is one factor that affects diversification behavior of farm operators. Swidinsky (1998) in Canada and Gunter et al (1990) in Mexico found out that participants in off-farm work tend to be younger than non-participants.

Studies conducted in pastoral areas also identified some variables that affect diversification behavior of pastoralists. Among these, spatial access has an effect on options available for diversification. Opportunities for trade, informal sector activity, and wage employment clearly are affected by distance to urban and employment centers as well as proximity to infrastructure (e.g. road). For example, Little *et al.* (1999) indicated variation in non-pastoral income across Ethiopia and Kenya vis-à-vis proximity to infrastructure and urban centers. In this regard areas with relatively easy access to other employment centers show higher level of non- pastoral activities than other areas (Little *et al.*, 1999).

Other studies also showed how diversification strategies depend on households' wealth status (Little *et al.*, 1999; Little, 1992, Ayele, 1991). These studies showed that the tendency to diversify generally increases as per capita livestock holding declines. Rich herders also diversify, but in activities generally different from that of the poor and middle herder. For instance, Little *et al.* (1999) showed that relative to most pastoral groups in Kenya, the Massai maintain relatively large herd size and they show less diversification in to non-pastoral strategies.

Moreover, Little *et al.* (1999) showed that wealthy livestock owners are less likely to migrate from their local area to pursue low waged jobs. Nor are they as likely to engage in petty trading as poor and middle herders do. Ayele (1991) indicated that when the poor Afar households are "pushed" from pastoral activity, they move into the sale of firewood, charcoal, mat fiber, aromatic trees along with migration and participation in irrigated farming. Little *et al.* (1999) concluded that the poor are pushed or forced by poverty into

diversification, while those who are better off choose to diversify their activities to maximize economic returns and manage risk. Unskilled, waged employment and petty trading often are options for the poor, while wealthy herders can pursue more capital-intensive activities such as irrigated agriculture or business ownership.

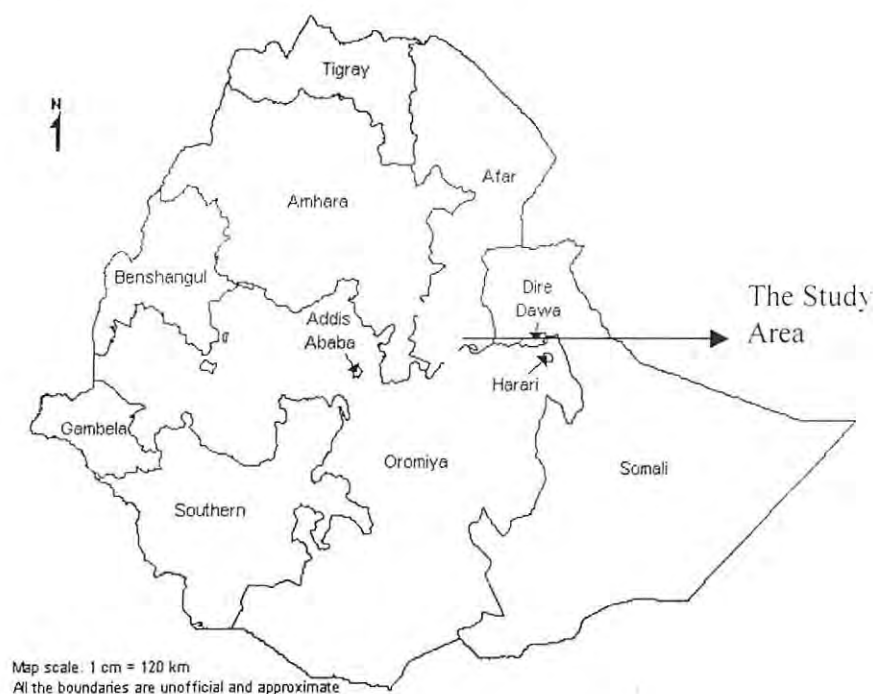
In general, the review of previous studies pointed out some factors that influence diversification behavior of households. These factors are used as the basis for identifying the relevant variables to be included in the econometrics model.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Description of the Study Area

Amibara district is situated in Eastern part of Ethiopia along the Awash Basin of Afar Regional State. Map of Ethiopia that indicates the study area is given in Figure 3.1. *Amibara*, which is one of the six districts of Zone three, has fifteen *Kebeles*. In terms of geographical reference, the district is located between 09°N to 10°N latitude and 39°45' E to 40°30'E longitude (Kassa, 2001), covering an area of 925,450 hectare of land (CDEP, 1998).

Figure 3.1 Map of Ethiopia Indicating the Study Area



Source:

<http://www.fao.org/WAICEN/faoinfo/economic/gIEWS/english/basedocs/eth/ethadm1e.str>

The average altitude of the district is 740 meter above sea level with mean annual temperature of 25°C (Kassa, 2001). The rainfall distribution varies from year to year, but the average mean annual rainfall is about 575 mm. In general, arid and semi- arid climatic environment is the typical characteristics of the district (Kassa, 2001).

Population of the district is 55,359 of which, 47 % are women. About 91 % of the populations live in rural areas (CSA, 2003). The average household size in the district averages to five persons per household (CSA, 2003). The district is inhabited by Afars and non-Afars. The non-Afars are mainly highlanders who came after the introduction of irrigation agriculture in the 1960s. More than 30 Afar pastoral clans live in the area (Kassa, 2001). The livelihood of the Afars largely depends on traditional pastoralism with seasonal movement of the people and their livestock to get access to water and forage.

The district is one of the rich areas of Afar with fertile arable land, wealth in livestock, and some mineral resources (Ali, 1997). The area is mostly known for its large-scale irrigated cotton plantation schemes. These private and state farm schemes make the area one of the major cotton producing locations in the country. The area has some technical and economic advantages for irrigated agriculture. It is suitable to grow crops and vegetables all year round using the perennial Awash River (Ali, 1997). Moreover, it is easily accessible to regional and external markets, as it is found 250 km from Addis Ababa on the main road to Djibouti port.

However, the pastoralists in the study area are negatively affected by the introduction of irrigated agriculture (Maknun, 1993; Ali, 1997). They have been under constant pressure

from various development schemes in the form of mechanized large-scale cotton plantation. They have lost most of their dry season grazing lands to these development schemes. The total size of wet and dry season land alienated from the Afar clans of the Middle Awash is about 47,141 ha of land. (MAADE, 1990 as cited by Kassa, 2001).

3.2 Sample Size and Sampling Technique

The first step in the sampling procedure was the selection of *kebeles*. Given the focus of the study on wage labor jobs in the farm schemes, emphasis was given to *kebeles* that were important providers of this kind of employment in the district. Accordingly, from the 15 *Kebeles*, four were excluded from the sampling, as they were not in close proximity to any of the farms to enable their residents make use of employment opportunities. Of the remaining 11 *kebeles*, six were selected considering accessibility and the extent of pastoral and agricultural activities to ensure good representation of the district.

Then a two stage sampling procedure was used. First, sample pastoral villages were randomly selected. As the number of pastoral villages differs from one *kebele* to another, the formation of villages was mainly considering size and accessibility. The number of household and the number of villages in each selected *Kebele* is shown in Table 3.1.

Then, in the selected village, the households were serially numbered. Then simple random sampling technique was employed to select 180 sample households. All the 180 respondents were Muslims who belong to the Afar ethnic group. In terms of clan, 114 (63%) and 66 (37%) of the respondents are from the “Debine” and “Weima” sub-clans respectively.

Table 3.1: Number of Sample Households and Villages

Kebele	Number of Household*	Sample Households	Number of Villages	Sample Villages
Angelele	495	25	6	3
Shelko	800	40	8	4
Ambash	652	35	6	3
Eeeable	139	20	4	2
Serkamo	715	40	7	3
Halysumele	274	20	5	3
Sum	3075	180	36	18

* Source: CSA (1994)

3.3 Data Collection

Data collection involved both primary and secondary sources. Primary data were collected by a field survey using a structured questionnaire. Enumerators were recruited and trained on basic principles of interview. The questionnaire was pre-tested and revised based on the feedback obtained. The questionnaire was prepared in English and Amharic, and interview was conducted in local language (*Afaraf*). Enumerators administered the questionnaire with the close supervision of the researcher. Group discussions and key informants interview were also carried out using a guiding checklist to complement the data collected using the questionnaire. Main variables included in the questionnaire were age, sex, marital status, education level, wealth status and distance. The questionnaire used for the survey is given in Appendix 1.

Secondary information was also collected from various published and unpublished sources. Different documents of agricultural schemes and regional level reports and consultants'

reports as well as Central Statistics Authority publications were reviewed to gather relevant information.

3.4 Method of Data Analysis

Survey data were analyzed using descriptive and econometric methods. Descriptive statistics such as mean, percentage, and frequencies were used to summarize the data. Chi-square and t-test tests were also used to identify the existence of significant relationship for quantitative and qualitative data, respectively. Chi-square test was used for nominal characteristics that can be represented by non- numerical categories, such as sex and marital status. For quantitative data, a t-test that compares the means of two groups was used. With regard to econometric method, a regression model was applied to analyze the significance and relative importance of the explanatory variables. Then, the data was uploaded onto a computer and SPSS software was used to do the analysis.

