ADDIS ABABA UNIVERSITY
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DETERMINANTS OF INDIVIDUALS WORK STATUS, THE CASE OF OROMIA REGION

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ABSTRACT

This paper attempts to identify the major determinants of individuals labour force participation in Oromia Region and to examine how these determinants are associated with individuals labour force participation. The data from the 1994 Population and Housing census of Ethiopia, are analyzed by the logistic regression model. A number of potential variables for inclusion in the logistic regression are identified on the basis of results of the chi-squared tests and also on the basis of theoretical models which explain individual's participation in the labour force. The results suggest that age, sex, marital status, educational level, ethnicity, place of residence and disability status are important factors while religion does not significantly affect individuals in Oromia Region entering into the labour force.

Finally, I would like to forward that up to date investigation in the work status of individuals at national and/or regional level is very important. Researchers who try to examine the determining factors of work status in the future have to take into account those variables that are not included in this study.

CHAPTER ONE
INTRODUCTION

1.1 Background of the study

We are all familiar with programs that are intended to allow employees to use their talents fully in their work. Central to this approach is the assumption that employees and jobs are suitably matched.

According to International Lobour Organization Employed persons may be defined as: Persons 15 years and above in the civilian noninstitutional population who, during the survey week

(a) did any work at all (at least 1 hour) as paid employees; worked in their own business, profession, or on their own farm, or worked 15 hours or more as unpaid workers in an enterprise operated by a member of the family; and

(b) all those who were not working but who had jobs or businesses from which they were temporarily absent due to vacation, illness, bad weather, childcare problems, maternity or paternity leave, labor-management dispute, job training, or other family or personal reasons, whether or not they were paid for the time off or were seeking other jobs. Excluded are persons whose only activity consisted of work around their own house (painting, repairing, or own home housework) or volunteer work for religious, charitable, and other organizations.

There are some legal issues in the selection of individuals as employee for a given organization or any concerned employer. "Employers, unions, employment agencies, and joint labor management committees that direct apprenticeship and training programs are prohibited from discriminating on the basis of sex, race, color, religion, or national origin." (Robert D., 1986)

One of the major problems confronting most developing nations in their effort towards modernization is rapid population growth. High rate of unemployment is also another problem.

The experience of countries that succeeded in reducing poverty significantly indicates that, although essential, economic growth is not a sufficient condition for poverty reduction. Employment serves as a key link between growth and poverty reduction. In view of the importance of productive employment in reducing the poverty, the International Labour Organization (ILO) and the Swedish International Development Agency (SIDA) are collaborating in undertaking a series of studies to examine the linkage between economic growth, employment and poverty reduction.(ILO, 2004)

Strategies for reducing poverty should therefore be based on analyses done along different routes to the creation of employment and the constraints to employment growth. For an understanding of the relevance of employment growth for poverty reduction, both quantity of employment and its quality require closer attention.

A number of special features characterize the labour markets of developing countries like Ethiopia. Predominance of informal employment and self-employment leads to special strategies of income enhancement among the poor. Such strategies involve diversification of types of employment, sector of employment and location of employment.

Since its beginnings the modernization of an economy implies paramount changes in its labour force. Ethiopia is among countries with a rapidly growing population coupled with a backward economy, and therefore, the proper management and efficient utilization of its work force is essential. The level of the unemployment of a country is widely used as an overall indicator in evaluating the current performance of its economy. The problem of unemployment is a global issue at the moment that every country is striving to control it at its minimum level. However, in developing countries it is getting worse mainly due to the unbalanced relationship between the rate of economic development and the rapid

population growth. The Oromia Region in Ethiopia is no exception in this regard. The analysis of working status and unemployment is therefore essential both in tackling present difficulties and to foresee future changes.

Oromia is one of the regions in Ethiopia currently being overwhelmed by a rate of population growth that continues to pose serious problems to the Region's economic development program.

Therefore, it is necessary to identify those factors that influence the work status of individuals in Oromia Region and also analyze the observed data so that on the basis of the observed data we develop a statistical model for predicting work status of individuals.

1.2 Objectives of the study

Although a considerable amount of information including statistics now exists for youth and employment in Oromia from various surveys and other sources, there is no comprehensive and systematic analysis of regional level data concerning the work status of individuals residing in the Region. Although recognition of the seriousness of the individual's unemployment, underemployment and vocational training problems has promoted a special study but, there is limited information about the trends, characteristics and determinants associated with individuals

unemployment and the labour market. To fill the gap this regional study is prepared with the following objectives.

General objectives

- To investigate factors that determine work status of an individual.
- To develop a statistical model that predicts the work status of an individual on the knowledge of some determining factors.

Specific objectives

- To provide estimate of regional average of unemployment rate.
- To study unemployment rates by age group in order to understand the situation of the youth and the rest of the population in the labour force.
- To provide information to government and other concerned bodies in formulation of policies and strategies for reducing unemployment rate, particularly with the aim to review the regional policy framework for youth employment giving particular attentions to policies and programs targeted to young people in the Region, since youth development is one of any society's major concern.

1.3 Significance of the study

As sustainable employment is one of the best routes out of poverty, assistance in designing and implementing strategies and programmes for job creation can contribute to the objective of poverty alleviation in situations of **low income** and **high unemployment,** which seems feasible in Oromia Region. Identification and assessment of determinants of work status of individuals has a number of applications. The followings are some applications of the results.

- ❖ The results help in designing appropriate policies that contribute to the development of the region and the country at large.
- ❖ They help both employers and employees to understand factors that influence work status and adjust their system with respect to these factors.
- ❖ The results help as a basis for further study in this area.

CHAPTER TWO

LITERATURE REVIEW

Despite its prevalence, unemployment is little researched and understood in Ethiopia. The investigation of unemployment – its nature causes and cures - requires the availability of reliable microeconomic data, that is, data collected directly from individuals or collected indirectly from their households. Preferably, it requires longitudinal data, that is, data tracking a sample of individuals over a period of time, rather than simple cross-section data capturing information at only one point in time. However, even reliable cross-section data were not available in Ethiopia until the 1984 Population and Housing Census, which was conducted throughout the country. The absence of such data prior to 1984 hindered research about unemployment and related questions.

The dominant view of unemployment in developing countries is that much open unemployment is due to search and is voluntary (Harris and Todaro, 1970) that is, people choose to remain jobless while they search for a good job. If there is a free-entry self employment sector, then those who cannot afford to remain in search-unemployment enter this informal sector.

The assessment of how the concepts and methods of employment or unemployment were used in the data collection process of census or surveys is highly dependent on the proper application of the definition and concepts of economic activities (ILO, 1990:4).

A number of factors are associated with unemployment incidence, such as:

- Age of individuals
- Sex of individuals
- Marital status
- Migration status
- School Attendance
- Educational level
- Economical activity
- Religion
- Place of residence
- Disability status

The degree of correlation between each variable and individuals labour force participation rate varies from country to country that have achieved different levels of economic development, as economic development of the country creates better employment opportunities and better social welfare programs for individuals. In the case of Oromia Region, it is expected that determinants of individuals labour force participation would be different from those of other countries or regions.

Therefore, to see some association, let us review the literature on some of the factors that seem to be significant in affecting the work status of an individual, employed or not.

