Determinants of Graduate Unemployment Duration and Its Impact: *Evidence from Jimma Town, South West Ethiopia*

A Thesis Submitted to the School Graduate Studies of Jimma University in the Partial Fulfillment of the Award of the Degree of Masters of Economic Policy Analysis

By:

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JIMMA, ETHIOPIA

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MSC PROGRAM

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DECLARATION

I hereby declare that this thesis entitled "Determinants of Graduate Unemployment Duration and its Impact: Evidence from Jimma Town, South West Ethiopia" has been carried out by me under the guidance and supervision of Jemal Abafita (Ph.D.) and Enideg Tekalign (MSc). The thesis is original and has not been submitted for the award of any degree or diploma to any university or institutions for the award of any degree or diploma to any university or institution.

Researcher's Name	Date	Signature
_____	_____	_____

CERTIFICATE

This is to certify that the thesis entitled *"Determinants of Graduate Unemployment Duration and its Impact: Evidence from Jimma Town, South West Ethiopia"* submitted to Jimma University for the Award of the Degree of Master of Economic Policy Analysis (MSc) and is a record of valuable research work carried out by Mr. Mohammedsani Ali Gelan, under our guidance and supervision.

Therefore, we hereby declare that no part of this thesis has been submitted to any other university or institutions for the award of any degree or diploma.

Main Advisor Name	Date	Signature
_____	_____	_____
Co- Advisor Name		
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APPROVAL SHEET

We, the undersigned members of the Board of Examiners of the final open defense by Mohammedsani Ali Gelan have read and evaluated his thesis entitled "Determinants of Graduate Unemployment Duration and Its Impact in South West Ethiopia: Evidence from Jimma Town, South West Ethiopia" and examined the candidate. This is, therefore, to certify that the thesis has been accepted in partial fulfillment of the requirements for the degree of Master of Science in Economic Policy Analysis.

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Name of Internal Examiner	Date	Signature
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Abstract

This study was strange for the analysis of determinants of individual unemployment duration of graduates and its impact using cross-sectional primary data. The study population was 2012-2016 G.C. graduates of private and government higher institution of Ethiopia found in Jimma town, it includes employed as well as unemployed. The Data collected using self-administered questionnaire. Simple random sampling technique was used. *Kaplan-Meier estimation method, Cox proportional hazard regression, and parametric regression models were applied. Both parametric and non-parametric Estimation result suggests that a cumulative grade points aggregate, an expected unemployment duration, the gap between unearned income during unemployment and actual salary after employment, language, financial difficulties faced by unemployment, family background; mother and father education level, father employment sector, educational practicum and having developed skill are the most highly significant factors affecting graduate unemployment duration. The hazard rate shows an increasing trend within study time interval taken. Quality education, skill enhancing education, educated or human capital intensive development policies and economic activities which generate temporary income during unemployment are the recommended issues in reducing unemployment hazard.*

Keywords: *Unemployment duration; graduates; proportional hazard model.*

List of Acronyms

- CSA = Central Statistics Authority
- AIC= Akaike Information Criterion
- PH= Proportional Hazard Model
- AFT= Accelerated Failure Time
- CGPA= Centre for College Affordability and Productivity
- ILO= International Labour Organization
- UI= Unemployment Insurance
- G.C.=Gregorian calendar

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CHAPTER ONE

INTRODUCTION

1.1. Background of the Study

The Ethiopian economy has witnessed major restructuring after the change in Government in 1991. In the 1970s and 1980s, the economy operated under Soviet-style central planning that fully marginalized the private sector both in the urban and rural area. The public sector was the largest provider of formal wage employment in the government, state-owned enterprises, and state farms. Allocation of public sector jobs was primarily done through a government ministry and all higher education graduates were granted automatic positions in the sector. After the socialist regime was toppled, the new government embarked on market-based economic reform programs under the broad Structural Adjustment.

Down the years the public sector witnessed significant contraction and progressively larger roles were granted to the private sector. Participants in the labor market also bore the challenge of the reform attempts with the significant downsizing of the former largest employer. University graduates were no more afforded automatic employment in the public sector and subsequent job queues were observed especially in the early years of reform. According to national employment policy and strategies of Ethiopia, the future of employment expansion in Ethiopia is with the private sector. The public sector can no more be the biggest employer. The Civil Service has to be lean and needs to have highly skilled and well paid civil servants to ensure its leading and facilitating role for a thriving private sector (National Employment Policy and Strategy of Ethiopia, 2009).

The overwhelming facts of the labor market in Ethiopia are firstly the rapid growth of labor supply. The labor force is growing much more rapidly than the population as a whole because of the young dominated demographic profile. Secondly, the labor markets are weak. This weakness is characterized by limitations of the regulatory framework and lack of social dialogues among institutions themselves (trade unions and employers' organizations). The situation is believed to result in a lack of protection and job security, lack of social dialogue, and poor labor market services against the background of labor market imperfections (National Employment Policy and Strategy of Ethiopia, 2009).

Finally, the Ethiopian government issued The Labour Proclamation (Proclamation No. 377/2003) (FNG, 2004), the provisions of the Employment Exchange Service Proclamation (Proclamation No. 632/2009), the Right to Employment of Persons with Disability (Proclamation No. 568/2008) and ILO Conventions that Ethiopia has ratified as part of its domestic law which govern the relations between employers and employees. The growth and development plan includes policies focusing on both demand and supply side to improve market imperfections. The demand side considers the economic capacity to create jobs for various skill categories while the supply side enables the labor supplied to be equipped with required skills that the economy needs.

1.2. Statement of the Problem

The problem of developing countries is not only high unemployment rate, but unemployment of educated labor is more critical. Because high cost associated with educated unemployment. At recent time, some of these countries are experiencing at building modern education and number of educated people entering labor force is high. The capacity of the economy to employ is crucial. The costs of Unemployment of these essential educated labors at social, individual economic level is more significant than other unemployed peoples.

In emerging economies, new entrants alone are the most common source of graduate unemployment. For instance, in Ghana, between 30th August and 5th September 2012, UGAG estimated that the unemployment rate for over 88,000 graduates from universities, polytechnics, and other tertiary institutions was 50.8% (UGAG, 2012).

Centre for College Affordability and Productivity (CCAP, 2010) made a similar argument that the rate of graduate supply does not match the rate of growth of the American economy. Thus, any policy implication derived from the study will also include interventions to stimulate demand for the skilled graduates. Anything short of this stimulus will perpetuate the mismatch between supply of trained graduates and the demand for them.

Many of the graduates do not have the basic requirements for starting their own business, such as social capital (contacts), human capital (experience and knowledge), financial capital (funding), and psychological capital (resilience).Therefore most of them search paid jobs. However, the searching time duration can be affected by demographical, social, economic and cultural factors.

The study on unemployment duration is essential because it stress compels people to migrate, as the duration of unemployment increases, Fan and Starks (2011), Bacarreza and Soria (2007) confirmed for Argentine and Lee(2002), Teles (2004) and Gums (2004) confirmed for the USA.

The positive relationship between unemployment and crime is well-documented in literature Ehrlich (1973), Fajnzylber (1998), Gould (2002), Huang (2004), Fougere (2006). Lee et.al (2002) detected the association between crime occurrence and poor labor market condition in three Asia-Pacific countries Australia, Japan, and South Korea. Nicole (2003), Rafiq (2008) detected that joblessness, poverty, high school and college education, the penitentiary population as well as high population growth rate, earnings inequality contribute to increasing crime. The relation between suicide and unemployment has been confirmed significantly as compared to the relation between suicide and other socio-economic measures, Platt (1984), Lewis and Sloggett (1998).

The unemployment rate is the most widely used indicator of the well-being of a labor market and an important measure of the state of an economy in general. While the unemployment is in theory straightforward to calculate and classify none employed working age persons as unemployed out of the labor force, it does not differentiate the hazard rate of unemployment duration from just unemployment rate and its impact on the different group. In the case of Ethiopia, only two studies Serneels (2002), examines youth unemployment duration and seife (2006) studied on unemployment duration in urban Ethiopia. He has used secondary data which included all types of labor force educated as well as uneducated. This did not allow him to minimize heterogeneity among the study population. Parametric and semi-parametric Cox proportional hazard model was used in his study. He arrives at the same result from the two models. But He did not describe the importance of graduates entering labor force specifically.

In Ethiopian economy context, as it is growing economy, it needs skilled labor and expected to employ them to the optimum level. Oppong (2013) demonstrates a strong relationship between higher education and economic growth both theoretically and empirically. This means; its cost is high if not employed. Thus; in addition to the empirical evidence, intuitively points needs the economy to employ educated labor force for economic growth.

- As education access increases, a number of educated labor increases and so that, Productivity increases and then the economy grow faster.
- As population growth is high, a large number of new labor forces are also entering the labor force in a higher amount and therefore they will search for a job.
- Both non-educated, as well as graduated unemployment, would be expected to employ either by Government, private or self-employment. It relies on the capacity of the economy and economic institution.

Therefore; considering the significance of graduate unemployment duration, and the study gap on this special target group, this research interested in determining the demographic and socio-economic determinants of unemployment duration and its impact in southwest Ethiopia.

1.3. Objective of the Study

1.3.1 General objective

The general objective of this study was to find out the factors determining graduate unemployment duration in southwest Ethiopia and its impact.

1.3.2 Specific Objectives

Under the course of analysing the determinants and its impact of unemployment duration on individual contributes to investigating the following specific objectives.

These are;

- To investigate the general characteristic of graduate unemployment duration.
- To determine the factors affecting hazard rates of graduate unemployment duration.
- To estimate and compare the hazard rates of graduate unemployment duration based on different models.

1.4. Significance of the Study

The duration of unemployment involves depreciation of skills and work habits, loss of motivation and discouragement, mental frustration and inclination to crime, which can be avoided through policy making.

It also enables the society to aware the problem of graduate unemployment duration so that they take measurements that at least minimize the hazard or impact of factors affecting unemployment duration.

Moreover, graduates themselves prepare on what is expected to be not affected by prolonged unemployment duration hazards.

Finally, the result of this study would also be used as a source of information to other researchers for further study to identify important factors improving hazard rates of unemployment duration and unemployment itself.

1.5. Scope of the Study

The purpose of this study was to determine the determinants of graduate unemployment duration and its impact in South-West Ethiopia.

1.6. Organization of the Study

The final thesis of this study organized under five chapters and subheadings under each chapter. The first chapter contains an introductory part which has six subheadings; background, statement of the problem, objectives, significance of the study. Chapter two included a theoretical and empirical review of the study. Chapter three handle the data, methodology of the study. Chapter four have two parts, one describes the data and the second part empirically analysis the empirical result. Final in chapter five, concluded the result and recommended point based on findings.

CHAPTER TWO

REVIEWS OF LITERATURE

2.1. Theoretical Review

The view of most economists always goes with their thinking at that particular time. The two major school of economic thought were classical and Keynesian.

2.1.1. Classical Theory of Unemployment

The classical was the school of thought that emphasized the role of money in explaining short-term changes in national income. Traditionally, this theory has been that unemployment has been looked upon in terms of aggregate. Their view was that involuntary unemployment was a short term phenomenon resulting from the discrepancy between the price level and the wage level. Unemployment was the result of too high real wages.