In the study, the dependent variable is dichotomous variable. Two related analytical techniques that are useful when the dependent variable is dichotomous are logit and probit models. These models are useful to predict the presence or absence of a set of predicted values (Gujarati, 1995). The basic difference between the two models is that logit assumes a logistic distribution of the dependent variable, while probit model assume a cumulative normal distribution. Because the two distributions are very close to each other, except at the tails, the two models give similar result (Maddala, 1999). In this study, logit model was used because it is easy to estimate and interpret the result.

3.5 Specifications of the Model

Logit model applies maximum likelihood estimation after transferring the dependent variable into the natural log of the odds of the dependent variable (Gujarati, 1995). In this way, logistic regression estimates the probability of certain event occurring.

In this study, the dependent variable of the logit model was participation of the household head in wage labor employment. The model determines the probability of being in one of the two groups, participating or non-participating group. For a person to be counted as participating, he/she has to be engaged in paid work in the farm schemes at least for one year during the last three cropping years.

The logistic regression model is specified following (Kinear and Gray, 2000; Gujarati, 1995). The probability of an event and the odds in favor of the event are, by definition, measures of likelihood related according to:

$$p = \frac{odds}{1 + odds} \dots\dots\dots(1)$$

Where;

$$odds = \frac{p_i}{1 - p_i} \dots\dots\dots(2)$$

P_i = probability of an event occurrence

$1 - p_i$ = probability of not occurrence

But there is a difficulty with the odds as a measure of likelihood of an event due to the asymmetry of the range of result. This asymmetry can be rectified by taking the natural logarithm of the odds, giving the log odds, or logit function where:

$$\text{logit} = \log_e(odds).....(3)$$

From the definition of the logit given above, therefore, the logistic regression equation is given by:

$$P = \frac{e^{\logit}}{1 + e^{\logit}}(4)$$

Although the probability cannot be a linear function of the independent variables (because of the scaling properties of the log odds), the logit is such a linear function of Z, where:

$$Z = \beta_0 + \beta_1x_1 + \beta_2x_2 + \dots + \beta_nx_n.....(5)$$

where:

β_i = regression coefficients

x_i = independent variables

Logistic regression overcome many of restrictive assumptions of ordinary least square regression. For instance, logistic regression does not assume a linear relationship between the dependent and independent variables andthe dependent variable need not be normally distributed.. However, the following assumptions still apply (Gujurati, 1995. Kinear and Gray, 2000):

1. Linear relationship between the logit of the independent and the dependent variable.

2. No multicollinearity.
3. Inclusion of all relevant variables and exclusion of all irrelevant variables in the regression model
4. Meaningful coding. Logistic coefficients will be difficult to interpret if not coded meaning fully.
5. Low error in the explanatory variables: Low measurement error and no missing cases
6. Sampling adequacy and no outliers.

The relationship between the dependent and the independent variables were drawn from the literature review, which indicated factors that affect the decision to participate in wage employment. Therefore, based on the literature review the following continuous and dummy variables were selected as explanatory variables.

1. Sex (X_1): Gender of household head. It is a dummy variable. $X_1=1$, if household head is male, 0 otherwise. Since females are busy with domestic works, male household heads are hypothesized to participate more in wage employment than females.
2. Age (X_2): Age of household head. It is a continuous variable measured in years. Since working in the farms is relatively new to the Afar culture, more involvement of the younger generation is expected. Therefore, age of household head is hypothesized to negatively relate to wage labor participation.
3. Marital Status (X_3): Marital status of household head. It is a dummy variable. $X_3=1$ if a household head is married, 0 otherwise. Married household heads are expected to

have more labor for livestock herding than single household heads. Therefore, it is hypothesized that married household heads are more likely to participate in wage employment than single household heads.

4. Education (X_4): Education status of household head. It is a continuous variable measured by the last grade completed. Since education improves knowledge, positive relation between education and the chance to engage in wage employment is expected.
5. Wealth (X_5): Wealth of a household. Since livestock ownership is used to measure wealth of a household in pastoral communities, livestock number was used as a proxy variable to measure wealth. TLU (Tropical livestock unit) is used to convert the number of different livestock species into a common measuring unit. In this context, wealthier households need more labor for livestock herding than the poor households. Moreover, wealthier households exhibit lesser demand for diversification for the purpose of risk mitigation than do the poor. Therefore, negative relationship is hypothesized between wealth and household head wage labor participation.
6. Crop Cultivation (X_6): It is a dummy variable indicating whether a household head personally engage in crop production or not. $X_6=1$, if household head engages in crop production, 0 otherwise. It is a proxy for experience in land cultivation. Positive relationship may be expected between experience in farming and wage labor participation at the irrigation schemes. However, working in own farm can also constrain wage labor participation due to more labor requirement in own farm. Hence, it is difficult to anticipate the sign of influence before parameter estimation.

7. Distance (X_7): It is the time taken to reach the nearest farm scheme. It is continuous variable measured in minutes. Proximity to the farms increases the probability of participating in wage labor activity. Therefore, negative relationship is hypothesized between participation and distance to the nearest farm scheme.
8. Family size (X_8): It is family size of the household, which is continuous variable. Since there is high labor requirement for livestock herding, household heads with less family members are less likely to participate in wage labor activity. Moreover, households with large family size need other source of income. Therefore, a positive relationship between household size and participation is expected.
9. Attitude (X_9): It is a dummy variable introduced to measure a person's attitude towards wage employment. A person is said to have positive attitude towards wage employment if a person do not consider wage employment against Afar traditional culture. $X_9=1$ if the household head has positive attitude towards wage employment, 0 otherwise. Positive attitude towards wage employment is expected to motivate participation in wage employment.

CHAPTER FOUR: RESULT AND DISCUSSION

This chapter presents the results and discussions of the study. The first section provides a description of the socio-economic characteristics of the sample households. The second section discusses issues of wage labor participation. Results and discussions of logistic regression analysis are presented in the last section.

4.1 Socio-Economic Characteristics of Sample Households

4.1.1 Sex and Marital Status

Sex is one factor that affects individuals' participation in a given economic activity. Among 180 respondent household heads, 159 (88%) and 21 (12 %) were male and female, respectively. Of the male-headed households, 110 (69 %) were participants of wage labor activities. The corresponding result for the female household heads was 12 (57 %). This low female involvement may be due to Afar social division of labor, in which women handle all domestic and family welfare activities of the family. However, a χ^2 - test indicates that there is no significant relationship between sex of household head and participation in wage labor activity (Table 4.1).

Table 4.1 No. of Household Heads by Sex

Sex	Participants		Non-participants		χ^2 - Value
	Number of Respondents	%	Number of Respondents	%	
Male	110	69	49	31	1.231
Female	12	57	9	43	
Total	122		58		

Source: Own survey (2004)

In terms of marital status, 136 (76%) respondents were married and 44 (24 %) were single (not-married, divorced or widowed). Among the married respondents, 96 (70 %) were participants of wage labor activity whereas, 26 (59 %) single respondents were participants. A χ^2 test indicates that there is no systematic association between marital status and participation in wage labor activities (Table 4.2).

Table 4.2 Marital Status of Household Heads

Marital Status	Participants N=122		Non-participants N=58		X ² - Value
	Number of respondents	%	Number of respondents	%	
Married	96	71	40	29	2.01
Not married	26	59	18	41	
Total	122		58		

Source: Own survey (2004)

4.1.2. Age Structure

Age is an important factor that can affect individuals' decisions to participate in various economic activities. Age determines the capacity of individuals to work in a given type of work. Age also affects division of labor within a household. Therefore, it was one of the socio-economic characteristics, which was hypothesized to influence pastoralists' participation in wage labor activities. The age of the household heads ranges between 17 and 60 years. The mean age of all respondents was 34 years. The mean age of wage labor participants was 32 years and that of non-participant household heads was 38 years.

Statistical analysis of the result gave a t-value of -3.075, which is significant at one percent level.

Table 4.3: Number of Households Heads by Age Group

Age group	Number of Households	Percent
15 - 25	47	26
26 - 35	64	36
36 - 45	42	23
46 - 55	17	9
56 - 60	10	6

Source: Own survey (2004)

4.1.3 Education

Education affects the well being of an individual and a society in general. It improves knowledge and skills of a community. The number of respondents who can read and write was 41 (23 %) whereas, the number of illiterate respondents was 139 (77 %) in the sample household heads. The survey result showed higher education level among wage labor participants than non-participant household heads (Table 4.4).