2.1 Age, Sex and Unemployment

In Ethiopia, there is no national legislation that forbids children from participating in any production or service activities. Furthermore, except in the public sector, where a minimum age of 18 years was set for entrance into employment there is no national labour legislation that excludes children from admission to formal or non formal activities below a certain age.

There is a big difference between working men and working women since women are burdened with childbirth and the responsibility for raising the family as well as domestic work. Women are considered the weaker sex and employers prefer hiring men to women.

It is useful to look at unemployment rates by age group and sex to understand the situation of youth and other population in the labour force. For instance, taking the most recent census statistics in Viet Nam, the highest rate of unemployment is found among males and females at 15-19 years of age, followed by the age group of 20-24. In general, the gender gap in the unemployment rate is not large,

although males generally experience higher rates of unemployment than females in all age groups.

While the unemployment rate for the 15-19 age group is somewhat difficult to interpret as individuals in this group are often at school, the high rate of unemployment indicate that many young people cannot find jobs (Dang Nguyen Anh, Le Bach Duong, Nguyen Hai Van, 2005).

2.2 Educational Level and Unemployment

It is necessary to examine education as another significant factor contributing to changes in the labour force. The education system and its quality have an important impact on the labour market.

An integration of the youth and other population into the growing economy requires that they should get employment after leaving school. It has already been known that a small percentage of the labour force of Ethiopia is educated. A poor country like Ethiopia cannot afford wastage of educated human power and therefore their employment prospects and the question of educated unemployment deserve special attention. In general, many researchers indicated that the probability of being employed was higher for more-educated people.

2.3 Marital Status and Unemployment

Martial status often plays an opposite role respectively in male and female labour force participation rates, at least in middle and older ages. Persons not able to work such as the disabled, permanently ill person, indolent persons etc may be found more often among the never married men in societies where marriage is almost a rule and their activity rate is lower than married ones. But the labour force participation rate of the adult never- married women is often higher both because their fewer engagements in the house and children keeping and their strong need to earn their living by work. This implies that marital status is a major influencing factor on female labour force participation, as married women have greater household responsibilities than unmarried women.

Due to the late entry into the labour market, both never-married men and women suffer a higher unemployment rate than people with other marital status. This is particularly true in young ages; particularly the young unmarried people who are still living in their parents' home experience longer periods of unemployment while seeking a suitable job. On the other hand, the sharp need to work for adult single men pushes for more pressing labour force participation, thereby causing higher unemployment rate also in older ages.

2.4 Migration Status and Unemployment

According to the 1984 Population and Housing Census of Ethiopia, urban societies are often characterized by the scaling of people according to the length of their permanence in town. More recent immigrants are normally less educated and poorer than native urban dwellers and long time migrants. Therefore, they have a higher propensity to accept any kind of work demanded. Their entrance into the labour market is earlier. Non-immigrants have the possibility to go on studying, or, to wait for a suitable job. A confirmation comes from their higher youth employment, which they can bear because many of them still live with their parents, depending on the other house hold members'revenues.This is partially true for long-term migrants. The unemployment rate of migrants and immigrants actually differs from country to country or area to area.

Most immigrant groups in major immigrant-receiving countries or regions are known to be significantly more likely to report being unemployed than are members of the native born populations (Price, 2001). Also, in the UK unemployment rates are generally higher amongst members of the main ethnic minority groups (Blackaby et al. 1997, 1999) and their unemployment is predominantly involuntary in nature (Shields and Wailoo, 2002). Several explanations for these findings in the UK have been explored to date, the main

two of which are that UK employers' hiring decisions discriminate on the grounds of ethnicity and that many immigrant groups lack the necessary English Language fluency to compete effectively with native born workers in the labour market (Hatton and Price, 1999). Job search behavior may provide a further explanation for the observed differences in unemployment rates, according to immigrant status, and this has yet to be extensively explored in the UK context. It may be the case that immigrants employ different job search methods that are different from those of from the natives. Their chosen methods may not be effective. This may be the consequence of their lack of (apparently) similar human capital, lack of familiarity with the workings or institutions in the UK labour market or because immigrants' job search methods are more limited than those of other job seekers. So far a lack of suitable longitudinal data has hindered the empirical exploration of this area in the UK .But it is as yet unclear whether differences in job search behaviors, or its success, can help explain this gap.

2.5 Ethnicity and Unemployment

The differences in labour force participation or unemployment by ethnicity are not very important. According to the 1984 Population and Housing Census of Ethiopia, only a more marked division of gender roles seems to characterize people of Guragie origin, whose men work longer and more intensively than men from all other ethnic groups and women work less, especially in the middle and

older age categories. Guragie males face less unemployment than the other ethnic groups, especially in the young ages. Guragie women show higher youth unemployment rates.

Blackaby et al. (1997, 1999) used the 1991 Census and Annual Labour Force Surveys, to examine the determinants of the white and ethnic minority differences in unemployment rates in the UK. After undertaking Oaxaca-type decompositions, they find that characteristic differences capture the bulk of the unemployment rate gap for Africans and the Irish, whilst differential rewards to these characteristics explain the majority of the unemployment difference for Bangladeshis, Indians and Pakistanis.

CHAPTER THREE

DESCRIPTION OF DATA AND METHODOLOGY

3.1 Description of the Data

The data for this study are taken from the 1994 Population and Housing Census of Ethiopia conducted by the Central Statistics Authority (CSA) of the Federal Government of Ethiopia.

Statistical data that reflect the socio-economic and demographic conditions of the residents of a country are useful for designing and preparation of development plans and for monitoring and evaluation of the impact of the implementation of the development plans. These statistical data include population size, age, sex, fertility, mortality, migration, literacy, and education, marital status ...etc. In order to fill the gap for socio-economic and demographic data, Ethiopia conducted its second National Population and Housing census in all regions in 1994. However, the data collected in Afar and Somali regions in 1994 were found to be deficient and as a result the 1994 Population and Housing Census central commission rejected the results and gave instruction that the census of the two regions should be repeated.

The data used for this study have certain limitations. The following are some of the limitation:

1. The questionnaires used in the census were prepared in Amharic. In Ethiopia, there are a lot of areas or regions where Amharic is not easily understood, especially, in many rural part of the country. Therefore, if the questionnaires were prepared in the language of the respondents, more accurate information could have been obtained.
2. As certain questions are referring to time frames and these were answered by referring to major events. It is actually expected that respondents may not entirely be accurate and genuine in the quantitative information they provided particularly on age and length of residence for migration status.
3. The type of questionnaire administered to each household was determined by using a systematic selection procedure. This decreases precision of the result compared to complete interview. Some of the information particularly referred to population size, sex and age composition and ethnic and marital distributions were collected from all persons covered in the census. However, some other information were collected from only a sample of a population. This refers to language, religion, disability, education, economic activity, migration, fertility, mortality and housing stocks. In order to let samples represent the entire population, statistical weights were used.

4. Most of the information obtained in the census was qualitative, which makes the analysis of the data somehow difficult when compared to quantitative information.

3.2 Variables in the study

Variables to be included in the study are selected from some studies and those that are expected to be relevant to the situation in Oromia Region.