At times the wage level in the classical view would be reduced and there would be no unemployment except for frictional search unemployment caused by the time delay between quitting one job and starting another. These schools possess that the problem of urban unemployment is traceable to the fault of workers and the various trade union powers. They believed strongly in the theory of demand and supply. Therefore it insists that urban unemployment is caused by the low supply of labor of more than the capacity of the economy.

Consequently, the school argued that the demand for too high wages of a worker without a corresponding increase in productivity renders product costly thereby discouraging competitiveness among local industries and foreign industries. The implication of these trends is the reduction of sales, which further leads to mass retrenchment of workers resulting in unemployment.

2.1.2. Keynesian Theory of Unemployment

Cyclical or Keynesian unemployment also known as demand deficient unemployment occurs when there is no aggregate demand in the economy. It gets its name because it varies with the business cycle, though can also be persistent as during the great depression of the 1930s.

Cyclical unemployment rises during economic downturns and falls when the economy improves. Keynes argues that this type of unemployment exist due to inadequate effective demand. Demand for most goods and services falls, less production is needed; wages do not fall to meet the equilibrium level and mass unemployment results.

The Keynesian framework, as examined by Thirlwal (1979), Grill and Zanalda (1995) and Hussain and Nadol (1997), postulate that increase in employment, capital stock, and technological change are largely endogenous. Thus the growth of employment is demand determined and that the fundamental determinants of long-term growth of output also influence the growth of employment.

In the Keynesian theory, employment depends upon effective demand which results in increased output, output creates income and income provides employment. He regards employment as a function of income. Effective demand is determined by aggregate supply and demand functions. The aggregate supply function depends on physical or technical conditions which do not change in the short run, thus it remains stable. Keynes concentrated on aggregate demand function to fight depression and unemployment. Thus employment depends on aggregate demand which in turn is determined by consumption demand and investment demand.

According to Keynes, employment can be increased by increasing consumption and or investment. Consumption depends on income C(y) and when income rises, savings rise; Where C is consumption and y stand for income.

Consumption can be increased by raising the propensity to consume in order to increase income and employment but the psychology of the people (taste, habit, and others) which are also constant in the short run. Therefore the propensity to consume is stable. Employment thus depends on investment.

2.1.3. Efficiency Wage Theory

This is a macroeconomic approach of explaining unemployment. The rationale behind the theory is as follows; Assume that worker differs in quality, not just abilities but in the probability to shrink, in other words, some people are lazier than others and are therefore less likely to work harder. The effort is a function of costly monitoring i.e. if you are being closely monitored than if you are not. An employer cares about the cost of labor (the wage

rate). However, the cost is dependent upon the productivity of the workers. So, the objective is one to minimize the wage divided by productivity (wage per unit produced). To do this, there are at least two options:

Firstly, you can increase productivity by increasing wages. The reason for this is that as wages increases, the cost shrinking becomes higher because if you are caught, you are fired and lose your wages and the higher the wage is the more you lose by being fired. A higher wage thus means that you work even harder since it is more important for you not to be fired. Hence, there is a connection between quality of workers and the wage rate. The higher the wage the more costly it is to be fired and the less likely is it that the workers will shrink.

Another argument using the same reason is that turnover itself is costly (firing, hiring, and training) and consequently the employer would want to pay higher wages to prevent high-quality workers from leaving. This theory explains unemployment in the sense so far it has been established that is profitable for an individual factory to differ higher wages than the market equilibrium. However, the factory is not alone in making this discovery advantage of higher relative wages for the firm is going to disappear. The solution to this problem lies in the creation of a permanent group of unemployment.

The high real wage level creates an excess supply of labor. The excess supply does not result in a decrease in the wage level because the firms know they need some unemployment to provide incentives for the employed workers not to shrink. The incentive is produced by making the cost of being unemployed high which is what a high unemployment rate reflects. Here, wage performs two functions, one as payment for the use of a resource and another as an incentive not to shrink. As a result of the second role of wage, unemployment becomes a permanent equilibrium phenomenon.

2.1.4. The Search Theory

The search theory of unemployment argues that unemployment is a result of employees quitting their job to search for a new and better-paid job. This involves a certain optimum time spent searching in order to find the best-paid job. While searching, the worker is unemployed. This seems to be a theoretical explanation of unemployment since only less than 10% of the unemployed actually quitted their own job.

According to Job Search theory, self-expectations on employability influence job search intensity and reservation wages. Hence, this self-expectation should have a significant influence on graduate unemployment duration. Whereas, for overall life happiness, in the related literature, the 'hypothesis of selection' suggests that graduates who are happy with their life would have shorter unemployment spells. The 'hypothesis of selection' states that an individual's happiness (well-being) influences his or her employment outcomes. The assertion is that those with certain low employability characteristics (such as always thinking negatively) could lead to low level of happiness, and hence they are more likely to be unemployed.

2.1.5. The Insider-Outsider Theory

The alternative microeconomic theory of unemployment is the insider-outsider theory. The focus in this theory is the turnover costs of labor. This means that there are significant costs involved in the firing, hiring, and training workers. Not only are there exogenously determined costs but the insider can increase the costs of turnover by refusing to cooperate with hired outsider i.e. those who already have a job gain market power over wages as a result of these costs, the employers are willing to give the workers higher wages because this is more profitable than the costly process of turnover.

2.2. Empirical

This study was focused on empirical literature, mainly from developed and less from newly developing Asian countries. The reason was that existing theories did not differentiate clearly the hazard rate of unemployment duration from the just unemployment rate. Unemployment in developing countries was an urban problem and was higher among well-educated and first-time job seekers, particularly caused by a preference for job Tasci and Tansel (2005) and job creation was not sufficient to absorb the rising labor force, particularly well-educated individuals.

Graduate Unemployment is one of the throbbing issues in both developing as well as developed countries. It results in wastage of human capital and erosion of work habits. The causes for unemployment of educated peoples may be due to poor education, poor training system, job preference, skill mismatch, economic inefficiencies and absence of an effective labor market institution and information system. It has been endlessly and seriously debated worldwide in Literature that unemployment causes cost at economic, social and individual

levels. Further, it was also found that the economic, social and individual costs are faced by the developed and developing countries Sabot (1982). At the macroeconomic level, unemployment causes loss of output, not- payment of taxes which result in revenue loss to government Reyher (1979).Moreover, the developing countries are most of the past experience, unemployment of professionals and non-professional educated peoples prolonged unemployment duration was not common.

Pakistan was facing high educated youth unemployment figure due to demographic transition, and unemployment among well-educated and first-time job seekers is high Arif and Chaudhry (2008). Higher education is blamed for this very rising trend in unemployment Qayyum (2007). In Ethiopia like Pakistan, the labor market is segmented into the formal and Informal sector. The informal sector is characterized by the absence of protection legislation, non-implementation of minimum wage legislation, lack of social coverage within job period or after retirement both, a high proportion of self-employment, home-based work are the prominent features of the labor market.

Studies on unemployment duration have mainly focused on the impact of personal characteristics, unemployment insurance (UI) and local labour market characteristics on the probability of leaving unemployment (Lancaster, 1979; Nickell, 1979; Atkinson, Gomulka, Mickle Wright, and Rau, 1984; Edin, 1989; Holmlund, 1998; Roed and Zhang, 2003, 2005; Pellizzari, 2006). In particular, the effect of UI has been the centre-piece of unemployment duration analysis for many developed countries.

Theoretically, unemployment insurance (UI) benefit increases the value of continuous job search and reservation wages. Hence, it is expected that the level of any UI benefit decreases the probability of leaving unemployment. Empirically, this negative impact of UI benefit has been clearly established. It is also found that the probability of leaving unemployment rises sharply before the exhaustion of UI benefit (Holmlund, 1998; Roed and Zhang, 2003, 2005).

UI is unavailable in most developing countries, including Ethiopia. However, the findings of significant UI effects suggest that unearned income, financial support received, and financial constraints faced during the job search period are all possible determinants of individual unemployment duration.

In addition to supply side factors, demand side factors such as local unemployment rates, unemployment-vacancy ratios, and place of residence are all typically found to be significant determinants of individual unemployment duration (Arulampalam and Stewart, 1995; Grogan and Berg, 2001; Tansel and Tasci, 2003; Kupets, 2006; Serneels, 2007). For instance, Grogan and Berg (2001) observed that those living in Moscow or St Petersburg have higher exit rates than those living in other regions in Russia.

Theory of informal job search suggests that another potential significant determinant of an individual's employability is family background. Other demographic characteristics such as age, health conditions, own and parental education levels, previous working experiences and spouse employment status, are found to be significantly associated with exit rates (Edin,1989; Narendranathan and Stewart,1993; Chuang,1999; Lazaro, Molto and Sanchez, 2000; Grogan and Berg, 2001; Tansel and Tasci, 2003; Kupets, 2006; and Serneels, 2007).

In developed countries, it is recognized that minority ethnic groups are more vulnerable to prolonged unemployment spells. According to the Population Survey of the United States in 2003, the median unemployment duration of African American workers is 9.4 weeks longer than that of the white workers (Dawkins, Shen and Sanchez, 2005).

In Malaysia, ethnicity also has been consistently found to be a significant determinant of graduate employability. Specifically, the Malay graduates are found to have significantly lower exit rate, compared to non-Malay (Lim and Normizan, 2004). While Malay graduates are found to have significantly lower exit rate, this finding is typically obtained without controlling for other factors (such as Chinese language proficiency), which is believed to be less favorable to Malay graduates. For instance, generally, non-Malay graduates can speak more languages than Malay graduates. Thus, the significant influence of ethnicity might just be picking up the influence of other omitted variables.

In the global setting, a crucial determinant of unemployment duration is the level of English language proficiency. In Australia, Carroll (2006) observed that the exit rate of those born in non-English speaking countries is lower than that of those born in an English speaking country. Nevertheless, as the length of their stay in Australia increases, this negative effect

on exit rate tends to diminish. In countries using English as second or third language such as Malaysia, the proficiency of English language is also an important determinant in one's employability. Lim and Normizan (2004) found that there is a positive impact of English language proficiency on exit rates; however, it is limited only to pre-university proficiency. Given the wide use of English language among private sector companies in Malaysia, English language proficiency gives an added advantage to job applicants.

Types of degree obtained also have a significant influence on one's employment duration. Using a sample of Universiti Utara Malaysia graduates, Lim (2007) found that accounting graduates have the highest probability of leaving unemployment compared to other business-related degree graduates. This highlights the possible mismatch between the types of degree graduates produced and industries' demand.

In short, previous studies have suggested that the determinants of individual unemployment duration are the (proxies for) demand constraints and the socio-demographic variables related to the supply side.

Thus, the present study contributes significantly to the current literature by filling the existing gaps by incorporating these variables (family background, language proficiency, and graduate self-expected employability) into a duration model using a sample of the Ethiopian graduates exist in Jimma town to examine the determinants of graduate unemployment duration in southwest Ethiopia.