Table 4.4 Educational Levels of Household Heads

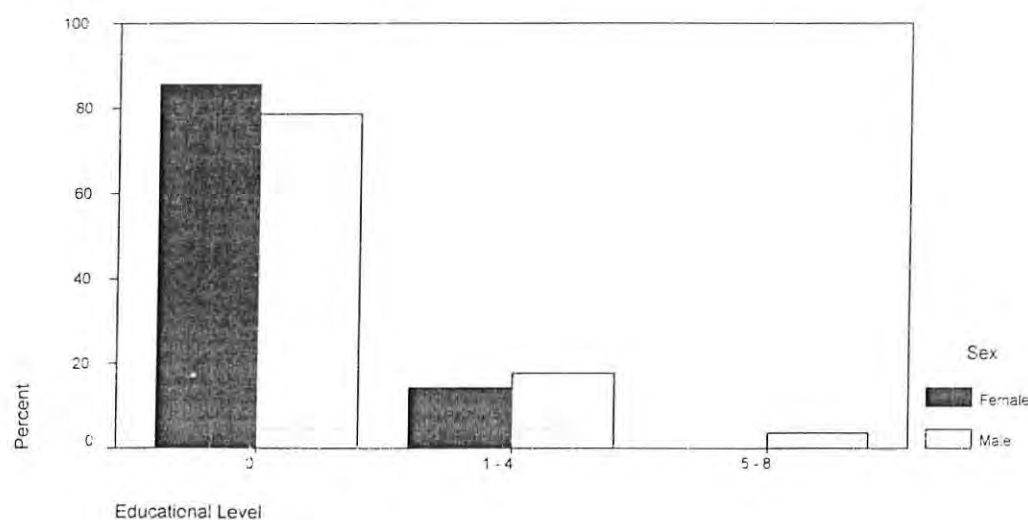
Educational Status	Number of Participants	Number of Non-participants
0	89	54
1-4	27	4
5 - 8	6	0
> 9	0	0
Mean	0.76	0.12
Standard deviation	1.5	0.5
Total	122	58
t-value	-4.1*	

* Significant at 1 % level

Source: Own survey (2004)

A t- test analysis showed that there is systematic relationship between education level and wage labor participation (Table 4.4). All respondents who can write and read had only a primary education. Compared by gender, more proportion of female respondents were illiterate than male respondents (Figure 4.1).

Figure 4.1 Educational Levels of Household Heads by Sex



Source: Own survey (2004)

4.1.4 Family Size

The average household size in the sampled households was eight persons per family. About 62 % of the households had more than six family members (Table 4.5).

Table 4.5: Frequency Distribution of Family Size

Number of family members	Frequency	Percent	Cumulative percent
1 - 3	12	6.7	6.7
4 - 6	56	31.1	37.8
7 - 10	75	41.7	79.4
11 - 13	23	12.8	92.2
14 - 16	11	6.1	98.3
16 and above	3	1.7	100
Total	180	100	

Source: Own survey (2004)

The average family size of non-participants is statistically significantly higher than that of participants (Table 4.6). The same result was also found when household size measured by economically active male and female members (separately) and all economically active members. This result was against the expected positive relationship between participation and family size. Household heads with higher family size was expected to participate in wage labor activity, as they have less labor constraint for livestock herding.

Table 4.6 Family Size of Sample Households

Household Size	Participants N=122		Non-participants N=58		t-value
	Mean	Standard deviation	Mean	Standard deviation	
Economically active male	1.67	1.12	2.03	1.46	-1.83**
Economically active female	1.44	0.85	1.72	1.10	-1.87**
Total, economically active member	3.11	1.58	3.75	1.95	-2.18**
Dependent family members	4.59	2.52	4.87	2.66	-0.71
Total family size	7.65	3.36	8.52	3.67	-1.57***

Source: Own survey (2004)

** Significant at 5% level

*** Significant at 10 % level

4.1.5 Wealth Status

Wealth was one of the hypothesized factors that were expected to influence wage labor participation. In pastoral communities where livestock play a dominant role, it is common to use number of livestock to measure wealth of a households (Coppock, 1994). This is because: livestock are source of food, income, prestige and security in times of hardship in

pastoral communities. Therefore, in this study the number of livestock³ owned by the respondents has been taken as a proxy variable to estimate the household wealth.

The different livestock species reported by respondents were cattle, camel, donkey as well as sheep and goat, with an average holding of 13, 7, 0.31 and 18 animals per household respectively. Using the common measurement unit TLU on average, the sample households own 18 TLU with a range between 3 and 76. Correlation analysis was carried out to check the existence of association between family size and TLU. However, the analysis indicated no linear association between the two variables.

A detailed analysis of livestock holding for wage labor participant and non-participant households showed that the average TLU of the former was lower than the latter for all livestock species (Table 4.7). This difference in wealth (measured by livestock number) was found to be significant at 0.01 significance level for all livestock species, except sheep and goat. The result is also found to be significant when analyzed using the total TLU.

This finding is consistent with the hypothesized negative relationship between wealth and wage labor participation. Previous studies (Barrett, 2001; Ayele, 1991; Little et al., 1999) also show negative relationships between off -farm labor supply and wealth for such low remunerated agricultural work.

³ To overcome the problem of common measurement unit for comparison of different livestock species, first the different livestock species were converted in to a common measurement unit called Tropical Livestock Unit (TLU) following ILICA conversion factor; where 1 Camel =1 TLU, 1 Cattle=0.7 TLU, 1 Sheep=0.1 TLU, 1 Donkey=0.5 TLU (ILICA, 1990)

Table 4.7 Average Livestock Holding of Households (in TLU)

Livestock species	Participants		Non-participants		t-value
	Mean	Standard deviation	Mean	Standard deviation	
Cattle	7.5	5.5	13	8.7	4.55*
Camel	4.5	6.5	12	10.3	5.2*
Sheep and goat	1.7	1.3	2	1.4	1.46
Donkey	0.07	0.24	0.31	0.47	3.65*
Total	13.7	10.81	26.6	16.58	5.4*

* = Significant at 1 % level

Source: Own survey (2004)

The higher diversification behavior of the poor can be explained by the negative relationship between wealth and risk aversion. Therefore, limited risk bearing capacity of the poor could be a possible explanation for the greater involvement of the poor in wage labor activities.

Beside the risk aversion reason, negative relationship between participation in wage labor and wealth, can also be explained by the peculiar characteristics of the pastoral production system of the study area. The pastoralists in the area depend upon traditional extensive grazing system, which makes livestock husbandry a labor-intensive activity (Kassa, 2001; Ali, 1997). Therefore, wealthier households need more labor to manage their higher number of livestock than the poor households. Consequently, this can have a negative effect on labor supply decisions of rich for wage labor activities than the poor households do. Therefore, among other things, differential risk preferences and labor demand, between rich and poor

households could be possible explanations for higher participation of the poor in wage labor activities.

4.2 Wage Labor Participation of Sample Households

In forgoing paragraphs, attempts have been made to give an overview of the socioeconomic characteristics of the sample households in relation to wage labor participation. This section assesses the state of wage labor participation among the sample households. Specifically, it takes a look at the importance of wage labor to the household economy, the level of participation as well as motivation and attitudes towards wage labor among the sample household heads.

4.2.1 Importance of Wage Employment

The sample households were found to earn their livelihood from different sources, indicating some degree of diversification. The different means of living reported by the sample households include livestock rearing, crop cultivation, wage employment, a share from clan-land rent and trade. This implies that a household may depend on one or more of these sources for survival.

However, the proportion of households who depend on each means of living varies among the sample households. Table 4.8 depicts the number and proportion of households that depend on different means of living.

Table 4.8 Proportions of Households with Different Livelihood Strategies

Means of living	% of Participants N= 122	% of Non-participants N = 58
Livestock	98	100
Wage labor	100	22
Crop production	27	15
Share from clan land rent	21	22
Trade and Remittance	3	3

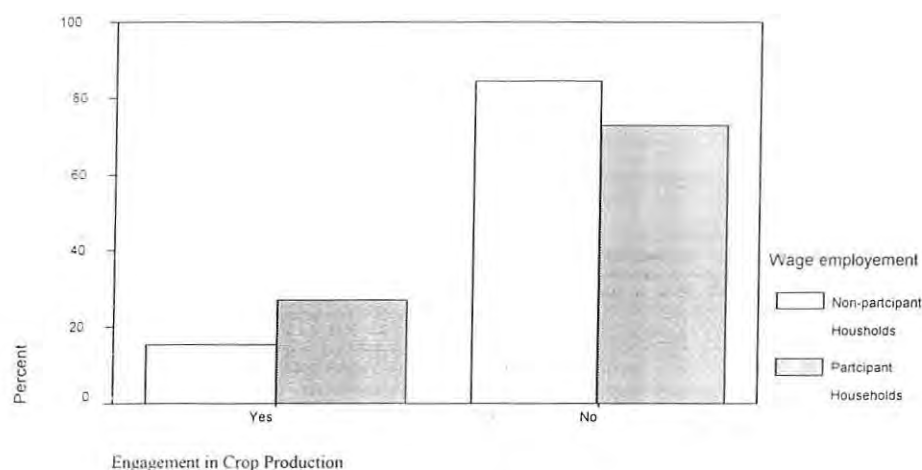
Source: Own survey (2004)

As indicated in Table 4.8, the largest proportion of the respondents earns their living from livestock husbandry and wage labor. This indicates that livestock husbandry and wage labor were important components of livelihood strategies for the majority of the respondents.