3.2.1 Dependent Variable

In assessing the work status of individuals, whether employed or not, the definition of employed person according to international Labour Organization (ILO) was used in the census. Only economically active populations are considered in the definition. Using the definition different categories of work status were obtained, which can be dichotomized as employed or unemployed. Hence the dependent variable denoted Work_S, assumes possible values:

Work_S ➔ 1: Unemployed

0: Employed

3.2.2 Independent Variables

As some studies revealed, most independent variables included are expected to show marked differential in the work status of individuals. Variables to be included in the analysis are listed below.

Age: age of individual

1: 10 -14

2: 15- 24

3: 25- 64

4: 65^{+}

Sex: sex of individual

1: Male

0: Female

Martial_S: Martial status of individuals

1: Single

2: Married

3: Divorced

4: Widowed

School_A: School attendance of individuals

In the census all persons of ages five and over in a sampled household were asked about their school attendance. There were three alternative answers given in the questionnaire. These are:

A) Attending school during the census year,

B) Attending school in the past and left during the census year,

C) Never attend.

The last two groups can be considered as one, namely not attending. **School_A** two possible values:

1: Attending

2: Not attending

Educational_L: Educational level of individuals

All persons of age ten and above were asked their highest grade completed. There were six alternative answers given in the questionnaire.

1: Illiterate

2: Literate

3: Grade 1 to 6

4: Grade 7to 8

5: Grade 9 to 12

6: Above secondary

Relig: religion of an individual

1: Orthodox (Christian)

2: Catholic (Christian)

3: protestant (Christian)

4: Muslim

5: Others

Place_R: place of residence

0: Urban

1: Rural

Ethn_G: ethnicity of an individual

1: Oromo

2: Amhara

3: Guragie

4: others

Disab_S: disability status

0: Disable

1: Not disable

3.3 Methodology

A limitation of ordinary linear models is the requirement that the dependent variable is numerical rather than categorical. But many interesting variables are categorical - patients may live or die, people may be employed or not, student may pass or fail their exams, an item may be defective or not and so on. A range of techniques have been developed for analyzing data with categorical dependent variables (Cox and Snell, 1989). There are a lot of multivariate statistical techniques that can be used to predict binary dependent variables

from knowledge of a set of independent variables. The following are some of the techniques:

- Multiple regression Analysis
- Discriminant Analysis
- Logistic Regression Analysis

The above three techniques have their own statistical assumptions. One of the major assumptions is the one about the distribution of the response variable under study.

Linear regression analysis is widely applicable to predict the value of dependent variable. However, when the dependant variable assumes only two values, an event occurring or not, present or absent, and success or failure, the use of

multiple linear regression brings some difficulties. We also need the assumption of normal errors and well defined variance-covariance matrix. Moreover, when the dependent variable take only two values statistical inferences (Estimation and Hypothesis Testing) are impossible (Hocking, 1996).

Multivariate Discriminant Analysis does allow direct prediction of group membership. But, the problem is it requires the assumption of multivariate normality of the independent variables as well as equal variance-covariance matrices in the two groups for the prediction rule to be optimum (Sharma, 1996). Loosely speaking logistic regression analysis does not require strict assumptions about the distribution of the response variable, although, it is clear that the response has a binary outcome (Hosmer and Lameshow, 1989). This means implicitly that the Bernoulli/Binomial distributions are the natural choices. Therefore, the assumption on distribution of the response is quite evident. Thus, logistic regression model is appropriate to predict the binary dependent variable.

3.4 Logistic Regression

Logistic regression is concerned with the estimation of the probability of the occurrence of an event. Relationship between the probability model and the independent variables are usually nonlinear rather than linear, because, considering linear model is not realistic due to the fact that predicted values cannot be interpreted as probabilities and may not fall in the interval (0, 1).

3.4.1 Logistic Regression Model

In logistic regression, a single outcome variable Y_i ($i = 1 \ldots n$) follows a Bernoulli probability function that takes on the value 1 with probability π_i and 0 with probability $1 - \pi_i$. Then π_i varies over the observations as an inverse logistic function of a vector $\mathbf{x}_i$, which includes a constant and $k - 1$ explanatory variable:

$$Y_i \sim Bernoulli(Y_i / \pi_i),$$

$$\pi(x) = \frac{e^{f(x)}}{1 + e^{f(x)}}$$

where

$$f(x) = \beta_0 + \beta_1 x_{1i} + \ldots + \beta_k x_{ki} = \sum_{j=0}^{k} \beta_i X_{ij} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3.1)$$

X_{ij} is a k-vector of explanatory variables, and β is unknown vector of parameters of dimension k.

The nonlinear relationship between $\pi(x)$ and x are often monotonic with $\pi(x)$ increasing continuously as x increases, or $\pi(x)$ decreases continuously as x increases. The S-shaped curves are often shapes for the relationships (Agresti, 1996).

Taking the natural logarithm of both sides of (3.1), we find that

$$Logit(\pi(x)) = Log\left(\frac{\pi(x)}{1-\pi(x)}\right) = X'\beta \qquad \ldots\ldots\ldots\ldots\ldots\ldots(3.2)$$ where

$X' = (X_1, X_2, \ldots\ldots X_k)$ is a vector of independent variables.

The coefficients in (3.2) can be interpreted as the change in the log-odds associated with a one unit change in the corresponding independent variable or the odd increases multiplicatively by e^{β} for every one unit change increase in x. The ratio of success to failure, $\frac{\pi(x)}{1-\pi(x)}$ is called the odds of success.

Through relation (3.2) the dependence of the success probability on explanatory variables, the probability scale is transformed from the range $(0, 1)$ to $(-\infty, \infty)$. This transformation ensures that the fitted success probabilities will lie between 0 and 1.

3.4.2 Parameter Estimation

Since logistic regression model is a nonlinear, an iterative algorithm is necessary for parameter estimation. Maximum likelihood estimation is the most widely used technique for estimating the logistic regression model. (Sharma, 1996)

Let p be the probability of success and it is equivalent to the probability that the response variable assumes value one.

$$P(Y=1)=p=\frac{1}{1+e^{-X'\beta}} \qquad \text{.....(3.3)}$$

$$\Rightarrow Logit(p)=Log\left(\frac{p}{1-p}\right)$$

We have seen that, each observation (response) can be considered as an outcome of a Bernoulli trial and hence for the i^{th} observation we can have the following distribution, which is the probability density function of the Bernoulli distribution.

$$P(Y=y_i)=p^{y_i}(1-p)^{1-y_i}$$

In the Bernoulli probability distribution, we assume that the n observations are independent. Then the likelihood function (L) is the joint probability distribution of all n observations. That is

$$L=\prod_{i=1}^{n} p^{y_i}(1-p)^{1-y_i} \qquad \text{.....(3.4)}$$

Using equation (3.3) in equation (3.4) we can express L as follows.

$$L = \prod_{i=1}^{n} \left(\frac{1}{1+e^{-X'\beta}} \right)^{y_i} \left(\frac{e^{-X'\beta}}{1+e^{-X\beta}} \right)^{1-y_i}$$

Taking the natural logarithm of both sides yields the following expression for log likelihood function:

$$\ln L = \sum_{i=1}^{n} y_i \left(\frac{1}{1+e^{-X'\beta}} \right) + \sum_{i=1}^{n} (1-y_i) \left(\frac{e^{-X'\beta}}{1+e^{-X'\beta}} \right) \quad \text{.....(3.5)}$$

Hence, through maximization of equation (3.5) we can theoretically estimate the parameter vector β. But the equation is nonlinear in β and the estimates do not have a closed form expression. Therefore, β will be obtained by maximizing (3.5) using a numerical iterative method (Agresti, 1996).