According to CSA's 2006 Urban Employment/Unemployment Survey, looking at the employed population by major occupations, nearly three-fourths of urban employed population of the country is engaged in three almost equally important major occupations: services, shop and market sales workers (25.5 percent), elementary occupation (23.6 percent), and craft and related activities (22.1 percent). Professionals together with technical and associate professionals make up about 10 percent of the employed population while those persons working in the legislator and senior officials took the smallest share constituting a mere 2.5 percent of the total employed an urban population of the country.

Since most of the urban young people's are highly participating on learning, the expected output would be increases educated new labor force. Thus the above figure showing employed professionals could imply rising over time. It is a challenge that most economies are facing under the current economic circumstances did not to employ efficiently. For instance, in their study of the relationship between global financial crisis and unemployment in China, Zhou, and Lin (2009) reported that nearly 6 million students were expected to graduate in 2009 but their unemployment rate was estimated to be greater than 30%. Given the economic crisis at the time, they expected that the problem would worsen. They projected that approximately 2 million graduates (many of whom are postgraduates, even doctoral graduates) would not find jobs.

The earlier studies of Grzenda (2012)sex, marital status, education Level, information about continuing an education, region of Poland and the age at the moment of research, only two variables have been determined to be statistically insignificant are marital status and information about continuing an education.

Ghayur (1992), Arif(1996), Koch and Evans(2006), King Don and Knight (2001) reported a positive relationship between the level of education and Employment rates and concluded that variable indicating human capital like education, Work experience has a greater influence on employment probabilities. This implies that by increasing high level of education, unemployment can be eradicated. Sternberg (2005) using data from Sweden analyzed Unemployment duration by considering both selection bias and censored observations, concluded that training and skill-enhancing program reduce Unemployment duration.

Hernaes(1998) detects that expected duration of joblessness has gone down for male as compared to females. Tansel and Tasci (2002) reported that the behaviors of men may be changing over the course of unemployment while that of women remain the same.

Krishnan(1998) provides an extended analysis of the urban labor market in Ethiopia during structural adjustment (1990-1997). They find that real wages in the public sector have readjusted to pre-reform levels despite its shrinking size; real wages have increased in the private sector and returns to education have largely remained unchanged. More importantly, they note that the rigidity of real wages, growing unemployment queues and the implied

imbalances in the urban labor market collectively point to the fact that a considerable time may elapse before equilibrium levels are attained.

Seife (2006) studied on unemployment duration in urban Ethiopia using both parametric and a semi-parametric Cox proportional hazard model and He arrives at the same result from the two models. Accordingly, variables age, education ladder, has a positive and significant effect on hazard rate While, sex doesn't have a significant effect on the hazard rate. Married persons have a higher hazard rate than singles. People with vocational, college or university education have higher escape rates from unemployment than secondary school graduates. Those relying on relatives' help have lower hazard rates than those relying on parents' help. The education variable Primary and the support mechanism variable have not significance while another education variable, Vocation, has gained significance.

According to Arif (1996) who stated that variable indicating human capital like education, occupation, work experience appear to have a greater influence on employment opportunities. The probability of finding a job is increased for both men and women with the level of education Tansel (2010) proved for Turkey. Tasci and Tansel (2004) found that individuals with four or more years of university education have significantly high exit probabilities than with no formal education. Higher levels of education actually tend to reduce the probability of leaving unemployment to reduce the average unemployment duration Evans and Koch (2006). The development of human capital and skill enhancement can help youth to adjust in labor marketArif and Chaudhry (2008).

Ordine and Rose (2006) reported that unemployment duration is higher for individuals that exit toward bad occupation, and further individuals having higher education level face spell length higher that of their undergraduate counterpart. Hyder (2006) reported that the stated preference for a public sector job controlling for education and other characteristics was found to be associated with higher unemployment durations. It implies that the work environment may affect unemployment duration.

Podivinsky and Mc Vicar (2002) for Ireland found that young people are 25-50% less likely to experience long-term Unemployment. Ehrlich (1973) concludes that increase in unemployment rate actually decreases job opportunities which lead the frustrated individuals to engage in criminal activities. Lee.et. al (2002), Teles (2004) and Gums (2004) confirmed for the USA that Unemployment deprives people especially youth from their livelihood, they

are discouraged and got frustrated, so unemployment results in loss of self-esteem Goldsmith (1996).

A mass of the unemployed population, especially when such incidence is high among the educated and the youth, it becomes a potential source of political and civil unrest. Employment policies and strategies contribute towards reducing and avoiding such threats by addressing both the supply and demand side of the labor market towards the creation of productive employment.

The relation between suicide and unemployment has been confirmed significantly as compared to the relation between suicide and other socio-economic problems Platt (1984), Lewis and Sloggett (1998). The Impacts of unemployment in socio-economic lives of individuals is evident, it creates stress, adversely affect mental health and result in loss of dignity Jackson and Warr (1984), Darity Jr. and Goldsmith (1996), Murphy and Athanasou(1999), Cooper (2007). Similarly, Dahlgren (1991) mentioned that the loss of employment has a considerable effect on the health status of an individual.

Many studies provide evidence that unemployment negatively affects life satisfaction, Clark, and Oswald (1994), Frey and Stutzer (2000), Eggers (2006), Powdthavee (2006), Clark (2006). Oppong (2013) documented evidence that demonstrates a strong relationship between higher education and economic growth both theoretically and empirically. This means; its cost is high if not employed.

Rudolph (1998) and Franz (2003) provide some basic stylized facts such as unemployment rates by educational groups or average unemployment duration by household characteristics. Collecting more detailed stylized facts using a survival analysis may help in obtaining clearer ideas about the main micro- and macroeconomic determinants of the risk of unemployment and the distribution of the length of individual unemployment periods.

The analysis of this paper is restricted to the main workforce of mid-aged educated individuals so that the results are not affected by several policy measures for young unemployed and by the early retirement issue for unemployed with extended entitlements for unemployment insurance Fitzen and Wilke (2004).

The earlier studies of seife(2006) reported that The computed average duration of unemployment and the fact that most of the unemployed are relatively well-educated

productive youth highlights the seriousness of the problem and hence the need for urgent policy intervention. Hence; I am interested in determining factors that influence the duration of graduate unemployment and its impact.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1. Research Design

The study was undertaken through two approaches. The first was descriptive analyses. This approach used Statistical measures like mean, percentage, correlations and deviations to measure continuous variables, while percentage, mode, frequencies used to measure string variables.

The second approach used econometric models. The most dominant model that most duration and hazard analysis have been used was the proportional hazard models. This model has three types; non-parametric, semi-parametric and parametric models. This study goes through non-parametric analysis to parametric models. Through all models, the basic assumptions would be tasted were necessitated.

3.2. Source and Types of Data

3.2.1. Study Area

The study coverage was limited to Jimma town. It is one of the largest and oldest cities located in South West of Ethiopia and capital cities of the Jimma zone under Oromia Regional State. Based on figures from the Central Statistical Agency in 2005, this town has an estimated total population of 159,009 of whom 80,897 were males and 78,112 females.

Most of the residents engaged in business largely service sector activities. Jimma zone administrative offices, Federal offices of South West Region, Governmental as well as Nongovernmental organizations, are found in the city. Since the town is surrounded by many weredas under Jimma zone administration, most graduate students stay there for searching job vacancies. Most importantly, Jimma was found to be easy study area for me.

3.2.2. Study population

2012 to 2016G.C graduates of Ethiopian higher institutions including private and public universities and institutions are the study population. Both employed, as well as unemployed, were included in the study.

3.2.3. Type of Data

The study distinguished from similar studies done before; unlike previous studies, it used cross-sectional primary data while the previous studies used secondary data. The reason is that there was no well documented secondary data which shows the data on past and current status of graduate's characteristics. Moreover, it was considered appropriate because it entailed the collection of both quantitative and qualitative data on more than one cases with multi-variables.

The study used categorical value labels essentially for qualitative data, and it also has some quantitative continuous data as positive numeric value.

3.3. Sampling Technique and the Sample

3.3.1. Sampling Technique

The statistics data of graduate unemployed registered at the federal social affairs office, Jimma zone social affairs, and Jimma town social affairs offices in the Jimma town taken as sample frame to get the proportion of unemployed graduates. But the graduate employed data statistics was not easy to get. This made the total size of the study population not to be known. Thus, Simple random sampling technique employed in the study.

3.3.2. Sample size

Cochran's formula for calculating sample size determination for infinite population was used. Cochran(1977) developed a formula to calculate a representative sample for proportions as;

$$n_0 = \frac{z^2}{e^2} pq$$

Where,

n_0 is the sample size, z is the selected critical value of desired confidence level, p is the estimated proportion of an attribute that is present in the population, $q = 1 - p$ and e is the desired level of precision.

For this study, a sample size of a large population whose degree of variability is not known; the maximum variability, which is equal to 50% (p =0.5) and taking 99% confidence level with ±10% precision, the calculation for required sample size is as follows

p = 0.5 and hence q=1-0.5 = 0.5; e= 0.1; z=2.58

So, $n_0 = \frac{2.58^2}{0.1^2}(0.5)(0.5) = 166$

Thus the calculated sample size n_0 is 166 but in this study 250 used which is larger sample size which makes the study more precise.

3.4. Data Collection Tools

Data was collected through a face-to-face self-administered questionnaire with the target respondents. This was done with the assistance of well-trained field assistants. The minimum qualification of these field assistants was a Diploma certificate.

3.5. Data Analysis Techniques

Through a modeling approach to the analysis of survival data, we can explore how the survival experience of an unemployed individual depends on the values of one or more explanatory variables, whose values have been recorded for each unemployed graduate at a time origin. Survival analysis consists of a set of specialized statistical techniques used to study response time data.

In analyzing such data, the main objects are to determine the length of time interval spent in a state and the transition probability from the current state to the entering state. The interest of this statistical tool is mainly focused on two distinguishing features of time to event data. Primarily, duration times are non-negative values usually exhibiting highly skewed distribution and therefore the assumption of normality may be violated.

Secondarily, censoring may occur or the true duration is not always observed or known, that is, some subjects potentially being unobserved for the full time to failure. The main characteristics of these data were the issue of censoring which occurs when the periods of time of event occurrence for some individuals cannot be completely observed.

The process of censoring and truncation make these data unsuitable for analyzing with traditional regression method and hence, the appropriate techniques and analyses used is, usually called survival analysis.

In the survival study; Non-parametric (Kaplan-Meier), Semi-parametric (Cox-proportional hazard regression) and parametric regression models were employed Kiefer (1988), and Lancaster (1990).

3.5.1. Kaplan-Meier Estimation

An initial step in the analysis of a set of survival data is to present numerical or graphical description of the data for individuals in a particular group. And this description includes survival distribution and Kaplan-Meier survival function estimation which is used for the estimation of the distribution of survival time from all of the observation available.

The Kaplan-Meier (KM) estimator, or product limit estimator, is the estimator used by most software packages because of the simplistic step approach. It incorporates information from all of the observation available, both censored and uncensored, by considering any point in time as a series of steps defined by the observed survival and censored time. The KM estimator consists of the product of a number of conditional probabilities resulting in an estimated survival function in the form of a step function. It is a nonparametric estimator of the survivor function S (t).

$$F(t) = Pr(T <= t) \quad \text{..... (1)}$$

Equation (1) is the cumulative distribution of T, where T means actualization of T.

$$S(t) = 1 - F(t) \quad \text{..... (2)}$$

Equation (2) is the Survivor function of T. Where, T is a continuous random variable measured in months.