Since almost all respondents engage in livestock husbandry, it is difficult to compare the difference in livestock ownership for participant and non-participate households. With regard to crop production, more proportion of wage employment participants were found to engage in crop production than non- participants (Figure 4.1) In this regard, the questionnaire and group discussion results indicated that wage labor work had a positive effect on learning farming skills. Out of 36 respondents who personally engaged in crop production, 50 % stated that working in the farms has helped them to get acquainted with farming skills. Therefore, wage labor can offer increased exposure to farming skills and thus

can serve as a motivating factor to the households in cultivating their own land. However, a χ^2 test indicates that there is no significant difference between the two groups.

Figure 4.2: Engagement in Crop Production by Participants and Non-participants



As indicated above, wage employment was one of the important subsidiary economic activities for the sampled households. The result indicates that 75 % of the households derive a portion of their income from such employment. However, the relative importance of wage labor to support livelihood was different for those households that earn income from wage labor. In this regard, wage labor provided primary means of livelihood for 18 (10%) households (Table 4.9). This implies that wage employment accounts for the major share of household income for a considerable number of households.

Table 4.9 Households with Primary and Secondary Means of Livelihood (%)

Means of living	Primary Means of Living	Secondary Means of Living
Livestock	89	10
Wage labor	10	49
Crop production	1	12
Share from clan land rent	0	10
Trade	0.6	0.6

Source: Own survey (2004)

Moreover, the survey result showed that wage labor was a secondary and tertiary means of living for 49 % and 14 % of the respondents respectively. To this group also, wage earning played an important role in the survival of the households. Therefore, it can be concluded that not only the proportion of households who depend on wage labor was high, but the number of households who earn their primary and secondary means of living from wage employment was also high.

The farm schemes in the area mainly produce cotton for domestic industries as well as for foreign markets. These farms are partly mechanized, have different irrigation structures and use gravitonal furrow irrigation. Though the farms are partly mechanized, they provide employment opportunities to substantial numbers of managerial, professional and technical people. For example, in 2003/04 production year, six commercial farms in the district employed about 1730 semi-permanent (contractual) employees and 10,310 temporary employees. Among these, the Afars constitute 15 % and 17 % of the permanent and

temporary employees respectively. However, it should be noted that the 15 % share in permanent employment was inflated as most of them were representative of clans (locally known as “astebabares”), who were employed to mobilize their clansmen to prevent grazing in the farms. The following few paragraphs presents analysis of data collected on wage labor participation by household heads and other household members.

Respondents were asked whether they were engaged in wage employment during the last three cropping years. Out of 180 household heads, 68 % were participants of wage labor. Among the 58 non- participants, 21 % participated for some time before the last three years whereas, 79 % of the respondents had no experience in wage employment. Therefore, about 79 % of the respondents had some experience in wage employment in the farms.

In addition to the household heads, other household members also participated in this economic activity. Respondents were asked the number of family members who worked for wage during the last three cropping years. Among the 180 sample households, 140 households had 225 individuals who were participants of wage employment. Forty households had no family member engaged in wage employment. The survey result indicated that 69 % of the households appeared to have at least one or two members who engaged in wage labor whereas, 7 % of the households had 3-4 wage labor participant family members (Table 4.10). Analysis of household characteristics showed that households with zero participants are older, have higher distance from the nearest farm scheme and have more TLU than households with family member (s) who engage in wage employment.

Table 4.10 Number of Wage Labor Participant Members per Household

Number of Wage Labor Participating Family Members	Number of Households	Percent of Households
0	40	22
1- 2	124	69
3 - 4	13	7
> 4	3	2
Total	180	100

Source: Own survey (2004)

The above result being an average for the whole sample households, it doesn't reveal the gender difference in participation. Further disaggregation of the data by gender shows that from the 225 wage labor participant household members, the share of male and female were 69 and 31 percent respectively. The average male participant per household (1.1) was found to be twice that of female participants (0.51). Participation status of economically active family members is shown in Figure in 4.3.

Analysis of participation by sex shows a higher rate of participation by male household members than females in wage labor activities. A χ^2 test indicates this difference in wage labor participation is significant at one percent level. In addition to the hard physical labor requirement of the work, the existing social division of labor that makes Afar women to handle most domestic activities can also explain the low level participation of females.

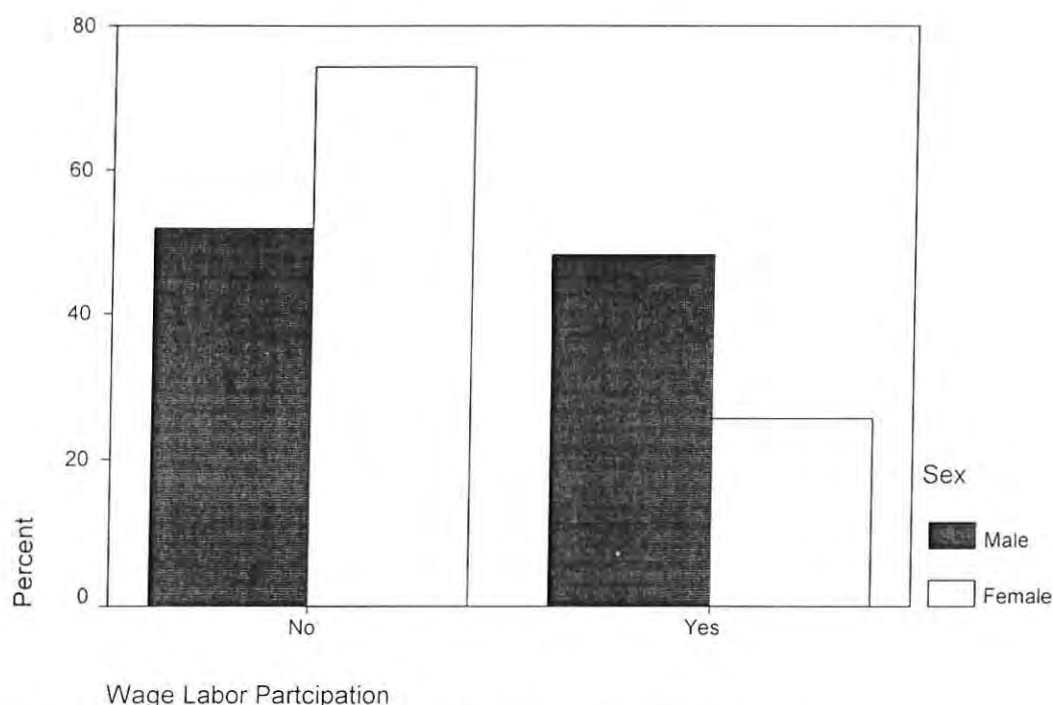


Figure 4.3: Wage Labor Participation of Household Members by Sex

In general, the above findings show that even though a number of household heads and their family members had participated in wage labor activities, the participation rates were different across households and for different sexes within a household. The next section will discuss terms of employment to see the level of participation in the sample households.

4.2.2 Terms of Employment

The sample respondents reported two major terms of employment namely, temporary and permanent. Although both temporary and permanent employees can be considered as participants of wage labor, the type of activity they engage in and the amount of income they earn differentiates the two categories of terms of employment. This section provides the

participation of the sampled households first under permanent terms of employment and then under temporary terms of employment.

Of the 225 total wage labor participating family members, only 5 % were permanent employees. This low level of participation in permanent employment was also similar if we single out the result for the household heads. Among the 122 participating household heads, only 7 % were permanent employees. These results show that the share of the Afars employed on permanent terms was in general very low. This low level of participation in permanent employment gets even more dismal if we further disaggregate the data by sex. The result of the survey indicated that only one female was found to be permanent employee out of the total 225 participating family members.

Therefore, we can conclude that the pastoral households constituted insignificant portion of the permanent job opportunities. Women were particularly under represented in permanent employment opportunities, which provide relatively better pay and stable employment. Low level of education can be a major explanation for such low level of participation in permanent job opportunities, as education is mostly a prerequisite for permanent employment.

The other type of terms of employment is temporary. Individuals who were reported to be in this group were part time herders and part time wageworkers. This term of employment was found to be dominant in providing employment for the majority of participating household members. Of the total 225 employed family members in the sample households, about 95 % were temporary employees. Temporary jobs were also found to take the major share among

employments undertaken by the wage labor participant household heads. Out of the total 122 participant household heads, 93 % were employed on temporary terms.

If we disaggregate the result by gender, male and female family members constitute 67 and 33 % of the total 210 temporary employees respectively. On the other hand, among the 113 temporary employee household heads 90 % were males.

This result shows that female participation rates improved noticeably in temporary, compared to permanent terms of employment. But still the proportion of male dominated. Different factors can be attributed for males' comparative advantage in wage labor employment. Firstly, males have better access to information about availability of jobs, since they pass most of their time out in towns. Secondly, males have adequate time to participate in paid employment than females as males seldom perform household tasks. In existing social division of labor, women are handling most domestic and family welfare activities such as taking care of children, fetching water and the like. Women also take part in domestic productive activities (e.g. as in livestock husbandry) along with men. Thirdly, males are also more likely to work far away from their residences.

4.2.3 Job Categories

It was indicated in the previous section that the majority of participant respondents were in temporary terms of employment and the proportion of participants in permanent employment opportunity was insignificant. To substantiate this information, data on respondents' job categories was also collected.