3.4.3 Assessing the Goodness of Fit of the Model

One way of assessing goodness of fit is to examine how likely the sample results are, given the parameter estimates. This means, we have to compare the extent to which the fitted values of the response variable agree with the observed values. The model attempts to generate the parameter estimates that make the results most likely (Hosmer and Lameshow, 1989).

The first step is to check the overall fit of the model to the data. This is equivalent with testing the following hypothesis

H_0: the hypothesized model fits the data against H_1: not H_0.

The test statistic is based on the likelihood function, L. The probability of the observed results given the parameter estimates is known as the Likelihood. Since the likelihood is a positive number less than 1, it is customary to use -2 times the log likelihood (-2LL) as an estimate of how well the model fits the data. We note that (-2LL) has a chi-square distribution with $(n-k)$ degrees of freedom, where k is the number of parameters in the model. A good model is one that results in a high likelihood of the observed results. This translates into a small value for -2LL. For the model that fits perfectly, the likelihood=1 and -2LL=0.

To see if the inclusion of independent variables significantly improves the model fit we again use the likelihood function and this is testing the following hypothesis

$$H_0 : \beta = 0$$
$$H_1 : \beta \neq 0$$

at a given α level of significance.

This hypothesis can be tested by considering the difference between -2LL for the model with intercept and independent variables and -2LL for the model which is constant, which is with only the intercept.

Let $\hat{L}_c$ be the maximized likelihood corresponding to the fitted model

$\hat{L}_o$ be the maximized likelihood corresponding to the constant model.

Hence the log likelihood ratio statistics is given by:

$G^2 = -2(\log(\hat{L}_o) - \log(\hat{L}_c))$, which has chi-square distribution with $(k\text{-}1)$ degrees of freedom, where k is the number of parameters in the model (Agresti, 1996; Dobson, 1990).

Most software like SPSS also report Wald statistic (W) for testing the above hypothesis, which is given by:

$$W = \left(\frac{\hat{\beta}_j}{s.e(\hat{\beta}_j)} \right)^2$$

The Wald statistic is simply the square of the Z-statistic under the assumption of the null hypothesis and it has a distribution of chi-square with a single degree of freedom. This statistic has a very undesirable property. When the absolute value of the regression coefficient becomes large, the estimated standard error is too large. This produces a Wald statistics that is too small, leading to fail to reject the null hypothesis that the coefficient is zero. Therefore, whenever we have a large coefficient, we should not depend on the Wald statistics for hypothesis testing.

The goodness of fit of the logistic regression model can also be assessed using a classification table. This method involves the use of the classification table for response vector **Y.** The classification table for **Y** gives four readings in 2x2 table, for predicted and observed values of the binary response. The off-diagonal entries

of the table tell us the number of cases that have been incorrectly classified (Collett, 1991).

Before using the model for predictive purpose we have to also check the adequacy of the model. For this purpose we need to identify influential observations. An observation is said to be influential if its omission from the data results in considerable changes in certain aspect of the fit. In this regard ***Cook's Distance*** and ***DfBeta*** will be used to assess the influential power of the cases (SPSS Manual; Montgomery and Peck, 1992).

Multicollinearity in the explanatory has also a great effect on the result of the analysis. Its presence can be checked through

- Variance Inflation Factor (**VIF**)
- Condition Number (**CN**)

(Draper and Smith, 1998; Christensen R., 1997)

3.4.4 Model Selection

In situations where there are many predictors it is often helpful to use a model selection procedure to obtain a model that uses a subset of the original predictor variables.

In multiple regression and discriminant analysis, there is a problem in identifying subsets of independent variables that are good predictors of the dependent variable. We also face this problem in logistic regression analysis.

In model building, it is good to examine several possible models and try to choose among them on the basis of subject matter and parsimony. Statistical softwares like SPSS and SAS use either backward elimination or stepwise model selection procedures to obtain an optimum logistic regression model.

In backward elimination we start with a model that contains all the predictors and we systematically remove the largest non-significant p-value terms until we are left with a subset that consists of statistically significant terms. This procedure usually returns useful models, or at least gives a good starting place.

On the other hand stepwise selection starts with no predictors in the model and examines each term that could be possibly added and then adds the most significant predictor, or the predictor with the smallest p-value. In the next stage the procedure adds the next most significant term and checks to see if any previous terms are now non-significant and removes them if they are not significant. This procedure continues until there are no further significant terms to add. So unlike backward elimination, this procedure builds by adding terms.

CHAPTER FOUR

RESULTS AND DISCUSSIONS

4.1 Results from Data Analysis

The purpose of this chapter is to quantify the effect of different scio-economic and demographic determinants of work status of individuals in Oromia Region based on the information obtained from the 1994 Population and Housing census of Ethiopia.

Before the analysis was made the data were checked for all possible errors. The researcher obtained the data after they were entered into the SPSS data window. In checking the data, it was found that some of the observations were coded incorrectly and also that there are a lot of missing observations for different cases and variable combinations. Therefore, correcting the possible errors and excluding all the cases where there is at least one missing observations across all the variables under consideration were to be done. This reduces the number of observations to be included in the analysis from 612,342 to 23,326 of which 37.3% are employed and 62.7% are unemployed.

4.1.1 Preliminary analysis

A preliminary analysis was done, to survey which of the explanatory variables appears to have a strong association with the dependent variable. The analysis was

done using the classical chi-square statistic. For all independent variables taking one -at-a-time a test of association was carried out using the Pearson Chi-Square. High values of Pearson Chi-Square for a given independent variable indicates that there is strong association between this variable and the dependent variable keeping the effect of the other factors constant. The bivariate association between work status of individuals and selected independent variables is shown in Table 4.1. Based on the results it was found that the age of an individual showed a significant association with the dependent variable. Particularly, the problem was worst in the age groups 10-14 of which 94.3% are unemployed and this is actually expected because, according to ILO definition of employed and unemployed, individuals under age 14 are considered to be out of labour force (United Nations, 1999; ILO, 2004). It was also observed that the problem is also very serious in the age group 15-24, which is referred to as the youth population, according to the International Labour Organization.

This can also be presented using a contingency table (Table4.1) as follows:

Table 4.1: Work status versus Age group

Age Group	Work Status (%)	
	Employed	Unemployed
10 - 14	5.72	94.28
15 - 24	26.23	73.77
25 - 64	67.54	32.46
65^{+}	74.14	25.86

The age-specific unemployment rate for the region is given in Table 4.2. It can be noted that, for the Region as a whole, the unemployment rate was highest among those aged 15-19, followed by those aged 20-24 and 10-14.

It is also to be noted here that the incidence of unemployment is higher for females than males in the majority of age groups.