3.5.2. Cox-Proportional Hazard Model

The Cox regression model provided a useful and easy way to interpret information regarding the relationship of the hazard function to predictors. While a nonlinear relationship between the hazard function and the predictors was assumed, the hazard ratio comparing any two observations was, in fact, constant over time in the setting where the predictor variables do not vary over time. This assumption is called the proportional hazards assumption and checking if this assumption met is an important part of a Cox regression analysis.

In this procedure, coefficients of the covariates are estimated without the need to specify or estimate a baseline hazard function. The Hazard Function can be retrieved subsequently after estimation. As the name suggests, Cox-proportional estimation was done under the PH specification implying exponential covariates have a proportional effect on the estimated hazard rate. It allows testing for differences in survival times of two or more groups of interest while allowing adjusting for covariates of interest.

According to Hosmer and Lemeshow and May (2008), The Cox regression model is a semi-parametric model, making fewer assumptions than typical parametric methods but more assumptions than those nonparametric methods. In particular, and in contrast with parametric models, it makes no assumptions about the shape of the so-called baseline hazard function. It was by far the most popular model for survival data analysis and is implemented in a large number of statistical software packages.

3.5.3. Test of Proportionality

The Cox model allows for testing the proportionality assumption. The model assumes that the baseline hazard enters multiplicative and that it is equal for all individuals. Cox starts from the conditional probability that the i^{th} individual leaves unemployment at ti, given that there are those individuals that could have left at that point. This is defined as a ratio, it is the hazard of person i, divided by the sum of the hazards for all other persons who have not left.

The baseline hazard cancels in this ratio. The log-likelihood function is obtained very simple; it is the log of the product of the individual probabilities and hence does not require estimation of the baseline hazard. It is the conditional probability that the i^{th} individual leaves unemployment at t_i, given those individuals who could have left at the t_i.

The actual test is based on the findings by Grambsch and Therneau (1994) that the Schoenfeld residuals should have a slope of zero for each covariate. These residual can be interpreted as the nonparametric estimate of the log hazard ratio function. (Stata, 1999) The basic approach of the test is explained very clear in Lancaster (1990, p323).

The strength of this method is also its weakness: it does not give an estimate of the baseline hazard. It estimates the -coefficients (by partial likelihood) without estimating the form of the baseline hazard.

3.5.4. Parametric Estimation

The parametric analysis offers an advantage over non-parametric methods. It allows to formally testing whether duration dependence is positive or negative. It also allows plotting a smoother estimate of the hazard rate, so we can visualize its course. The disadvantage is that it imposes assumptions on the data, which do not always hold. But these restrictions can be tested as well. Because results are typically sensitive to the assumed distribution, it is important to find out which distribution fits best to the data. Ideally one would follow a general-to-specific approach, starting from a model that encompasses all the others and formally test for restrictions. But there is no such model at hand.

The most general fully parametric model is a model which assumed a generalized gamma distribution. This model encompasses the lognormal and Weibull models, The exponential model is a restricted version of the Weibull and non-nested model. Alternative models like the Gompertz and the log-logistic are also non-nested and can therefore not be written as a restricted form of any of the other models.

3.6. Hazard Rate

Steiner (2001) states that; the hazard rate of unemployment is actually the reduced form of Standard job-search model. In the job-search model, the cost and benefits of job-search and unemployment determine the intensity of the job-search and the reservation wage of the individual.

The possibility of obtaining employment depends on Individual characteristics such as sex, age, language, ethnicity, family size, martus status, status of education; program attended, field of study, government or private university attended, educational practicum, having developed skill, actual salary, reservation wage, expected unemployment duration, job search intensity, unemployment difficulties faced, family background; father and mother education level, participation in economic activity, employment sector. In this paper, we will analyze the determinants of unemployment duration, which is measured by the time involved from the last degree obtained to full-time wage employment. It also finds out the probability of ending up the unemployment spell by taking an interval of time, given that it has lasted until time t. Duration of unemployment is denoted by UNEDU.

Various personal and demographic characteristics affect the probability of a person to experience a different level of leaving unemployment. The survivor function shows the proportions of people who survive unemployment as time proceed. Here we want to find out the Probability of ending up of unemployment spell in the next time, say at time 't' when it has lasted until time T.

UNEDU= f (Demographic Characteristics + Personal Characteristics)

A semi-parametric model is;

$$\log_e hi(t) = \alpha_{(t)+} \beta_1 X_{i1} + \beta_2 Xi_2 + \ldots\ldots\ldots + \beta_K Xi_K$$

Or equivalently,

$$hi(t) = ho(t)\exp(\beta_1 X_{i1} + \beta_2 Xi_2 + \beta_K Xi_K) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3)$$

Where;

i = stand for i^{th} individual in the sample

X = stands for observed characteristics of respondents and

k = stands for k^{th} parameter of variables

The Econometric Model would be;

$$\log_e hi(t) = \alpha_{(t)+} \beta_1 X_{i1} + \beta_2 Xi_2 + \ldots\ldots\ldots + \beta_K Xi_K + e$$

Or equivalently,

$$hi(t) = ho(t)\exp(\beta_1 X_{i1} + \beta_2 Xi_2 + \beta_K Xi_K + e \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (4)$$

Where; the term "e" capture the random disturbance effect.

Equation 4 is the proportional hazard econometric model.

3.6.1. The Course of the Hazard Rate

The theoretical, as well as empirical literature on duration models, has boomed over the last decade. Although there remain many questions, there is a growing consensus on certain issues. There is for example ample evidence that duration analysis is much more sensitive to distributional assumptions than is OLS. Wrongly imposing a distribution may result in

heavily biased estimates (see Van den Berg (2000), Stewart (1998)). Because of that, we started from a non-parametric approach. Initially, we did not allow for unobserved heterogeneity.

First, we consider a non-parametric model; not controlling for unobserved heterogeneity, and then moved on to test different parametric specifications while controlling for unobserved heterogeneity. Parametric models have the advantage of allowing a smooth plot of the hazard rate and of formal testing of its increase or decrease. Because results are usually sensitive to the assumed distribution, we have compared and tested different specifications. Although it may seem better to start from a more general model, namely a parametric model that allows for omitted heterogeneity in a non-parametric way (a mixture model), there are two reasons for not doing so.

First, although Lancaster has developed a method to estimate mixture models in a non-parametric way, the method is complex, its calculations are long and error-prone, and, because it has scarcely been applied, little is known about the properties of its estimators (Lancaster, 1990, p280-288).

Second, there is evidence that the main cause of bias in the estimation results of a mixture model is misspecification of the baseline hazard rather than assuming the wrong distribution of heterogeneity (Ridder and Verbakel, 1983). So we restrict ourselves to models with parametric assumptions for heterogeneity.

Throughout the study, I excluded time-varying independent variables like age. The main reason for this was that our measure for the duration is obtained by recall questions, whereas for the time varying information, for example, parent's background, we only have current information.

3.7. Description of Variables

Data used for the analysis includes;

I. The respondent's socio-demographic aspects related to the study; including age, sex, ethnicity, language (mother thong), hometown, marital status.
II. Parent background; educational, economic and demographic status
III. Respondent's Education qualification status
IV. Job searching related issues
V. Employment status; for detailed and whole information; see appendix at the end.

3.7.1. Dependent Variable

The dependent variable was the duration of graduate unemployment measured in months. Formal employment requires the time frame as the fiscal period within which most agreements and payments made. These time frames differ from institution to institution. To avoid inconvenience, I have taken a 'month' as a measurement of initial duration and continuous over time.

Graduate unemployment duration described as the duration of degree holders in southwest Ethiopia, specifically Jimma town who are capable and willing to work, searching for a job but was unable to find jobs. The international labor organization definition of unemployment was taken as a standing description for unemployment duration. It measured as the number of months from which the individual has started to search job after university degree have been obtained.

The currently employed was asked how long their first spell of unemployment ended after graduation was asked that is a retrospective question. While the currently unemployed were asked graduation date and but not asked how long they had been in unemployment because their spell still not undertaken. I have constructed a measure of uncompleted unemployment duration for them by calculating the time from job search start to the date they have filled this study's questionnaire.

There are three reasons why this was relevant. First, considering completed spells only could lead to a selection bias because those who remain unemployed could be excluded. Second, completed spells only reflect past unemployment condition not updated. Third, by also taking the currently unemployed into account, I have obtained more observations that explain the most recent information of those unemployed, which allowed me for a more robust analysis.

3.7.2. Explanatory Variables

The explanatory variables (time-invariant variables) were measured at the first date of job search started, except the following variables: number of job applications submitted, expected wage, the lowest wage for which graduates are willing to accept employment, job search/interview training, sharing of job market information among friends, unearned income received while unemployed, financial support received while

unemployed, financial difficulties faced while unemployed, ratio of job seekers over job vacancies and age.

Because of all data are actual time measurement, error for predicted duration not exist, we have consistently checked the exact calculation from actual data for our results. I have done this by the analysis on the directly observed data only, which is observed rather than constructed data.

Unemployment duration was affected by social, economic and demographic characteristics. I used personal characteristics, family background, educational features and economic factors. The most determinants were described as follows.

Age (AGE)

In this study, it is a continuous variable measured at the actual age when the respondents graduated and started to search for a job. That is the current respondent's age minus the date they have started to search for a job after graduation. The probability of leaving Unemployment increases/decreases as age increases. The increase in age lowers/raises the probability of leaving Unemployment

Sex (SEX)

A male suffers lesser unemployment duration as compared to females. The estimate of Cox proportional regression model takes “SEX” for a male dummy. That is 1 for male and 0 if it is female. An individual being male accept any job offer as soon as possible because in our social set up males are bound to take the family responsibilities. Thus, Women face longer Unemployment duration than male.

Marital Status (MARSTUS)

Marital Status is positively affected the probability of leaving unemployment duration. The individuals who are married expected to be suffered lesser unemployment duration as compared to a person who was single because the individual who is not married due to family responsibilities accept job offer even at a low wage. For man being married increase the probability of exiting unemployment. It is string variable in this study “MARSTUS” dummy for married respondent.

Field of Study (FLDTY)

For education variable, we see the effects. The first is the study field or type of degree. Nine string values are taken as educational professions category in this study. Teaching related =0, health science=1, business and economics= 2, social science and humanities=3, law and governance= 4, applied natural science= 5, information science= 6, engineering science=7, and agricultural science=8. We construct eight dummies, taking teaching science as the base dummy.

Program Attended (PROATEND)

The second education-related issue is the program attended. If the person got his or her degree by distance education=0, weekend=1, evening= 2 and a regular program = 3. We also construct three dummies taking distance education as a base dummy.