Among the nine permanently employed household heads, five were guards, three were field workers and only one was a driver. This result can also be supported by the information gathered from Middle Awash Agricultural Development Enterprise (MAADE), the biggest farm employer in the study area. According to this information, in year 2003, the local Afars constitute only three percent of the 941 permanent employees of the enterprise. In general, the above results show that not only the number of Afars who were engaged in permanent employment was low, but also their involvement in professional and technical posts was insignificant.

Similar information was collected for temporary employees. The result shows that participants of temporary employment have taken up different job categories over the reference period. Close analysis of these different job categories revealed that individuals participate in more than one activity during one cropping year. However, higher concentrations of employees were found on some job categories than others. The two most important involvements of temporary employees were in guarding and weeding/thinning, in which 76 % and 50 % of the respondents participated respectively. Next to these, picking, gapping, plant erection and field side sanitation were the major job categories performed by 43, 36 and 33 % of temporary employees respectively. On the other hand, the participating respondents in jobs such as loading (10 %), bagging (13 %), irrigation (15 %) and canal maintenance (23 %) were relatively low.

A gender disaggregated analysis of the data showed the existence of different involvement rate of participants in different job categories. Higher proportion of female participation was observed in activities such as picking, slashing and field side sanitation, in which, 54 %, 45 %, and 45 % of the 11 temporary female employees were respectively engaged. Whereas for

activities such as irrigation, canal and drain maintenance and loading no female participation was reported. On the other hand, males participated in all job categories. But, higher proportion of participation among the males was observed for guarding, wedding, picking and gapping, in which 77 %, 48 %, 42 % and 33 % of the total 102 male temporary employees participated respectively. Unlike females, males participated in activities such as irrigation canal /drainage maintenance and loading; but still the proportion of males in these activities was still very low compared to other activities (Table 4.11).

Table 4.11 Proportion of Respondents by Job Categories (%)

Farm activity	Temporary employees (%)[*] N=113	Male participants (%) N = 102	Female Participants (%) N = 11
Loading	10	11	0
Bagging	13	12	18
Irrigation	15	17	0
Slashing/ Burning and field sanitation	26	24	45
Canal and drain maintenance/cleaning/ disilting	23	26	0
Plant erection	36	30	90
Head land planting/ gapping	36	33	63
Picking	43	42	54
Weeding/ thinning	50	31	63
Crop guarding	76	77	63

Source: Own survey (2004)

* Percents do not add up to 100 due to double or more than double job involvement.

There is well-justified reason for respondents preference of some specific activities. The Afars, being pastorlists are not accustomed to the use of farm implements and the physical labor that farm work requires. For instance, 76 % and 65 % of the respondents who were not participant of irrigation and loading reported lack of skill and laboriousness of the work as a problem for participation respectively. Therefore, they prefer those job categories that do not require the use of farm implements and hard physical labor.

4.2.4 Wage Labor Earning

As indicated in previous sections the farm schemes provide employment opportunity to a large number of permanent and temporary employees. Consequently, the earning from such employment has an income effect in the area. For instance, if we take the average direct labor cost (1187 birr/ ha) (MAADE, 2003) and aggregate for the total area cultivated in the area (10.385 ha⁴) the total amount of money for direct labor is 12,326.995 birr per year. This figure gives some idea of the income effect of these farms in the area. This section discusses issues with regard to wage earnings.

Compared to temporary terms of employment, permanent jobs provide relatively better pay and stable employment. Moreover, permanent employees are entitled to benefits like pension, insurance and other services like housing. However, as indicated in the previous section, the number of respondents permanently employed is insignificant. In addition to this, the permanent employees being mostly unskilled were engaged in low paying activities.

⁴ This figure is the sum of cultivable land of six commercial farm schemes during year 2003 i.e Middle Awash agricultural development enterprise (MAADE) (6809 ha), Kadigagora agricultural development enterprise (1822 ha), Middle Awash private farm (195), Hellem farm (100 ha), Aweke Farm (63 ha) and Africa PLC (1396).

Therefore, we can conclude that the Afars constitute an insignificant portion of the permanent employees and are engaged in non-technical and non-professional posts earning low income.

Besides being the underpaid, employees under temporary terms of employment have none of the benefits that permanent employees enjoy. The wage rates slightly vary from one enterprise to another, but a rate of 4.50 Birr per day was an average used in the study area. Since much of the temporary employment is seasonal, the duration of employment in wage labor of each individual varies. Therefore, individuals who work for many days -*ceteris paribus*- earn a higher monthly income. Therefore, earnings for temporary employees vary from individual to individual and for an individual in different times depending on the duration of employment.

Respondents were asked their average monthly earning from wage employment. The reported wage earnings range from a minimum of 45 Birr to a maximum of 220 birr per month per household head. The average wage earning for respondents was 111 birr per month. If we multiply this by the average number of months worked in a year, which is 8 months, a household head earns an average of 897 birr per year.

Respondents were asked for what purposes they use the wages they earned. According to the survey result 99 % of the respondents replied that they primarily use the wages to cover daily household expenditures. Other uses of wage earning by respondents include livestock and family health expense, school fees and recreational expenses (Table 4.12). This cash contribution of wage labor can make the other economic sectors grow and cause trade to

develop. For example, although wage employment inevitably diverts labor and, to a lesser extent, management resources away from the pastoral community, it can play a role in the process of maintaining a viable pastoral system that requires purchased input (veterinary service, herd restocking, etc). However, the survey result indicated only eleven households put some of the income earned back into the maintenance or growth of their livestock.

Moreover, informal individual and group discussions held with different community members disclosed that even though wage earning from farm employment was essential, living solely on the income earned from wage labor was insufficient to cover household expenses. The majority of group discussants indicated that wage income was just only a complementary, and not sufficient even to cover daily meal expenses. Therefore, it is difficult to conclude that earnings from wage labor result in greater improvement of household income or wellbeing. However, we can conclude that wage earning served participating households as a source of liquidity in areas where credit supply is constrained and the challenge of recurrent drought is high.

Besides the cash contribution, some positive implications of wage employment can be noted. Members of the Afar community are directly or indirectly gradually becoming dependent on forest resources to meet their subsistence needs (CDEP, 1998; Yirgalem, 2001). Informal discussions indicated that in the absence of wage earning, one of the next best alternatives for the community is depending on forest resources. Therefore, wage employment relaxes the environmental stress through providing jobs for fuel wood sellers. However, it may also have negative effect on the environment. Shortage of herding labor, due to wage labor engagement, may result in localized rangeland degradation (around settlement).

Table 4.12: Purpose of Wage Earning (% of Respondents)

Type of Use of Wage Income	Primary use: % of Respondents	Secondary use: % of Respondents*
Household expenditure	89	0
Family health expense	0	55
Livestock health and purchase	0	10
School expense	0	11
Others	11	0

Source: Own survey (2004)

* Because some respondents use wage income for only a single purpose percents do not add up to 100.

4.2.5 Distance and Means of Transportation

Proximity between a household and employment center can affect the extent of wage labor participation. Proximity itself may be a function of the average distance to the nearest employment place or it may be a function of available means and costs of transportation. Reduced distance or improved means and costs of transportation can positively contribute to higher rate of wage labor participation.

Information on the state of roads used to travel to and from work and the average distance to the nearest work place from the respondents' residence was collected. The main dry weather road connects the district capital, Melka Werer, with the zonal capital, Malka Sedi, (Sidha Faghi) which is connected with the main Addis Ababa- Djibouti high way. Apart from this,

there are dry weather feeder roads that link the different irrigation farms to the main dry season Werer-Sedi road.

Public transport to most *Kebeles* out side *Werer*, *Shelko*, and *Sedi* was rare. Regarding the type of transportation used, all participants replied that they traveled on foot to and from work. The use of other means of transportation like pack animals or vehicles were non-existent even for those households residing far from the farm schemes.

Since the farms are located in different rural *Kebeles*, employment opportunities are distributed across district. The result of the survey showed that, the average distance to the nearest farm scheme was 80 minutes. Therefore, unlike most off-farm employments, neither temporary nor permanent migration is necessary for participating households. The location of the farm schemes also implies less search costs for the rural pastoralists who look for wage labor employment. Once few individuals in a village know about job opportunities, local networks are effective in spreading the information within the community. In this regard, 95 percent of respondents indicated that *daggu*⁵ was the major means of information about wage labor opportunity.

To observe the effect of households' location on employment, respondents were asked about the time taken to reach the nearest farm scheme from their dry season home⁶. Only 14 percent of participants reside in areas located more than a two-hour distance from the nearest

⁵ Daggu is traditional information exchange system of Afars.

⁶ Pastoralists in the area seasonally migrate during wet season. However, the household heads usually do not move during wet season with the livestock.

farm scheme, whereas this proportion for non-participants is about 38 %. The average time taken to reach the nearest farm scheme was 78 and 106 minutes for participant and non-participant households respectively. This difference was found to be significant as shown by t- test (Table 4.13). Therefore, this shows that participation decreases with increasing distance of farm schemes from the residence area.

Table 4.13 Distance to the Nearest Farm Scheme (in minute)

Distance	Participants N= 122	Non participants N=58	t-value
	Mean	Mean	
Average	78	105	3.3*
Minimum	10	30	
Maximum	180	250	

* = Significant at 1% level.