Table 4.2: Age Specific Unemployment Rate by Sex

Age group	Total	Male	Female
10- 14	5.62	6.11	5.32
15-19	10.94	11.92	10.06
20-24	6.88	7.28	5.94
25-29	3.43	3.73	3.24
30-34	2.32	2.55	2.03
35-39	1.90	2.42	1.32
40-44	1.65	2.51	1.15
45-49	1.72	2.34	0.88
50-54	1.89	2.77	1.19
55-59	1.18	2.60	1.17
60-64	1.32	2.43	2.01
65+	2.28	1.34	1.45
All	3.98	4.37	3.53

A significant association between marital status (single, married, divorced, widowed) and work status was observed. The problem is more revealed among single individuals, of which 78.7% of them are unemployed.

Differences in the work status of individuals are also observed among the different socio-economic variables. Educational level of individuals showed a marked significant association. The problem is more prevalent if an individual is illiterate. Disability status, school attendance, religion, place of residence, and ethnicity of an individual are significantly associated.

Table 4.3: Bivariate association of selected variables and work status

Variables	Pearson chi-square	D.f	Significance (P-value)
Age	4501.28	3	0.00
Sex	2212.26	1	0.00
Marital Status	4417.52	3	0.00
School Attendance	8.58	1	0.00
Educational level	4617.74	5	0.00
Disability Status	341.69	1	0.00
Religion	323.77	4	0.00
Ethnicity	708.02	3	0.00
Place of residence	645.81	1	0.00

4.1.2 Fitting Linear relationship

Association between work status of individuals and each of the socio-economic and demographic variables can be analysed and the degree of each relationship can also be found using Chi-square tests. However, the dependent variable (working status of individuals) may be influenced by a number of factors simultaneously. To examine such relationships between the dependent variable and a set of independent variables in a model, multiple regression analysis can be utilised. However, the dependent variable in this study is a dichotomous variable generated from responses to the question: "Are you employed or not?" and the independent variables consist of categorical and dummy variables. A major problem associated with the use of multiple regressions is that the predicted values do not necessarily lie in the range 0 to 1, and therefore cannot be interpreted as a probability (Norusis, 1993, p. 31). Given the nature of the dependent variable, Y, which takes value Y=0 if the respondent is in the workforce (employed); and takes value Y=1 if the respondent is not in the workforce(unemployed), the two models, Probit and Logit models, can be used. Both of these models provide a prediction mechanism for the probability that an individual with a given set of characteristics is in the workforce. However, since logistic model is easier to understand and uses a standard form of analysis, it is used in this study.

4.1.2.1 Estimates and Goodness of fit

To start with, the logistic regression of Y on the explanatory variables using" FORWARD STEPWISE (LIKELIHOOD RATIO)" was run. This procedure revealed that the variables age group, sex, marital status, educational level, school attendance, place of residence, ethnicity and disability status of individuals are important predictors of work status. From the independent variables included in the model, only religion was found to be non-significant in affecting the work status of individuals. Results obtained by the procedure of **FORWARD STEPWISE (LIKELIHOOD RATIO)** are shown in Table 4.4 below. The final (optimal) logistic regression model includes only the above significant variables.

Categorical Variables Codings

			Parameter coding				
		Frequency	(1)	(2)	(3)	(4)	(5)
Educational Lev	Illiterate	16811	1.000	.000	.000	.000	.000
	Literate	385	.000	1.000	.000	.000	.000
	Grade 1- 6	3427	.000	.000	1.000	.000	.000
	grade 7-8	909	.000	.000	.000	1.000	.000
	Grade 9- 12	1447	.000	.000	.000	.000	1.000
	Above grade	347	.000	.000	.000	.000	.000
Religion	Orthodox	10153	.000	.000	.000	.000	
	Catholic	179	1.000	.000	.000	.000	
	Protestant	7658	.000	1.000	.000	.000	
	Muslim	5217	.000	.000	1.000	.000	
	others	119	.000	.000	.000	1.000	
Marital Status	Single	7155	.000	.000	.000		
	Married	13935	1.000	.000	.000		
	Divorced	770	.000	1.000	.000		
	Widowed	1466	.000	.000	1.000		
Ethnicity	Oromo	19672	.000	.000	.000		
	Amhara	3269	1.000	.000	.000		
	Guragie	160	.000	1.000	.000		
	Others	225	.000	.000	1.000		
Age Group	15-24	5579	.000	.000	.000		
	10-14	2036	1.000	.000	.000		
	25-64	14510	.000	1.000	.000		
	65+	1201	.000	.000	1.000		
Place of Resider	Urban	3514	1.000				
	Rural	19812	.000				
DiseablityStatus	Diseable	646	1.000				
	Not diseable	22680	.000				
School Attenden	Not Attending	22345	1.000				
	Attending	981	.000				
Sex	Female	11058	.000				
	Male	12268	1.000				

Table 4.4: Estimates for the final logistic regression model

Covariates	Sub groups	β	S.E	Wald	df	Sig	Exp(β)
Age				321.910	3	0.00	
	10-14	0.58	.080	51.293	1	0.00	1.78
	15-24(Ref)	-	-	-	-	-	-
	25-64	-0.62	.046	186.404	1	0.00	0.54
	65+	-0.97	.089	117.666	1	0.00	0.38
Sex					1	0.00	
	Male(Ref)	-		-	-	-	-
	female	2.33	.041	3162.98	1	0.02	10.32
Marital status				1442.167	3	0.00	
	Single(Ref)	-	-	-	-	-	-
	Married	-1.839	.053	1192.033	1	0.00	.159
	Divorced	-2.354	.100	552.466	1	0.00	.095
	Widowed	-2.765	.084	1095.336	1	0.00	.063
School attendance					1	0.00	
	Attending	.482	0.28	7.26	1	0.00	1.62
	Not attending(Ref)	-	-	-	-	-	-
Educational level				340.543	5	0.00	
	Illiterate	2.657	.514	74.544	1	0.00	14.25
	Literate	2.354	.528	59.328	1	0.00	10.53
	Grade1-6	2.265	.514	61.599	1	0.00	9.63
	Gade7-8	2.116	.519	52.695	1	0.00	8.30
	Grade9-12	1.43	.518	37.848	1	0.00	4.18
	Above grade 12(Ref)	-	-	-	-	-	-
Place of residence					1	0.00	
	Urban	-0.462	051	77.77	1	0.00	0.63
	Rural(Ref)	-	-	-	-	-	-
Ethnicity group				41.668	3	0.00	
	Oromo(Ref)	-	-	-	-	-	-
	Amhara	0.673	.050	.573	1	0.002	1.96
	Guragie	-0.27	.284	40.640	1	0.00	0.76
	Others	0.61	.164	1.070	1	0.00	1.84
Disability status					1	0.00	
	Disable	0.928	0.54	6.58	1	0.01	2.53
	Not disable(Ref)	-	-	-	-	-	-
Constant		-1.386	.51	7.24	1	0.00	.250

*Ref indicates the reference category.

Table 4.4 above contains the estimated coefficients (under heading β) and related statistics from the logistic regression model that predict the work status of individual and the variables. The β's refer to the log-odds of being unemployed. We can insert these into the logistic regression equation as in multiple regression. The Wald statistic, which is the square of the ratio of the coefficient to its standard error, is given in the column **Wald** and it has a chi-square distribution with a single degree of freedom. The significance of the Wald statistic is reported in the column designated **Sig**.