Language (LANG)

During job vacancy announcement, language is one of the most important criteria for employment selection. This criterion depends on the regions or federal office working language. At the regional level, the working language is the language that has been chosen in addition to the federal working language and international language like English. Due to the language is taken as employment selection criteria; there is a positive effect on the probability of leaving unemployment. This study takes the mother tough language as the factors that affect employment duration. It categorically entered in the analysis as;

Language variable is string variable; Afan Oromo string value of 2 and LANG1 dummy in state software Amharic as LANG2 WITH string variable with value of 3, Triggering = LANG3 with string value of 4, guragenga as LANG4 with string value of 5and other languages as LANG6 with string value of 6

Preference for Job (JOBPERF)

It is measured using self perceived preference which takes 0 for a public job, 1 for NGO's, 3 for a private organization and 4 for self-employment.

A person having a preference for job suffered greater Unemployment duration. It takes time for which the person stays without a job unless he or she engaged in temporary employment.

In a market economy, the economic resource distributed among the public, private enterprise and firms. Therefore, an individual labour supplier has the right to choose employment sector. This choice may take the time to be employed, so that unemployment duration rises.

Government or Private Schooling

It is a dummy variable which takes 1 for government and 0 for private university attended. The individual who has obtained his last degree from Government Institution suffer lesser unemployment duration, as compared with an individual obtaining the last degree from private university or college. The reason was that difference in education quality and students those scored high grade join the government institution.

Salary or received income (ACTUAL)

The employed person gets a salary of his or her employment. The unemployed person also needs income for which he can sustain his life. This income may receive from family, relatives, friends, or from the temporary job. This income type is the opportunity cost of employment for those actually employed. Therefore the high gap between incomes received by the two people affects the probability of leaving unemployment positively. The high gap shows a high probability of leaving unemployment.

The actual salary is taken for employed person while the average estimated income received from all source is for that unemployed individual.

Training or Developed skill (DEVSKIL)

It is dummy variable that takes 1 for a person who has an extra skill to his/her degree. If any training program attended which enhance skill development, the person with skill developed has the probability of suffering lesser Unemployment Duration as compared to the person having no developed skill.

Head of Household (HHH)

It is dummy variable that takes 1 for being head of household and 0 otherwise. A person being head of household suffer lesser Unemployment Duration as compared to a person who did not be head of household because of responsibility of his family; he accepts the job even at a low salary (low reservation wage) thus reduces the Unemployment Duration.

Household Size (FAMLY1 and FAMLY2)

For Larger household size, an individual expected to suffer less unemployment duration because the individual accepts job offer readily due to the burden of large family size. FAMLY1 stands for the size of the own family member, while FAMLY2 is for his or her parent's household size.

Temporary Job (INMCFTEJOB)

An individual who was self-employed or engaged in his own business or temporary job suffers lesser hazard rate, thus has larger unemployment duration as compared to a person who was not engaged in the temporary job.

Job Opportunity (JOOPRTU)

Is the ratio of the number of applicants for job vacancies to the number of accepted applicants observed by graduates during their job search. It was taken as the proxy variable for the demanded efficiency or simply an economic efficiency. Its value ranges between 0 and 1 but multiplied by 100 to convert it into percentage. The higher percentage shows a high probability of leaving unemployment so that face lesser unemployment duration.

Self-Expected Unemployment Duration (EXUNDUR)

The expectation of unemployed individual positively affects the probability of leaving unemployment. Those have high expectation expects they will be employed after few months, while those with low expectation expect many months of unemployment duration. It is a continuous variable in this study.

The Reservation Wage (RESEVWAGE)

The job offers are accepted or rejected depending on whether they are above or below the reservation wage. High wage offers relative to the reservation wage result in high exit rates from unemployment. The reservation wage is a continous variable that the respondents not accept job offer bellow this wage level. Higher reservation wage leads to higher hazard ratio, thus its impact is positive.

Family background

The individual family has bases in determining their son's character. Graduates with better family economic, educational and status influence personal as well as educational qualification highly in good status than a graduate from low family status born. Especial, personal expectation, and condition during unemployment support. In this study, we take parent's education level, profession (a sector in which they have employed) considered as a factor determining unemployment duration. Parent's education level is taken as, if they well educated, te probability of leaving unemployment for their son becomes high. It is a categorical variable in this study.

The second variable is parent's employment sector (Mother Employment sector (MOTHEMSEC) and father employment sector is FATHEMSEC). It is also a categorical variable that categorizes if parents employed in public or government sector, non-government, private and self-employed. When large employer sector is public, the person whose parent's employment is in the public sector has a higher probability of leaving unemployment. Thus for public sector dummy, it is positive effect exist.

Financial Difficulties Faced During Unemployment (FINDIFF)

One of the incidences of unemployment is a lack of finance to maintain life-sustaining consumption. Based on the level of supports gained, different individuals face a different level of difficulties. For those who have high financial support, it is easy and duration of unemployment may rise. Taking this variable as a self-perceived categorical variable, for those who receive high-income support dummy that means those face low financial difficulty of unemployment duration, the probability of living unemployment is positively related to the financial difficulty faced by those group receive low financial support or face high financial difficulties.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1. Descriptive Analysis of Graduate Unemployment Duration

4.1.1. Exit Status

Unemployment duration is a completed spell for those who are employed. It is an on-going spell for those who are unemployed. Data in Table1 shows; from total sample, the largest proportion of unemployment spells (72.4%) ended with the exit state. Over a one-third (27.2%) of spells are (still enduring in the status of unemployment).

TABLE 1: Case Processing Summary(Jimma Town April 2017)

		N	Percent
Cases available in analysis	Event	181	72.4%
	Censored	68	27.2%
	Total	249	99.6%
Cases dropped	Cases with missing values	1	0.4%
	Cases with negative time	0	0.0%
	Censored cases before the earliest event in a stratum	0	0.0%
	Total	1	0.4%
Total		250	100.0%
a. Dependent Variable: Unemployment duration			

Source: own survey; Jimma Town April 2017

4.1.2. Characteristics of Respondents and Unemployment Duration

4.1.2.1. Categorical Variables

The data in Table 2 in the appendix; summarizes the mean and standard deviation of unemployment duration by observed characteristics (categorical) variables. Among female graduate respondents, 31.2% were still in unemployed states while the large portion 68.8 was

employed. 25.4 of male respondent were in unemployed condition while 74.6 completed spells of unemployment. The percent of a female who is unemployed is larger than male. In addition, from Table 3 below, the mean unemployment duration of female (15.23 months), is longer than male (12.41months).

By ethnicity, there are noticeable mean differences which range from the lowest 3.5 to 22.95 months. Oromo and Amhara graduates have the mean unemployment duration of 10.41 and 10.79 months which shows the insignificant difference as compared to 3.5months for Tigrian to 22.95months for Gurage, but the number of the respondents of the two ethnic grope in the sample is too low and therefore significant inference would not take. The respondent's ethnicity and unemployment duration are shown in Table3 below summarizes the mean and standard deviation of unemployment duration by observed characteristics (categorical) variables.

TABLE 2: Mean and Median for survival time

Means and Medians for Survival Time(Jimma Town April 2017)

ETHNICITY	Mean				Median			
	Estimate	Std. Error	95% Confidence Interval		Estimate	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound			Lower Bound	Upper Bound
OROMOO	13.589	1.310	11.021	16.157	7.000	.551	5.919	8.081
AMHARA	12.796	1.732	9.401	16.191	8.000	.559	6.904	9.096
TIGRE	3.500	.707	2.114	4.886	2.000	1.061	.000	4.079
GURAGE	34.291	4.372	25.722	42.861	32.000	5.635	20.955	43.045
DAWRO	23.182	2.616	18.055	28.309	22.000	2.421	17.255	26.745
OTHERS	27.863	3.453	21.094	34.632	24.000	8.195	7.937	40.063
Overall	17.935	1.190	15.602	20.269	10.000	1.010	8.020	11.980

a. Estimation is limited to the largest survival time if it is censored.

Source: own survey; Jimma Town April 2017

Respondent's Language and Ethnicity characteristics show similar figures of mean unemployment duration. These were due to the high correlation between the two characteristics and the only slight difference is due to the same language may experience by different ethnic grope. For example, the mean unemployment duration 3.71months is lowest and the largest is 22.98 months for language difference, which is much similar to the case in an ethnic variable.

The lowest mean unemployment duration is exhibited by orthodox religion followers followed by Muslim, but the difference is very small. The large mean unemployment duration was experienced by respondent's those were did not follow dominantly known religion or those have no religion at all. Protestant and waqeffata followers have similar mean and the gap of mean unemployment duration was very small for Muslim, orthodox, protestant and waqeffata. See Table 2 and Table 3 Above summarizes the mean and standard deviation of unemployment duration by observed characteristics (categorical) variables

Among the two university entry qualifications exist in Ethiopia, graduates entered university by college diploma certificate qualification was 31.2% of the sample has larger mean unemployment duration of 13.86 months as compared to those entered university by ELEELE qualification certificate 68.85% of the sample is 13.02 months.

4.1.2.2. Continuous Variables

Table 3: Correlation between continuous variables and unemployment duration

Continuous variables	Correlation with UNEDUR	P-value	Significance (2 tailed)
AGE	**-.089**	**.160**	**Not significant**
FAMILY 1	**-.121**	**.056**	**At 5%**
FAMILY 2	**0.029**	**.644**	**Not significant**
FMLF	**-.127**	**.045**	**At 5%**
CGPA	**-.122**	**.054**	**At 5%**
JOBSEFOR	**0.046**	**.467**	**At 5%**
JOOPPRTU	**-.242**	**.001**	**At 1%**
EXUNDU	**0.328**	**.000**	**At 1%**
EXPSAL	**-.242**	**.000**	**At 1%**
RESWAGE	**-.154**	**.015**	**At 1%**
ACTSEL	**-.398**	**.000**	**At 1%**

Source: Author computation by Stata 13

Table 4 above and Table 9 in Appendix B; displays correlations between unemployment duration and rescaled observed characteristics (continuous). Variables cumulative grade average point (-0.122), family size1 (-0.121), family member labor force (-0.127), job opportunity (-0.209), expected unemployment duration (0.328), expected salary with (-.242), reservation wage (-.154), actual salary with (-.398).

All these variables are significant at 1% (2 tailed) and family member labor force and reservation wage are significant at 5% (2 tailed) while cumulative grade average point and

family size1 are not significant. Variables with a correlation less than 0.10 are age (-.089), family size2 (0.029) and job search effort (0.046), thus I excluded both of them from the model. Variable job-opportunity also excluded from the PH models due to high correlation with the variable expected unemployment duration.

From correlation result, the Burden of unemployment duration varies quite dramatically across different socio-demographic groups. The age group 22 is the minimum and 30 is the maximum. But at their graduation time, there was no significant age difference among all graduates and the difference is due to the retrospective data run back for five year.

4.2. Econometric Analysis

4.2. 1. Comparison of Survival Experience

The Kaplan-Meier survivor estimator is used to investigate the significant differences between the survival probabilities of graduate unemployment duration by age groups. The Kaplan-Meier survivor estimators for all characteristics plotted in Figure A1.1 in Appendix A. The Figure shows that age group less than 24 years old had slightly higher survival probability compared with others. Those unemployed with age 26 and above have less survival probability. Both the log-rank and the Breslow tests show that there are significant differences among age groups with respect to survival probability. Among marital status, single graduate unemployment duration had highest survive probability and it was also statistically significant ($p<0.00$). The information presented above is presented in Figure 1, In Appendix A.