Source: Own survey (2004)

4.2.6 Motivating Factors and Attitudes towards Wage Labor

Different factors can be considered as a reason to the involvement of individuals in wage labor employment. In broader terms, push and pull factors are the major explanation in literature for participation in off-farm employment (Barratt, 2000). In this regard, respondents were asked about the motivating factors for starting wage employment in the farms. Out of 122 respondents 71 % and 5 % of participants responded that recurrent drought and expansion of *prosopis*⁷ necessitated wage labor employment, respectively. Therefore, for about 76 % of the participants, push factors seem to be the major reason for

⁷ Prosopis Juliflora: locally known as *Weyane* is a expansive weed which is harmful for livestock and major cause of range land degradation in most part of the study area.

the participation in wage labor activity. This finding is consistent with finding of Little *et al.* (1999) who indicated diversification in East African pastoralists as means of meeting their consumption requirements and supporting themselves against shocks caused by climatic fluctuations, animal diseases, market failures and insecurity. This finding may indirectly imply that most of wage labor participants would not have taken wage labor employment if they had well performing pastoral system.

Even though push factors can be considered as the major motivating factor for wage employment, people also took wage employment because of pull factors as well. About 18 % of the households replied that they took wage labor employment considering higher expected income. Moreover, additional non-financial reasons such as learning farming skills, was cited by 6 % of the respondents. Therefore, from this finding it can be concluded that, from pull factor perspective, 24 % of the respondents valued wage employment for both its financial (income) and non-financial benefits.

From the preceding discussion, it can be concluded that various social and economic push factors in the pastoral sector and pull factors in the farm schemes have resulted in participation of households in wage labor activities. However, the push factors took a significant share for the underlying motive for participation in wage employment. The logical question that arises from this finding is: whether their participation in wage labor decreases with improvement in the livestock sector in the future? In this regard, participants were asked whether they are willing to continue to work in the future if the income they get from livestock husbandry improved. Out of the 122 participants, 81 % of the respondents were mentally ready to retain their work in the farms. However, the rest 19 % of the

households could be possible explanations for higher participation of the poor in wage labor activities.

4.2 Wage Labor Participation of Sample Households

In forgoing paragraphs, attempts have been made to give an overview of the socioeconomic characteristics of the sample households in relation to wage labor participation. This section assesses the state of wage labor participation among the sample households. Specifically, it takes a look at the importance of wage labor to the household economy, the level of participation as well as motivation and attitudes towards wage labor among the sample household heads.

4.2.1 Importance of Wage Employment

The sample households were found to earn their livelihood from different sources, indicating some degree of diversification. The different means of living reported by the sample households include livestock rearing, crop cultivation, wage employment, a share from clan-land rent and trade. This implies that a household may depend on one or more of these sources for survival.

However, the proportion of households who depend on each means of living varies among the sample households. Table 4.8 depicts the number and proportion of households that depend on different means of living.

respondents replied that they would consider abandoning the wage labor job if the livestock sector performs well.

The trend towards engaging in wage labor employment may be good in terms of reducing vulnerability to natural disaster. However, in some rural areas and particularly in pastoral areas engaging in wage labor is despised and culturally disapproved. If the pastoral communities have negative attitude towards wage labor work it may be a cause for resistance for taking on wage labor employment. In view of this, it is important to know the respondents' attitude towards wage labor with reference to the Afar traditional culture.

Each respondent was asked about the judgment (based on the subjective evaluation) he/she gives on Afar-cultural acceptance of wage labor work. The result indicated that about 87 % of the sample households perceived that working in farms is not against Afar culture. This result was against Buli (1998) finding for the neighboring *Karrayu* pastoralists, who consider wage employment as a sign of subordination and deviation from the socially dignified practice of herding animals. Buli's study indicated that as wage laborer, the *Karrayu* perceive themselves as "selling out oneself" and consider such person as "slave for the others".

In the group discussions, pastoralists noted that the negative attitude for wage labor in the farms was also evident in the study area some years ago. However, most of them agree that the community's attitude to wage labor had become more supportive over the years, with an increase in demand for cash, together with weakened pastoral sector.

4.3. Constraints of Wage Labor Participation

The previous section discussion showed the number of Afars, especially in stable and well-paid jobs is insignificant. This calls for the need for a close examination of pastoralists' challenges and constraints in wage labor participation. In this regard, some factors can be identified as having significant influence on the marginalization of pastoralists from wage labor participation. This section briefly looks in to the constraints of wage labor participation among the pastoral households.

Education is one factor that contributes for realizing stable, secure and well-paid employment opportunity. The majority of the respondents (77 %) are non-educated and even for the literate respondents; the maximum level of education reported was seventh grade. As a result, the majority (95 %) of the total wage labor participants depend on erratic, lower paying casual wage labor.

An interview with key informants indicated that, even for working in such casual work, some degree of farming skill is required. However, since the dominant form of production in the study area is pastoralism, most of the Afars are not accustomed to the skills that crop cultivation requires. They are not acquainted with the agricultural practices such as the use of farm implements and the physical hardship that agricultural wage labor requires. Because of this, the Afars couldn't with stand labor competition from highland migrant laborers who are more skilled and experienced than the Afars. All these logically lead to low level of participation and for the Afars to earn low level of wage that cannot render sufficient income. This low wage level in turn creates disincentive for participation. Therefore, this lack of education and experience (skill) as well as the result low wage level implies a vicious

and self-reinforcing circle of unfavorable employment environment for the Afars, excluding individuals from wage labor employment.

But leaving aside the issue of lack of skill and education, it can also be seen that the performance of the livestock sector can have a significant influence on the extent of individuals' participation in wage labor activities. Among other factors, a poorly provided pastoral infrastructure with increased dependence of Afar households upon traditional pastoral system must have contributed to the low level of participation. In the study area, rangelands are located away from the river. Especially during dry season, livestock move far distance away from the permanent villages to perennial water points and dry season grazing reserves (Beruk, 2000). Greater distance from watering and pasture site, together with the desert and semi-desert nature of the area, obviously imposes correspondingly greater constraints on pastoral participation in wage labor. In such a situation, most of the able persons go to livestock herding, thus automatically reducing the pool of potential labor.

4.4 Econometric Analysis

In forgoing sections, descriptive statistics were used to discuss the relationship of some of the explanatory variables of wage labor participation. The descriptive statistics of the explanatory variables have shown some relationship with wage labor participation. Significant differences between the participants and non-participants household heads were observed with respect to educational level, wealth, age, distance and attitudes towards wage employment. However, for socio-economics characteristics such as sex, marital status and family size no significant difference was observed at ten percent significance level.

In this section, regression analysis is used to identify the main explanatory variables for wage labor participation. In the regression analysis, five dummy variables and four continuous variables were included. Logistic regression model given in Equation 5 was estimated. The result is presented in table 4.14.

Table 4. 14 Parameter Estimates of a Logistic Model

Explanatory Variables	Coefficient (B)	Standard Error	Wald Statistic	Sig.	Exp(B)
Sex	0.986	0.707	1.945	0.163	2.680
Marital Status	0.431	0.530	0.661	0.416	1.538
Age	-0.055	0.019	8.053	0.005*	0.946
Economically active family members	-0.065	0.121	0.289	0.591	0.937
Distance	-0.010	0.003	8.552	0.003*	0.990
Attitude	2.048	0.599	11.674	0.001*	7.753
Crop Cultivation	0.809	0.666	1.474	0.225	2.245
Education Level	1.516	0.657	5.332	0.021**	4.556
Wealth (TLU)	-0.091	0.020	21.474	0.000*	0.913
Constant	2.278	1.122	4.121	0.042**	9.754
N	180				
Overall cases correctly predicted	82 %				
Nagelkerke R-square	0.53				
Hosmer and Lemeshow test (p-value)	0.5				

Source: Own survey (2004)

* Significant at 1 % level

** Significant at 5 % level

Among the nine explanatory variables, sex, marital, attitude, experience in farming and education are found to have the expected positive sign of influence. But only education level and attitude are found to be significant. Variables such as age, distance, and TLU are found to have the expected negative sign and all are statistically significant. The coefficient for family size measured by economically active members is not as expected, but it is statistically insignificant.

As expected, the coefficient for household head education level has a positive sign and statistically significant at five percent level. Those who are better educated have more probability of participating in wage labor activity than those who are less educated. This indicates that the exposure to education has positive effect on participation of wage labor activity. It appears that, even though wage labor requires a large number of unskilled workers, education significantly improves the probability of getting employment. Similar results were obtained by other studies. Barrett (1997) found educational attainment to be the most important determinants of non-farm and off-farm employment opportunities, especially in more remunerative and skilled employment. Swidinsky (1998) also showed that off-farm work participants are more educated than non-participants.

The expected negative relationship between wealth and participation was obtained. TLU, which is a proxy for the wealth of the household, is significant at one percent level. This shows that those with fewer numbers of livestock have higher probability of participation than the wealthier ones. This may be explained by high labor requirements of wealthier households for herding. The result is also supported by the push factor hypothesis of diversification that states the poor diversify due to ex-ante and ex-post risk aversion.