High values of the Wald statistic show that the corresponding predictor variable is significant. If the coefficient is very large the Wald statistic can become unreliable in which case we should refer to the change in the log likelihood instead. However, log-odds is not a very straightforward concept as in multiple regression analysis. It is probably easier to use the multiplicative form of the equation using exp (β), which is given in the last column of the table. These are also called the Odds Multipliers or odds ratio. Interest is in coefficients that differ from 1. Values greater than 1 indicate that the variable in question increases the odds of the unemployment and values less than 1 (i.e. between 0 and 1) indicate a decrease in the odds of unemployment. Effectively the odds for the base category are set to 1. Exp(β), is a factor by which the odds of being unemployed change when the i^{th}

independent variable increases by one unit. For instance, the odds of being unemployed decreases when one moves from illiterate to above- secondary, implying the prevalence of the problem with illiteracy.

Before using the fitted model for the designed purpose, it is better to assess and diagnose the adequacy of the model. The adequacy of the final model can be evaluated using two alternatives.

The classification based on logistic regression model was compared to that of observed. In this classification table numbers in the off-diagonal represent the number of observation in the sample data that are miss-classified by the fitted model. A good model is a one that minimizes these miss-classifications

Table 4.5: The classification table for Y

Observed		Predicted		
		Work Status		Percentage Correct
		Employed	Unemployed	
Work Status	Employed	8632	3358	72.0
	Unemplyment	1590	9746	86.0
Overall Percentage				78.8

* The cut value is 0.50

As shown in Table 4.5, the fitted model has an overall predictive accuracy of 78.8% and this may ordinarily be considered adequate.

Using the statistic -2LL we employ the deviance as the second approach for assessing the goodness-of-fit of the logistic regression model. Results based on -2LL are given in Table 4.6

Table 4.6: Measures of goodness-of-fit

Statistic	Chi-square
-2LL(constant model)	244264.995
-2LL(Fitted model)	22981.1398
Model Chi-square	221283.8552
Goodness-of-fit	732.60
Df	18
Sig	0.00

The statistic **–2LL** compares the present model to a perfect model. The large observed significance level indicates that the model does not differ significantly from the perfect model. The model chi-square statistic is the difference between **–2LL** for the model with only a constant and **–2LL** for the current model. The model chi-square tests the null hypothesis that the coefficients for all of the terms in the current model, except the constant, are zero. This is comparable to the overall F-TEST for regression. Using the classification table and deviance approach, we can say the fitted model is statistically satisfactory.

Influence of an observation on overall fit of the model and a single parameter estimate was performed using case-wise plot of **COOK'S** distance and **DfBETA's**, respectively. But, there are no observations with COOK'S distance greater than 0.01, indicating that there are no influential observations. For the existence of multicollinearity in the independent variables the variance inflation factor (VIF) and condition indices (CI) were computed using SPSS. Based on these computational values, there is no problem of multicollinearitry in the fitted model (see table 2 in the Appendix)

4.2 Interpretation of Results

The logistic regression indicates that many factors affect the working status of individuals in Oromia Region. The results given above for the logistic regression model in Table 4.4 can be used for further discussion and interpretation.

The results, both univariate and multivariate findings suggest that age is one of the determinants of the work status of individuals. From Table 4.2 we can see that unemployment rate is high for individuals in age group 15-19, followed by age group 20-24. Therefore, from this empirical finding it can be inferred that, there is a problem of youth unemployment in Oromia Region. From the fitted logistic regression model, when compared to individuals in the age group 15-24, the odds of unemployment was found to be highest for individuals in the age group 10-14 followed by 25-64 and 65 and above. This implies that, relatively speaking the problem of unemployment is less prevalent for people in the age group 25-64.

The results also suggest that on the average males have better work status when compared to females. The odds of being unemployed for females is about ten times that of the odds of being unemployed for males. This indicates that the problem is more prevalent in females than males.

The multivariate results for variables representing educational level are also interesting. The higher the level of education, the less likely it is that the individual is unemployed. The odds of being unemployed for individual with education level illiterate, literate, grade1-6, grade7-8, grade9-12 was found to be 14.25, 10.53, 9.63, 8.30 and 4.17 times that of above grade 12 respectively, implying that the problem is less prevalent as the level of education increases.

Regarding school attendance of individuals, it is found that individuals who had not attended school have better work status, that is, the odds of being unemployed is higher for individuals attending school.

Marital status is also statistically significantly associated with the probability of being employed. When compared to single individuals, the odds of being unemployed is less for married, divorced and widowed individuals, indicating that in the Region the problem is more prevalent for single individuals.

As expected, ethnicity also significantly affects the probability that an individual is in the workforce. In the Region, being Oromo or being fluent in Afaan Oromo language seems more advantageous than individuals of other ethnic origins being employed in the Region. The multivariate findings show that, when compared to the Oromo ethnic group, for all other ethnic groups except Guragie, the odds of

unemployment is found to be greater than one. This indicates that the problem of unemployment is more prevalent for non Oromo ethnic groups.

Place of residence also significantly affects the probability of being unemployed. According to the multivariate results, the odds of being unemployed for individuals in the rural area is found to be higher than that of the urban area. Disability status of individuals is also found to be significant.

Finally, there are no statistically significant differences between religion of an individual and work status. The multivariate results make sense as they confirm the findings earlier obtained from the descriptive results except for the variable religion.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATION

In this study an attempt is made to identify the determinants of the work status of individuals in Oromia Region. Among the other things age, sex, marital status, educational level, ethnicity, place of residence and disability status are found to be associated with work status of individuals.

From table 4.2 it was observed that the unemployment rate was highest among those aged 15-19, followed by those aged 20-24. These unemployment rates are the most visible indicators of the youth employment challenge. According to Internal Labour Organization definition, a person is considered unemployed if he or she had actively looked for work and was not employed during the last seven days although he or she was available. Because of the hurdles associated with obtaining the first job and a lack of skills and experience, the rate of youth unemployment has always been expected to be higher than the rate of general unemployment.

Another indicator of the youth employment situation is the ratio of youth unemployment to adult unemployment. This indicator points to the enormous challenge that Oromia youth face in looking for jobs. Using the census data of

1994, the ratio of youth unemployment to adult unemployment was 7.1 suggesting that for every adult that is unemployed there are seven youth looking for work. The rising ratio indicates that more young people are unemployed compared with unemployed adults. There was a greater gap existing between youth and adults with regard to the proportion of the labour force unemployed and looking for work. The increasing youth to adult unemployment ratio could also point to the increasing scarcity of employment opportunities accessible for young people today together with a growing number of new entrants to the labour force. Therefore, the Oromia Region should take some appropriate measures to reduce the unemployment rate of the youth population.

As figures in Table 4.4 shows, controlling for other factors females have less chance to be employed than males suggesting the emerging gender gap in the labour market. Therefore, an effort should be made to avoid this gender gap in the labour force participation; it may be through encouraging female participation.