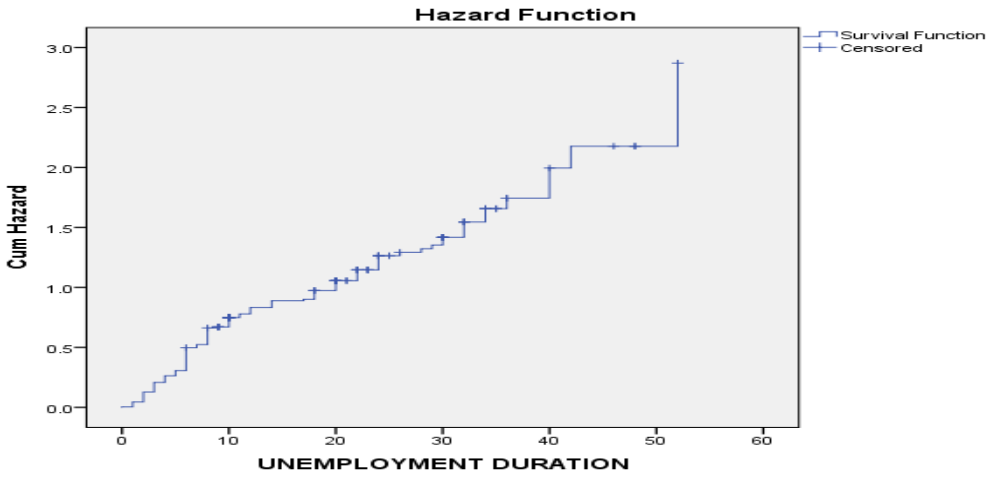
The differences of survival probability of graduate unemployment duration presented seen in Table 2 and Figure 1 in Appendix 1.

4.2.2. Non-parametric Estimation

Figure 1 in appendix A; plots the Kaplan-Meier survival function. It reflects how many people stay in unemployment 'survive' unemployment as time proceeds.

We used the Kaplan-Meier survival function to calculate the product-limit estimate of the hazard function. It reflects the number of people leaving unemployment at t, relative to the total number of people unemployed at time t and is plotted in figure 2.

Figure1: Hazard rate estimated from a Kaplan-Meier survival function



Source: Author computation by Stata 13

The hazard rate in figure 1 above shows; it is followed an upward trend. The second observation is that the hazard rate does not exceed 3%. Thirdly, the hazard rate peaked at integer numbers; one year (12 months), two years (24 months), etc.

For the cases where the duration was directly observed, reflects the tendency of respondents to round their duration to integer months. For the other cases, the clustering around integer values was a consequence of the way the Variable was constructed. For the currently unemployed, the duration was calculated as current time minus the time job search was started.

For development economists, the non-negative hazard may not be surprising. It is intuitively appealing that people are waiting in unemployment for good jobs. However, there is little or no hard evidence. I am not aware of any paper that investigates the issue empirically in a sound econometric way. It is therefore important to establish the fact of non-negative duration dependence beyond a reasonable doubt. We proceed by using a parametric framework.

4.2.3. Cox Proportional Hazard Model

We used the term duration analysis and duration model in their most general sense. In fact, we did not concentrate on duration but rather on the hazard rate, the probability of leaving

unemployment at time "t". Since the latter is conditional on having been unemployed until "t", hazard rate and duration are interdependent. Assumptions on the distribution of duration determined the course and functional form of the hazard rate, and vice versa.
We first analyzed the course of the hazard rate and then study the determinants of the hazard rate.

4.2.4. Parametric Analysis

We used the Akaike Information Criterion (AIC) to compare the parametric models. The AIC compare the likelihood scores while taking into account the degrees of freedom used in each model.
The AIC is an unorthodox, relative and arbitrary measure. It is unorthodox criteria because it has no confirmed base in theory. Relative because it only shows which one of the evaluated models performs best relative to the others, not whether that model is appropriate in itself. The AIC is also arbitrary in the way it penalizes: one could use a factor three instead of two to penalize for the number of covariates and ancillary parameters. The obvious advantage of the AIC is that models that it offers a way of comparing non-nested models.

An issue of special concern is the presence of unobserved heterogeneity. Is the non-negative duration dependence we observe genuinely? or is it the result of self-selection? In other words, does the probability of leaving unemployment really increase with time in unemployment, or does it increase because of those with the highest employment probabilities, due to characteristics we do not observe, remain longest in unemployment? We, therefore, control for heterogeneity in all models.

We started from a generalized gamma model both with the gamma and inverse Gaussian heterogeneity, the result shows it is the only constant fitted model . Testing the appropriate restrictions, we rejected the lognormal against the gamma at the p=0.00 significance level. we also rejected the Weibull at p=0.00 significance level. The log-normal score best followed by Weibull in compared the log likelihood.
To enable comparison with non-nested models, we calculated the Akaike Information Criterion (AIC). We observed that the exponential followed by Gompertz model scores best; Weibull and log-normal models relatively score moderate, while log-logistic found to be poorer.

The results remain unchanged when we use inverse Gaussian heterogeneity, instead of Gamma, although the log-logistic and Weibull reached slightly to a higher maximum likelihood. According to the AIC, exponential model which is the restricted version of Weibull model has scored better than any of another model. Testing the exponential as a restriction of the Weibull, we rejected it at p=0.00. For their computed (AIC) value, see Table 4, Table 5 and Table 6 below.

AIC= -2*log likelihood + 2(number of covariates + ancillary parameters)

Number of covariate = number of variables + constant – 1

TABLE 4: Fully Parametric with Gamma Heterogeneity **(Jimma Town April 2017)**

	Log likelihood #	covariate * parameters		AIC
1 exponential regression	**-255.99921**	**64**	**0**	**639.99842**
2 weibull regression	**-213.5587**	**64**	**2**	**557.1174**
3 gomperta regression	**-234.09249**	**64**	**2**	**598.18498**
4 log normal regression	**-195.98186**	**64**	**2**	**521.96372**
5 log logistic regression	**-188.92499**	**64**	**2**	**507.84998**

Source: Author computation by Stata 13

Table 5: Fully Parametric with Invgaurssian Heterogeneity **(Jimma Town April 2017)**

	Log likelihood #	covariate * parameters		AIC
1 exponential regression	**-255.99921**	**64**	**0**	**639.99842**
2 weibull regression	**-213.5587**	**64**	**2**	**557.1174**
3 gomperta regression	**-234.09249**	**64**	**2**	**598.18498**
4 log normal regression	**-195.98186**	**64**	**2**	**521.96372**
5 log logistic regression	**-188.92499**	**64**	**2**	**507.84998**

Source: Author computation by Stata 13

Table 6: Semi parametric regression (Jimma Town April 2017)

	Log likelihood #	covariate * parameters		AIC
Cox partial likely hood	-781.08205	29	0	1620.1641

Source: Author computation by Stata 13

4.3. The determinants of the hazard

To interpret the determinants of the hazard rate, we used a proportional hazard (PH) rather than an accelerated failure time (AFT) model. Proportional Hazard (PH) models model the hazard rate as a function of explanatory variables, while Accelerated Failure Time (AFT) models model the log of duration as a function of explanatory variables.

The Gompertz model is an example of a PH model, while the lognormal, log-logistic and generalized gamma models belong to the AFT family. The Weibull model, of which the exponential is a special case, can be written as a PH as well as an AFT model.

In PH models the hazard rate is written as a product of two components: one depending on t alone, which we call the baseline hazard, and one depending on the explanatory variables alone. The strong assumption these models make is that the explanatory variables have the same proportional effect on all points of the hazard. According to this assumption, having Cumulative grade point average **(CGPA**) would have the same effect on the hazard rate at 1 year of unemployment as it has at 4 years of unemployment.

From a theoretical point of view, the proportionality assumption means that the two components, the baseline hazard, and the explanatory variables enter the hazard function multiplicative. It turns out that this cannot readily be justified on economic-theoretical grounds. Only if the optimal strategy of the individual is myopic, proportionality can be deduced from theory (van den Berg, 2000).

Myopic behavior may occur when discount rates are very high (or infinite). Another factor leading to myopic behavior is repeated search. When the agent knows there is a 'second chance', he may behave myopic. Although there is little evidence to support any of these conditions, PH models are generally used to investigate the determinants of transition.

From a career perspective, the environment is certainly high-risk given that the unemployment rate is very high, which may induce high discount rates. Finally, youngsters may be more likely to discard the future. There is indeed evidence that young people behave more risk loving than adults (Pathillo and Söderbom, 2000). Before interpreting the results, we test the proportionality assumption.

4.3.1. Testing Proportionality

The spirit of the test is to see whether the covariance between the residual and the time-dependent regressors was large.

Table 7: Summarizes the Test of Proportionality Assumption

```
. estat phtest

      Test of proportional-hazards assumption

      Time:  Time
      ------------------------------------------------------------
                  |                 chi2       df       Prob>chi2
      ------------+-----------------------------------------------
      global test |               20.18       29          0.8873
      ------------------------------------------------------------

note: robust variance-covariance matrix used.
```

Source: Author computation by Stata 13

The test shows the null hypothesis that state, the model is proportional, against the alternative which is not proportional.

The global test shows chi^2=20.8 with a degree of freedom =29 and the p-value is 0.8873. We do not reject the null hypothesis and thus, the model is proportional. Since the assumption is of proportionality strongly accepted, it implies that the coefficients of the explanatory variables would be interpreted in the usual way. The test allows for different uses of time, but the results are robust whichever time scale would use, for the model containing all observations, the lowest p-value is 0.00.

The Cox model scores strong relative to other models according to the AIC, it performs substantially better than any of the fully parametric models. Inspection of the goodness of fit for the Cox model can be done by comparing the observed and expected number of events, as pointed out by Hosmer and Lemeshow (1999) and developed by Coviello (2000). Even though many variables are not significant with p- value of below 0.005, for the model with all observations, the observed and the expected risk are significantly different in any of the deciles.

Interestingly enough, the point estimates obtained by the Cox-model do not vary significantly from the estimates obtained from the other models. In general, the estimated coefficients turn out to be very robust. They do not differ significantly whatever parametric specification we use, as can be seen in Table 4.8 below. It summarizes the result of Cox proportional model using Breslow method for ties.

The coefficients reflect the change in log hazard due to a one-unit change in the concerned variable.

4.3.2. Results from Robust Proportional Hazard Regression

Table 8: Results summary from robust Cox proportional regression (Jimma Town April 2017)

variables	Hazard ratio	P-value	effect
CGPA	1.049249	0.003	4.9% (+ve)
EXUNDUR	0.8327676	0.000	16.7% (-ve)
ACTSEL	1.000308	0.000	.003% (+ve)
LANG3(Tigringa)	3.929747	0.001	92.9%(+ve)
LANG4(Guragegna)	0.3648902	0.001	63.5%(-ve)
LANG5(Others)	0.5072699	0.001	50%(-ve)
FINDIFF3(Moderate)	1.993527	0000	99%(+ve)
MOTHEL5 (Coll. dip.)	2.246774	0.001	24.65(+ve)
DEVSKILL	2.01249	0.000	1.2%(+ve)
FATHEMSEC2(NGO)	2.743429	0.000	74.3%(+ve)
FATHEMSEC3(Private)	0.4485861	0.041	44.85(-ve)
FATHEL2(read/write only)	0.5086714	0.008	50%(-ve)
PRACTIUM	0.5958774	0.004	59.5(-ve)

Source: Author computation by Stata 13

From table7 above;

Holding everything else constant; CGPA, expected unemployment duration, actual salary, languages like Tigrigna, Guragegn, languages other than Afan Oromo and Amharic, financial difficulties faced during unemployment, mother education level of diploma, graduates having developed skill, father employed in non-government sector or private organization and or educational practicum taken during education have a strong positive influence on the hazard rate. All these variables are significant at 1% level of significance except father employed in private sector is significant at 5%.