Swidinsky, (1998) also found that participants of off-farm work have smaller farms than non-participants in Canada. Studies in pastoral areas also show the tendency to diversify generally increases as per capita livestock holdings decline (Little *et al.*, 1999; Little, 1992, Ayele, 1991). For instance, Little *et al.* (1999) showed that relative to most pastoral groups in Kenya, the Massai maintain relatively large herd size and they show less diversification in to non-pastoral strategies. These studies show that rich herders also diversify, but in activities generally different than poor and middle herder. Little *et al.* (1999) showed that wealthy livestock owners are less likely to migrate from their local area to pursue low waged jobs. And they are less as likely to engage in petty trading as poor and middle herders. Ayele (1991) also found the poor Afar households move into less remunerative activities when they “pushed” from pastoral activity.

Consistent with the initial hypothesis, distance to the nearest farm scheme is negatively related to participation and this difference is found to be statistically significant. Proximity to employment centers, therefore, positively contributes to wage labor participation. This implies that, those who are relatively far from employment centers are not likely to participate because of high transportation cost. This result is in consistent with previous study in pastoral area. Little *et al.* (1999) found opportunities for wage employment are affected by distance to employment centers. In this regard, Little *et al.*, (1999) found higher level of non- pastoral activities for Chamus and Tugen areas of Kenya, where access for other employment centers is relatively easy.

A significant coefficient is also observed with respect to variables such as age and attitude. This indicates the probability of participation is higher for younger household heads.

Swidinsky (1998) in Canada and Gunter *et al* (1990) in Mexico also found that participants in off-farm work tend to be younger than non-participants. Consistent to the expectation, the positive attitude of respondents towards wage labor was found to improve probability of wage labor participation.

The coefficient for sex, experience and marital status of respondents are found to have the expected sign but their relationship is found to be insignificant. Inconsistent with expected positive relationship family size has negative sign. But it did not show up as an important explanatory variable as its relationship is insignificant.

$\exp(\beta)$ in Table 4.14 is the multiplier, which predict the change in odds for a unit increase in the independent variable. The Cox & Snell R-square is based on the log likelihood for the model compared with the log likelihood for a baseline model. The Nagelkerke R-square is an adjusted version of the Cox & Snell R-square. It adjusts the scale of the statistics to cover the full range from 0 to 1 (Kinear and Gray, 2000). The Nagelkerke R-square, shows that 53 % of the variance in the dependent variable is explained by the explanatory variables. Moreover, the Hosmer and Lemeshow χ^2 - test for goodness of fit is sufficiently large with high p value of 0.5 indicating the predicted values are closely related with the observed ones. The model correctly predicts about 82 % of the observed values.

CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS

In this study, the state of wage employment in general and determinants of wage employment among the pastoralists in particular were analyzed. The participation levels are discussed and attempts are made to show the benefits and constraints of wage employment. In this chapter, some concluding remarks and recommendations are given.

With regard to the motives of wage employment, the study indicated various social and economic push factors in the pastoral sector and pull factors in the farm schemes have resulted in participation of wage employment. However, push factors such as recurrent drought was found to be the major reasons in explaining the underlying motives for participation in wage employment.

The study indicated some benefits that make wage employment a viable alternative of livelihood strategy that should be promoted in the local economy. First, the study indicated the importance of wage employment to livelihood. In this regard, significant number of households earned their income from such employment. Among these, the number of households who earn their primary and secondary means of living from wage employment was also high. In general, wage employment was found to be an important provider of employment and source of cash, in areas where people have fewer alternative opportunities.

Secondly, due to the location of the farm schemes neither temporary nor permanent migration was necessary for participating households. This implies less search costs for the rural households. Wage employment may also be viewed as a positive factor that could help

pastoralists to improve their farming skills. In addition to these, wage employment can relax the environmental stress through providing jobs for households who otherwise would have depended on forest products for livelihood.

Nevertheless, compared to the high labor requirement of the farm schemes for casual labor, technical and professional personnel, the number of Afars currently involved in employment was low. Especially, the Afars constituted insignificant portion of the permanent employees, which provide relatively better pay and stable employment. Women were particularly under represented in such employment opportunities. Most of the Afars are engaged in non-technical and non-professional posts earning low. Therefore, even though wage employment served participating households as a source of liquidity in areas where credit supply is low, it is difficult to conclude wage employment resulted in greater improvement in household well being.

The finding of this study indicated that some socio-economic and local characteristics do influence wage labor participation. In this regard, the following points were highlighted as constraints for participation in wage employment in general and for participation in high return niches within the sector in particular.

Education is one factor that contributes for realizing stable, secure and well-paying employment. The descriptive and econometric analysis of the study showed that education is one factor that affects participation. Besides, lacks of skills and experience with the physical hardship that agricultural wage employment requires were constraining factors. Because of this, the Afars couldn't withstand labor competition from highland migrant laborers who are

more skilled and experienced than the Afars. All these led to low rate of participation and low level earning that cannot render sufficient income. Moreover, the performance of the livestock sector also has influence on the extent of individuals' participation in wage labor activities. Among other factors, a poorly provided pastoral infrastructure and traditional grazing system, which require more labor, have contributed to the low level of participation. Therefore, poorly provided infrastructure, lack of education and experience (skill) as well as the resulted low wage level implies a vicious and self-reinforcing circle of unfavorable employment environment. In such situations, the prospects for finding secure and well paying wage employment by the Afars are bleak.

However, with the occurrence of recurrent drought in the area, the demand for other sources of income by the pastoralists is likely to increase in near future. In such a situation, promoting alternative source of employment for the growing population will be a major policy challenge.

In this regard, it is certainly possible that the irrigated farming sector in the study area could take off and play a leading role in providing jobs. With the current government attention to irrigation development and export promotion, it can be expected the area of irrigated farms will expand creating more job opportunities. Therefore, development policies should focus to harness the apparent opportunities offered by this sector in the struggle for poverty reduction in Afar. The strategies for achieving success should include the following.

One sustainable approach to increase the participation of the Afars, especially in secure and remunerative employment is thorough promotion of education. Education improves skill and

helps individuals in making informed decisions about different alternatives. In this regard, provision of education, which is compatible with the pastoral way of life, is required.

Participation in wage employment can be promoted by improving the productivity of the pastoral sector. From this point of view, the most feasible strategy to progress is increasing efficiency of the sector. Key elements of this strategy include rangeland improvement programs, water supply (considering grazing capacity of the area) and veterinary service together with livestock marketing improvement.

The pace of growth of road infrastructure and the associated transport service in rural areas can also substantially increase the magnitude of participation in wage employment. Therefore, the other element of such strategy should consider about reducing the obstacles in the road sector by increasing accessibility and facilitating provision of transport services in rural areas.

The above-mentioned strategies, in many respects, do not differ from general economic development policies. However, implementing these strategies needs recognition of the diversity of the community in terms of age, gender, wealth etc. As the need, capacity and constraints of these groups are different for participation in wage employment, the efforts should consider the needs of each group accordingly.

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Appendix 1: Questionnaire

Questionnaire Number: _____

Date _____

Enumerator _____

Kebele _____

Village _____

Part I. General Information

1. Name of household head: _____
2. Sex of household head:
 1. Male
 2. Female
3. Marital status:
 1. Single _____
 2. Married _____
 3. Widow/ Widower
 4. Divorced _____
4. Age of household head: _____ Years
5. Education level: _____ (last grade completed)
6. Religion of the household head:
 1. Muslim _____
 2. Christian _____
 3. Other (specify) _____
7. Clan:
 1. *Weima*
 2. *Debene*
8. Do you have close family relationship⁸ with the clan leader?
 1. Yes
 2. No
9. Do you speak Amharic?
 1. Yes
 2. No
10. Family members:
 - 10.1 Total number of family members: _____
 - 10.2 Male 0-15 years old : _____
 - 10.3. Male 16-64 years old: _____
 - 10.4 Male 65 years and above _____
 - 10.5 Female 0-15: _____
 - 10.6. Female 16-64 years old: _____
 - 10.7 Female 65 and above _____
11. Do you make a livelihood from?
 - 11.1 Animal husbandry
 1. Yes
 2. No
 - 11.2 Crop husbandry
 1. Yes
 2. No
 - 11.3 Share from clan land
 1. Yes
 2. No
 - 11.4 Wage from farm employment in the farms
 1. Yes
 2. No
 - 11.5 Remittance
 1. Yes
 2. No
 - 11.6 Trade
 1. Yes
 2. No
 - 11.7 other (specify)

⁸ Close family relationship include son or daughter, wife or husband , brother or sister or cousins

12. Rank the relevant means of livelihoods in order of their importance to the household (write the corresponding number i.e 11.1, 11.2 etc)

12.1 1st _____

12.2 2nd _____

12.3 3rd _____

13. Have any of your family members ever participated in paid employment in the farms at least once in the last three years? (Including the household head)

1. Yes 2. No

(Employment in the farms includes working in state farm, private investors or at research center either on permanent or temporary basis)

14. If yes, how many of them were employed?

14.1 Total employed _____

14.2 Male: _____

14.3 Female _____

15. How many of them were permanent employees?

15.1 Permanent Total: _____

15.2 Permanent Male: _____

15.3 Permanent Female: _____

16. How many of them were temporary employees? _____

16.1 Temporary Total: _____

16.2 Temporary Male: _____

16.3 Temporary Female: _____

17. How far is your home from the nearest farm scheme _____? (In Hr. & minute)

17. (For married household heads only) Has your spouse participated in paid employment in the farms in the last three years?