It can be inferred from the economic literature that education level and unemployment rate are related inversely. For example, McConnell and Brue (1989, p.536 citing the study by Johnson 1979) state that:

"Higher levels of general education are associated with lower level of unemployment. For instance, college graduates who are displaced from their

existing employment because of changes in demand for technology have a wider range of job option and usually find retraining to be easier than persons who have little formal education". The findings of this thesis is therefore in the same line with results obtained from past similar studies. It is also well known that less-skilled individuals are more likely to suffer unemployment. Education is only a means to an end and not an end in itself. This implicitly implies that, attention should be given to the system of education and some corrective measures should be taken so that the education system results in the reduction of unemployment rate in the region.

This study revealed that singles have less chance of being employed when compared with people with other marital status, indicating that there are more dependents in the Region because, these single individuals directly or indirectly depend on their family for their survival.

Ethnicity and religious persuasion can provide individuals a sense of group identity and cohesion. Researchers have posited that such cohesion can provide an impetus for social and political discrimination and oppression of other groups, or solidarity against ruling authorities, both of which can destabilize a region and lead to conflict. In this paper, ethnicity is found to be significant in affecting the work status of individuals in Oromia Region; this may be due to the fact that, the

working language of the region is Afaan Oromo and the majority of people in the Region are Oromos. However, religion is found to be insignificant, implying that while employing individuals (formally or informally) religious discrimination is not totally required.

The majority of individuals in the Region are residing in the rural areas. According to this study individuals in the rural area are more likely to suffer from unemployment than their urban counterparts. This indicates that, changing the work status of the rural people should be the main concern of the Region's rural development program. The following are some of the things that the researcher would like to recommend to overcome the problem of rural unemployment.

- ✓ The creation of information centers that gather and disseminate restoration and development of rural infrastructure.
- ✓ Provision of financial support for agricultural workers.
- ✓ Offering educational programs designed to train needed professions.
- ✓ Organisation and finance of public works.

Health is important to securing and maintaining employment, but for many low-income or unemployed people access to health promotion programs is limited (Aldana, S.G., 2001). This is a problem for many people with disabilities who do not work and who rely on Medicare or Medicaid to cover their healthcare costs.

Without access to programs that promote health and reduce secondary conditions, people with disabilities may find it difficult to get a job or stay employed. This may be a factor in this group's persistently high unemployment rates. Therefore, to reduce the unemployment rate of people with disabilities, the region should increase access to health promotion programs.

APPENDICES

FIGURES

Figure 1.

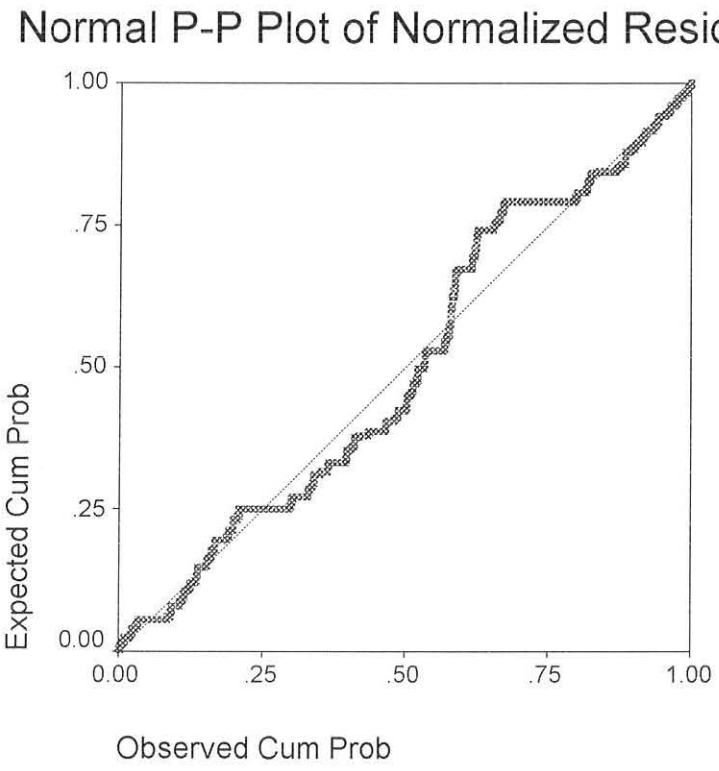


Figure2:

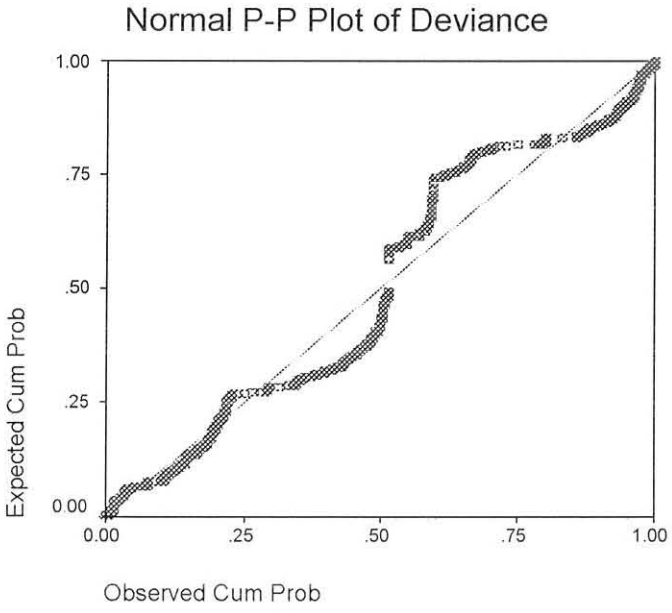
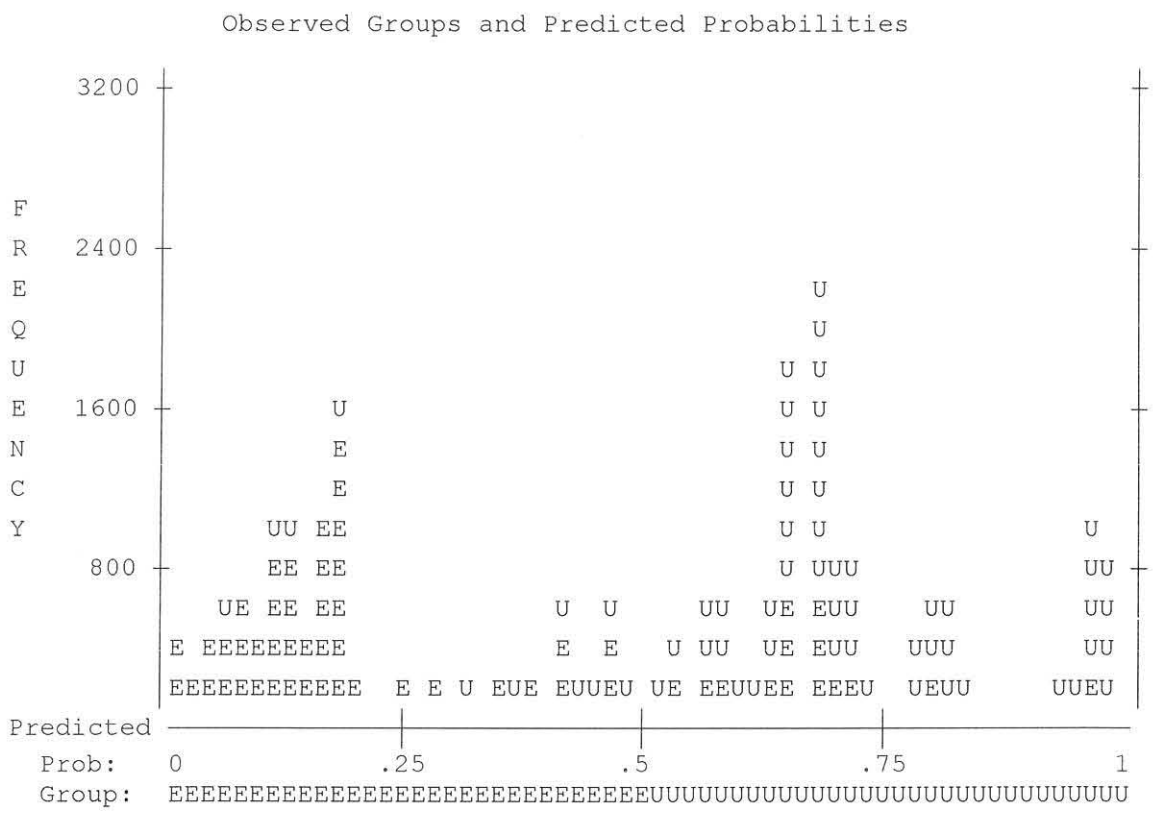