All else equal, the effect of CGPA difference on the probability of leaving unemployment is about 4.9% higher for graduate unemployment with high CGPA than the graduate unemployed with CGPA of one percent less, if he had not already done so. The positive effect shows that the probability of leaving unemployment in comparison of graduates between with one percent higher CGPA relative to graduates with one percent lower CGPA is directly related.

In this study, graduates expectation on employability has got very important influence in relation to other factors. Due to high expectation, Graduates with the same in all factors but only having a 1% higher expectation, differ in the probability of leaving unemployment by 16.7% from a graduate with 1% lesser expectation. Here high expectation implies less month of unemployment duration, while the low expectation is one month more duration of time expected in unemployed status.

Students those take educational practicum has 59.5% less hazard effect or less unemployment duration than those did not take an educational practicum, keeping all other factors constant. Graduates who have developed Skill have the higher advantage of 20% probability of leaving unemployment than those not have developed skill.

Those graduates facing with moderate financial difficulties while they were not employed have a 99.3% which is very higher probability than the low financial difficulty graduates facing.

Actual salary shows the income earned the difference between unemployed and employed individual has a positive effect on the probability of leaving unemployment by 0.03%, very small percent but significant.

Parent's characteristics also have an effect on hazard rate, especially the father's profession or employment sector, father and mother education level. Compared to a mother who has no attended school at all, with a mother with a college diploma, there is 24.6% hazard rate difference or less duration of unemployment. This Implies a graduated individual, whose mother with higher education level increases the probability of leaving unemployment more than a graduated individual whose mother is not attended any school by 24.6%. The effect of father education level also has the similar effect on their graduate unemployment duration. Who read and write only has 50.8% less effect on hazard rate than a father who no attended school at all.

Unemployed graduate's Father employed in private and or in a non-governmental organization has a 44.8% and or 74.3% less effect than graduate's father employed in a government organization respectively. It may have a direct effect that fathers recommend their sons and that this hiring practice is largly applied in the public sector.

Alternatively, it may indicate an information advantage, which is especially relevant for the public sector since it is much larger than the private sector. Most likely, it functions as a proxy for household income, indicating that youngsters from richer households leave unemployment earlier than those from poorer households. This is in sharp contrast with earlier research which argues that unemployment in developing countries is a 'luxury' [see Dickens and Lang (1996)] or 'bourgeois' phenomenon [see Myrdall (1968)].

It is interesting to combine these results with those obtained from the analysis of the incidence of unemployment (see Serneels (2000), which shows that those with a father in self-employment are less likely to become unemployed in the first place. While here we find that, once unemployed, those with a father in the public sector tend to spend less time in unemployment. This may have to do with waiting times for formal screening. It may indicate that those with a father in the public sector are more relaxed about unemployment since they know they will leave it relatively soon anyway.

From demographic factors language also affects graduate unemployed hazard rate significantly. Languages Tigrigna, Gurage, and other languages other than Afan Oromo and Amharic have a 92.9%, 36.4% and 50.7% effect on hazard rate compared to Afan Oromo respectively. All have a positive effect; Tigrigna has a stronger effect than the others have

CHAPTER FIVE

COCLUTION AND RECOMMENDATION

5.1. Conclusion

Cox-proportional hazard model score best of all other models. Average Graduate Unemployment duration in southwest Ethiopia is 13.28 months.

When we look at the determinants of the hazard rate, we find that expected unemployment duration, CGPA, parent's educational and economic background, financial difficulties faced during unemployment, educational practicum, developed skill and difference in languages have a positive and significant effect, which shows increases in the probability of leaving unemployment. Father's profession also has an important effect. Those with a father working in the public sector have significantly smaller unemployment duration. This can be interpreted as an information effect, hiring practices, or a household welfare effect.

5.2. Recommendation

Based on the findings of this study, some factors need policy intervention which includes;

- The role of the government in the planning of growth should enhance not only usage of already existed technology, but the way in which educated labor to invent and develop technologies that build the economies capacity to observe all type of labor resources.
- The Government should develop a National Manpower Plan to outline the skill needs of the country and how to facilitate the training of such skills.
- Individuals who are unemployed know should undertake skill development program or entrepreneur activities that enhance self-employment and build the capacity of the private organization, so that minimize the income lost due to prolonged unemployment duration, and hence unemployment hazard reduced.
- There should be a stronger collaboration between the universities and end-users of graduates on the skills requirements so that they can structure their courses accordingly.
- The universities should make effort to shift emphasis from theory type education to practical oriented type;

- The Government should take steps to improve facilities and conditions of service of Stakeholders in education to enhance quality delivery of education.
- The Government and the financial institutions should help settle the young graduates with soft loans and other facilities for self-employment.
- The public should be educated to put a value on all types of jobs and not to discriminate among jobs.
- Graduates need a new mental orientation to see their courses beyond theory to practical experiences.

Finally, the important point is for the individual at school currently has to rely on acquiring a quality education, participation in skill development activities.

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Appendexes

Appendix A: Kaplan Meier

Figure 1: Kaplan Meier survival hazard function for status censored (Jimma town April, 2017).

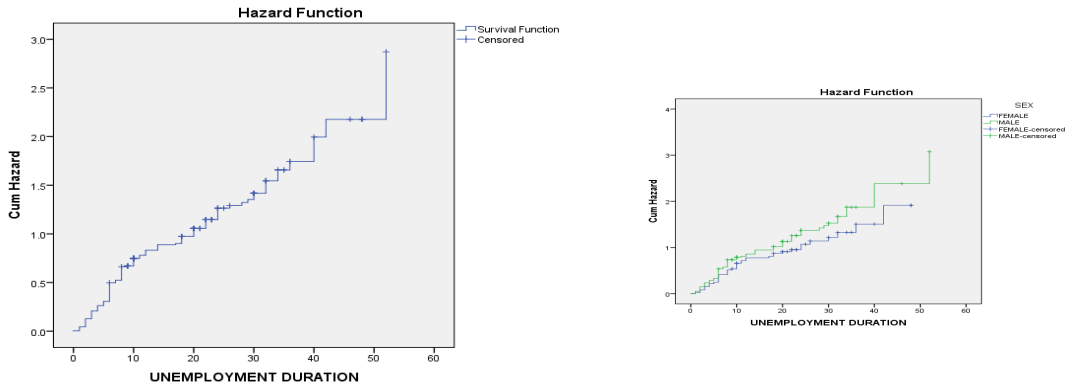
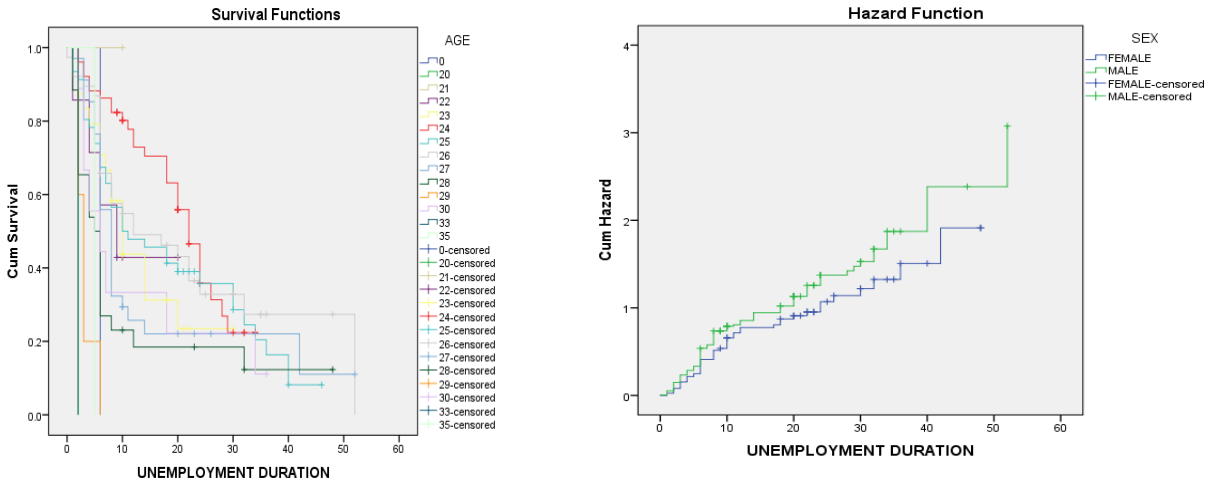
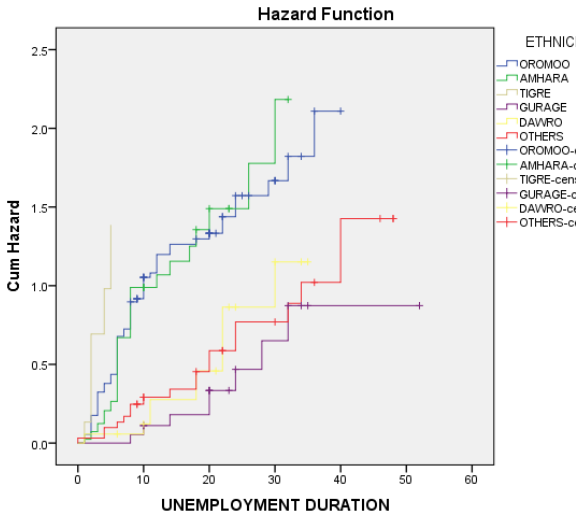


Figure 1: Kaplan Meier survival hazard function for status at different observed characteristics (Jimma town April, 2017).