1. Yes _____ 2. No _____

18. Have you participated in paid employment in the farms at least once in the last three years?

1. Yes _____ 2. No _____

(If the answer for Qn. 18 is yes go to continue from Qn.. 19 , If no go to Qn. 53 part III)

Part II. (For employed household heads only)

19. Where did you work?
1. MAADE⁹ _____ 2. Private farms (Specify) _____ 3. WARC¹⁰ _____
4. 1 and 2 _____ 5. 1 and 3 _____ 6. 2 and 3 _____
3. Others (Specify) _____
20. How far was your farm work place from your home? (In Hr. & minute)
20.1 From your dry season home? _____
20.2 From your wet season home? _____
20.3 From the nearest town? _____
21. Do you work traveling from your wet season home?
1. Yes 2. No
22. If yes, what do you use to travel from your wet season home to work in the farm?
1. Foot 2. Pack animals 3. Car 4. 1 and 2 5. 1 and 3 6. 2 and 3
7. 1, 2 and 3
23. What means of transportation did you use to travel from your dry season home to your work in the farms?
2. Foot 2. Pack animals 3. Car 4. 1 and 2 5. 1 and 3 6. 2 and 3
7. 1, 2 and 3
24. What is the major motivating reason for working in the farms?
1. Recurrent drought
2. Expansion of prosopis (Weyane)
3. To learn farming skills
4. Other (specify) _____
25. Will you continue working in the farms if the income from your livestock husbandry increases?
1. Yes 2. No
26. What was your terms of employment during the last three cropping years ?
1. Permanent _____ 2. Temporary _____

(If permanent go to Qn 27 part II-A, if temporary go to Qn 41 part II-B)

Part II-A : For Permanent employees Only

27. If your employment status were permanent, what was your occupational class?
1. Guard _____
2. Janitor or Messenger _____
3. Office work (specify) _____
4. Driver/mechanic _____
5. Field worker _____
6. Other (specify) _____
28. How many years of experience do you have? _____ years

⁹ MAADE: Middle Awash Agricultural Development Enterprise

¹⁰ WARC: Werer Agricultural Research Center

29. What was your employment status when you first employed in the farm?
 1. Permanent 2. Temporary
30. For how long did you work as temporary worker? _____
31. Have you ever got promotion since you started working as permanent worker?
 1. Yes 2. No
32. Do you think the promotion you get so far is satisfactory?
 1. Yes 2. No
33. If no, what are the reasons for unsatisfactory promotion?
 1. Low education level
 2. Low skill level
 3. Inadequate experience
 4. Amharic language fluency problem
 5. Others (specify) _____
34. Is there credit and saving association in the farm you work?
 1. Yes 2. No.
35. If yes, are you member of credit and saving association?
 1. Yes 2. No
 (If no go to question No. 38)
36. If yes what percentage of your monthly salary did you save?
 1. Less than 5 % 2. 5-10% 3. More than 10%
37. What are the major reasons for saving?
 1. To save for old age
 2. For emergency cash requirement
 3. To use it in drought years
 4. Other (specify) _____
38. If you are not a member of saving and credit association, what are the major reasons?
 1. Low salary
 2. Don't know the use
 3. My religion does not allow me
 4. Others (specify) _____
39. What benefit do you get as permanent worker?
 1. Housing 2. Insurance 3. Training 4. Free health service
 5. Pension
40. What are major problems you face as a permanent worker?
 1. Low monthly salary
 2. Inconvenience with livestock husbandry (Labor shortage etc)
 3. Inconvenience for crop cultivation
 4. Language problem
 5. Unsatisfactory promotion
 6. No problem 7. Others (specify) _____

Part II-B: For Temporary Workers Only

41. In which of the following farm activities did you participate

Farm activity	Did you work in the following activity? 1. Yes 2. No	If no, what were the major reasons for not participating? 1. Don't have the required skill 2. I am far from farms with livestock during its operation 3. It is laborious 4. it is not my gender type work 5. Others (Specify)
41.1 Slashing/ Burning		
41. 2 Pre-plant irrigation		
41.3.Head land planting/ Gapping		
41.4.Wedding/ Thinning		
41.5.Plant erection		
41.6.Post plant irrigation		
41.7.Picking		
41.8.Bagging		
41.9.Loading		
41.10.Field side sanitation		
41.11.Canal and drain maintenance/cleaning/ disilting		
41.12.Crop guarding		

42. Why did you work as temporary worker?

1. Limited job opportunity as permanent worker
2. Lack of educational qualification
3. Lack or limited skill in farm work
4. Prefer temporary works for pastoral engagement
5. Inconvenience with household work
6. Work only during problem years
7. My home is far
8. Others (specify) _____

43. How many years of work experience do you have as temporary worker?
_____ months/years.

44. Do you work year after year (continuously) as a temporary worker?

1. Yes _____
2. No _____

45. If yes, do you work the same activity year after year?
1. Yes _____ 2. No _____
46. If no to question 44, in which years do you work?
1. During drought years
2. When serious cash requirement arises
(To cover health expense, Marriage Expense etc)
3. When the income from pastoral activity is lowered
4. Others (specify) _____
47. In which season do you usually work?
1. Dry season only 2. Wet season only 3. Both
48. On average how many months do you work in a year?
48.1 maximum _____ months
48.2 minimum _____ months
49. On average how much do you earn from working in the farms?
49.1 maximum _____ birr
49.2 minimum _____ birr
50. For what purpose do you use the wage, you earn?
1. For daily household expenditure
2. For veterinary service and purchase livestock
3. Clothing expense
4. For family health expense
4. To cover school expense
6. Others (specify) _____
51. What benefit do you get as temporary worker?
1. Housing 2. Insurance 3. Training 4. Free health service 5. Others
52. What are the major problems you face working in the farm?
1. Low wage scale
2. Inconvenience with pastoral activity
3. Inconvenience with farming
4. long distance from residence
4. Other (specify) _____

Part III. For those not employed

53. Were you looking for a job in the farms during the last three years?
1. Yes 2. No
54. Have you ever worked in farms for money before?
1. Yes 2. No

(If no go to question number 61, Part III-b)

Part III-A (For those who had worked before the reference period)

55. If you have worked before, what was your employment status?

1. Permanent 2. Temporary 3. Both

(If temporary, go to question number 58. if permanent answer from 56 to 58)

56. If permanent, for how many years did you work? _____

57. What was your job category?

1. Driver
2. Guard
3. Janitor/ Messenger
4. Office work (specify)
5. Field worker
6. Other (specify)

58. Why did you stop working?

1. Changed other job
2. Found it difficult with livestock rearing
3. Retired due to old age
4. Health problem
5. Other (specify) _____

59. Do you want to be employed in the future?

1. Yes 2. No

60. If you used to work as temporary, why didn't work in the last three years?

1. Only work in drought year
2. Work only when serious cash requirement arises
3. Stopped due to old age
4. I could not find a job
5. Other (specify)

Part III-B: For those who have never worked before.

61. Do you wish to work in the future

1. Yes 2. No

62. If yes, in what status

1. Permanent 2. Temporary 3. In either of the two

63. If you don't want to work in the future, what are the reasons,

1. Have enough income source
2. Don't have the required skill
3. Don't have the education qualification
4. Don't speak Amharic language
5. Employed in other sectors
6. It is not Afar culture to work in crop farming
7. Other (specify) _____

Part IV. Others (For all respondents)

64. Do you engage in livestock husbandry?

1. Yes 2. No

65. If yes, indicate the number of animals the household own?

S. No.	Animal	Number Of animals
1	Cattle (cows and oxen)	
2	Sheep & Goats	
3.	Camels	
4.	Donkeys	
5.	Horses and mules	
6.	Others	

66. Do you stay in wet season grazing area with your livestock?

1. Yes 2. No

67. Do you engage in crop production?

1. Yes 2. No

68. If yes, how do you manage the different farm activities of you farm?

1. By your and your family labor
2. By employing laborers
3. By 1 and 2
4. By renting the land for others
5. By sharecropping

69. If you directly participate in the different farm operations, how did you learn cultivating land?

1. Experience gained from family
2. Experience gained from paid employment in the farms
3. From previous training on farming
4. Others (specify)

70. If you want to work in the farms, how do you get information about employment opportunity?

1. Traditional information exchange system (*Dagu*)
2. Go to the farm schemes and read if there is any vacancy announcement
- 3.

Ask other employees in different enterprises

4. Others

71. In your opinion, do you think working in the farms is against afar culture?

1. Yes 2. No

72. In your opinion, how do you rate the Afars participation in farm paid employment in the last 10 years?

1. Decreasing 2. Increasing 3. No change

73. What support do you suggest to enhance the active participation of the Afars in employment opportunities?

1. Skill training related to farming
2. Support the livestock sector (to release labor from livestock herding)
3. Support that will improve the educational level of the Afars
4. Others (specify) _____