Figure3: Histogram of Estimated probabilities



TABLES

Table 1: Cross tabulation of each Independent Variable with Dependent Variable

Ethnicity * Work Status Crosstabulation

% within Ethnicity

		Work Status		
		Employed	Unemployed	Total
Ethnicity	Oromo	36.8%	63.2%	100.0%
	Amhara	47.0%	52.0%	100.0%
	Guragie	84.4%	15.6%	100.0%
	Others	44.3%	55.7%	100.0%
Total		37.3%	62.7%	100.0%

Disability Status * Work Status Crosstabulation

% within Disability Status

		Work Status		
		Employed	Unemployed	Total
Disability Status	Disable	52.2%	47.8%	100.0%
	Not disable	63.0%	37.0%	100.0%
Total		37.3%	62.7%	100.0%

School Attendance * Work Status Crosstabulation

% within School Attendance

		Work Status		
		Employed	Unemployed	Total
School Attendance	Not Attending	37.4%	62.6%	100.0%
	Attending	35.7%	64.3%	100.0%
Total		37.3%	62.7%	100.0%

Educational Level * Work Status Crosstabulation

% within Educational Level

		Work Status		
		Employed	Unemployed	Total
Educational Level	Illiterate	34.0%	66.0%	100.0%
	Literate	61.0%	39.0%	100.0%
	Grade 1- 6	46.1%	53.9%	100.0%
	grade 7-8	51.4%	48.6%	100.0%
	Grade 9- 12	64.0%	36.0%	100.0%
	Above grade12	96.4%	3.6%	100.0%
Total		37.2%	62.8%	100.0%

Sex * Work Status Crosstabulation

% within SEX of IND

		Work Status		
		Employed	Unemployed	Total
Sex	Female	20.2%	79.8%	100.0%
	Male	53.7%	46.3%	100.0%
Total		37.3%	62.7%	100.0%

place of residence * Work Status Crosstabulation

% within place of residence

		Work Status		
		Employed	Unemployed	Total
Place of residence	Urban	71.2%	28.8%	100.0%
	Rural	48.3%	51.7%	100.0%
Total		51.8%	48.2%	100.0%

Age Group * Work Status Crosstabulation

% within Age Group

		Work Status		
		Employed	Unemployed	Total
Age Group	10 - 14	5.7%	94.3%	100.0%
	15 - 24	16.2%	83.8%	100.0%
	25 - 64	57.5%	42.5%	100.0%
	>=65	74.1%	25.9%	100.0%
Total		37.3%	62.7%	100.0%

Marital Status * Work Status Crosstabulation

% within Martial Status

		Work Status		
		Employed	Unemployed	Total
Marital Status	Single	11.3%	88.7%	100.0%
	Married	58.5%	41.5%	100.0%
	Divorced	54.4%	45.6%	100.0%
	Widowed	61.9%	38.1%	100.0%
Total		37.3%	62.7%	100.0%

Religion * Work Status Crosstabulation

% within Religion

		Work Status		
		Employed	Unemployed	Total
Religion	Orthodox	39.2%	60.8%	100.0%
	Catholic	34.0%	66.0%	100.0%
	Protestant	34.8%	65.2%	100.0%
	Muslim	38.0%	62.0%	100.0%
	others	38.5%	61.5%	100.0%
Total		37.3%	62.7%	100.0%

Table 2: MULTICOLLINEARITY DIAGNOSTICS

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.556	.309	.309	.416	1.643

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1799.201	9	199.911	1157.264	.000
	Residual	4027.715	23316	.173		
	Total	5826.916	23325			

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	1.318	.023		57.580	.000		
	Ethnicity	2.71E-02	.006	-.025	-4.631	.000	.980	1.020
	DiseablityStatus	2.46E-02	.017	-.008	-1.476	.140	.994	1.006
	School Attenden	.097E-02	.014	.008	1.510	.131	.953	1.050
	Educational Leve	5.68E-02	.002	-.151	-24.343	.000	.775	1.290
	Sex	-.389	.006	-.389	-65.214	.000	.833	1.200
	place of residenc	.696E-02	.008	.055	9.437	.000	.870	1.149
	Religion	.131E-02	.002	.028	5.162	.000	.979	1.022
	Age Group	9.46E-02	.003	-.173	-27.276	.000	.741	1.349
	Maritial Status	-.178	.004	-.269	-41.356	.000	.701	1.427

a. Dependent Variable: Work Status

Collinearity Diagnostics

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions (Constant)	Ethnicity	DiseablityStatus	School Attendence	Educational Level	Sex	place of residence	Religion	Age Group	Maritial Status
1	1	7.568	1.000	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	2	.981	2.778	.00	.00	.00	.86	.01	.00	.00	.00	.00	.00
	3	.527	3.788	.00	.00	.00	.09	.10	.44	.01	.01	.00	.01
	4	.293	5.086	.00	.00	.00	.04	.57	.36	.03	.02	.00	.01
	5	.218	5.887	.00	.00	.00	.01	.04	.05	.00	.63	.06	.07
	6	.150	7.106	.00	.06	.00	.00	.05	.03	.33	.28	.08	.10
	7	.137	7.440	.00	.71	.00	.00	.03	.01	.23	.02	.00	.00
	8	0.062	11.027	.00	.01	.01	.00	.00	.09	.02	.00	.63	.78
	9	5.397E-02	11.842	.03	.17	.28	.00	.15	.00	.29	.03	.17	.00
	10	1.044E-02	26.920	.96	.05	.70	.00	.05	.01	.08	.02	.04	.03

a Dependent Variable: Work Status

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DECLARATION

I, the undersigned, declare that the thesis is my original work, has not been presented for degrees in any other university and all sources of material used for the thesis have been duly acknowledged.

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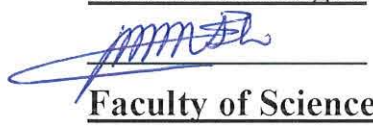
Signature: 

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This thesis has been submitted for examination with my approval as a University advisor.

Professor Eshetu Wencheko