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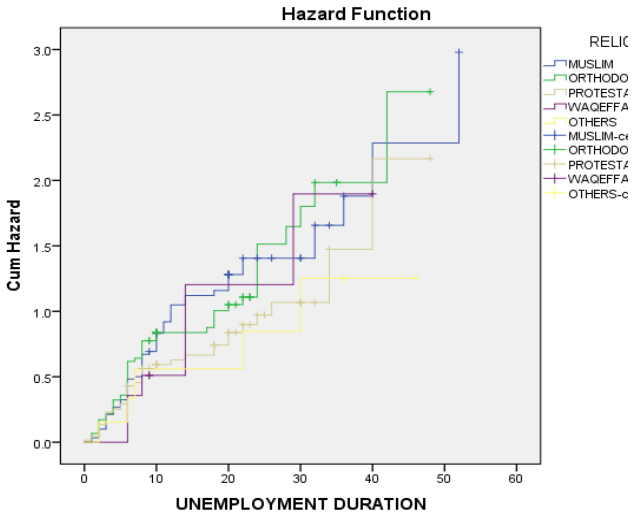
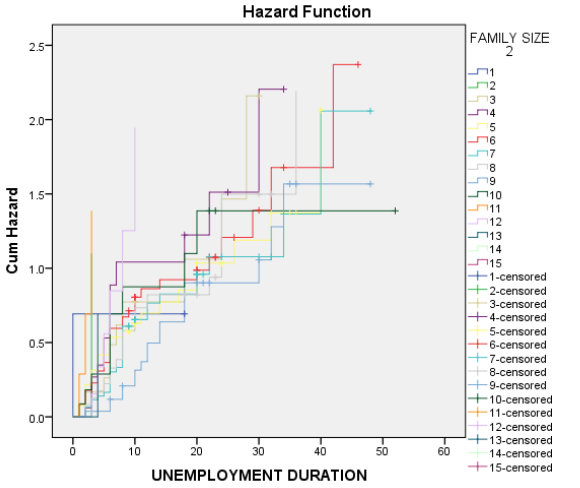
Cum Hazard
UNEMPLOYMENT DURATION
ETHNIC
OROMOO
AMHARA
TIGRE
GURAGE
DAWRO
OTHERS


Hazard Function
Cum Hazard
UNEMPLOYMENT DURATION
RELIG
MUSLIM
ORTHODO
PROTESTA
WAQEFFA
OTHERS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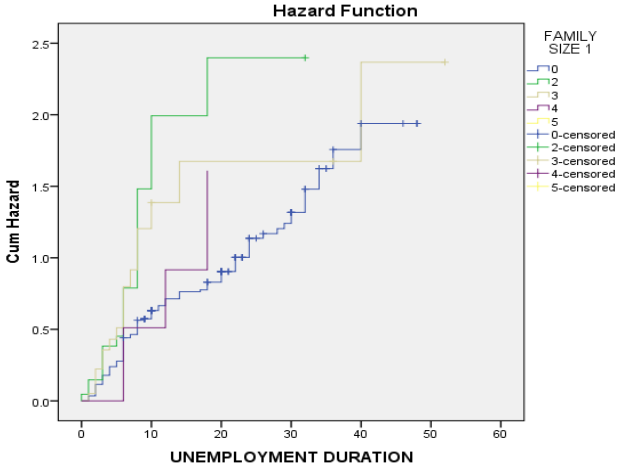
Cum Hazard
UNEMPLOYMENT DURATION
FAMILY SIZE 2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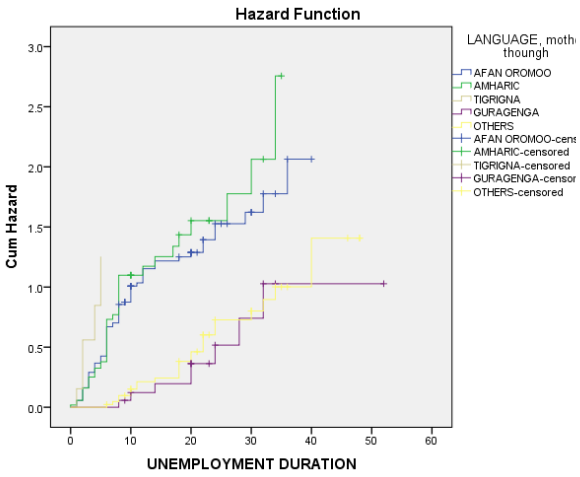
Cum Hazard
UNEMPLOYMENT DURATION
FAMILY SIZE 1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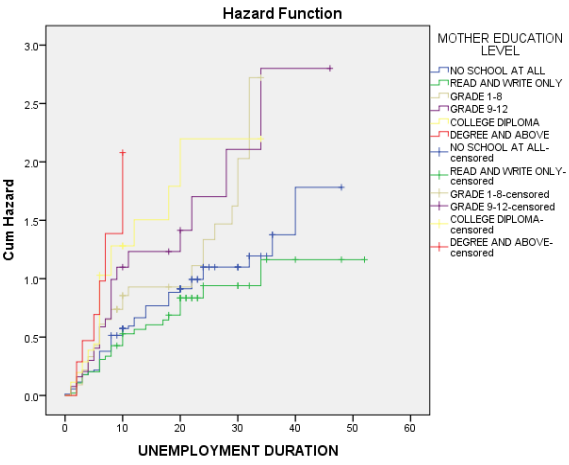
Cum Hazard
UNEMPLOYMENT DURATION
LANGUAGE, moth thoungh
AFAN OROMOO
AMHARIC
TIGRIGNA
GURAGENGA
OTHERS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Cum Hazard
UNEMPLOYMENT DURATION
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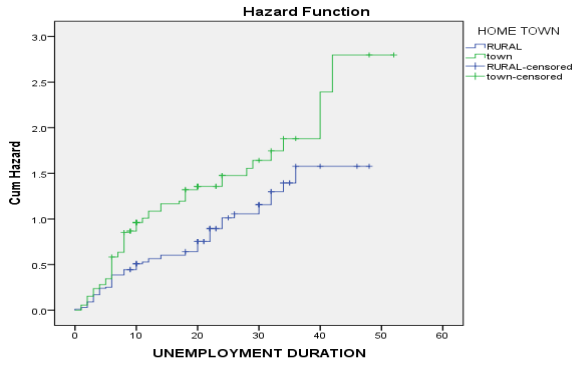
GRADE 9-12
COLLEGE DIPLOMA
DEGREE AND ABOVE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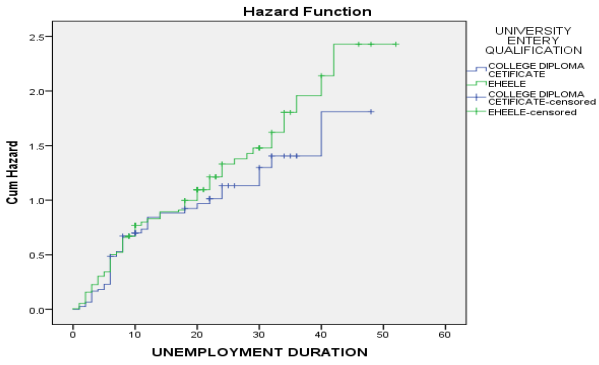
RURAL
town
RURAL-censored
town-censored
Cum Hazard
UNEMPLOYMENT DURATION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COLLEGE DIPLOMA CETIFICATE
EHEELE
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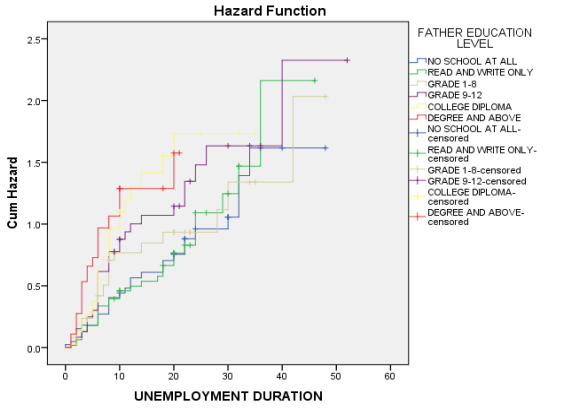
EHEELE-censored
Cum Hazard
UNEMPLOYMENT DURATION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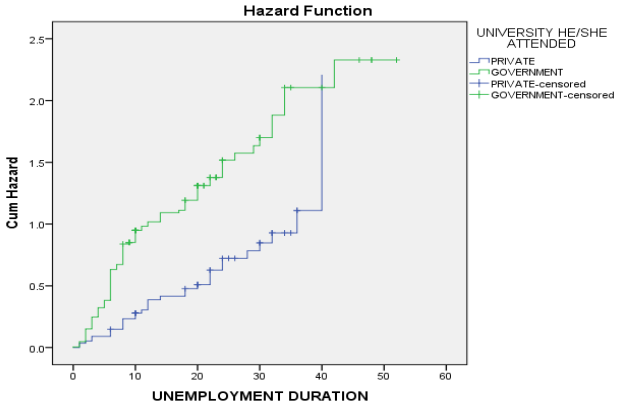
READ AND WRITE ONLY
GRADE 1-8
GRADE 9-12
COLLEGE DIPLOMA
DEGREE AND ABOVE
NO SCHOOL AT ALL-censored
READ AND WRITE ONLY-censored
GRADE 1-8-censored
GRADE 9-12-censored
COLLEGE DIPLOMA-censored
DEGREE AND ABOVE-censored
Cum Hazard
UNEMPLOYMENT DURATION


Hazard Function
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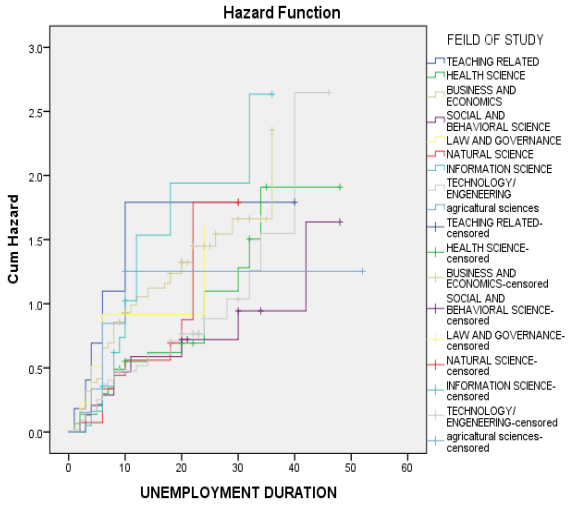
PRIVATE
GOVERNMENT
PRIVATE-censored
GOVERNMENT-censored
Cum Hazard
UNEMPLOYMENT DURATION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FEILD OF STUDY
TEACHING RELATED
HEALTH SCIENCE
BUSINESS AND ECONOMICS
SOCIAL AND BEHAVIORAL SCIENCE
LAW AND GOVERNANCE
NATURAL SCIENCE
INFORMATION SCIENCE
TECHNOLOGY/ ENGENEERING
agricaltural sciences
TEACHING RELATED-censored
HEALTH SCIENCE-censored
BUSINESS AND ECONOMICS-censored
SOCIAL AND BEHAVIORAL SCIENCE-censored
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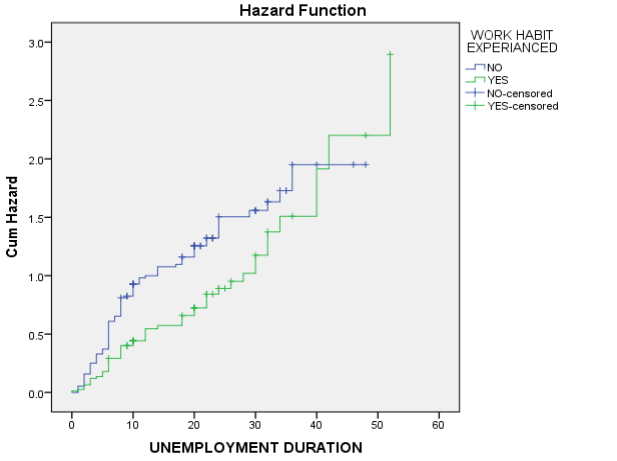
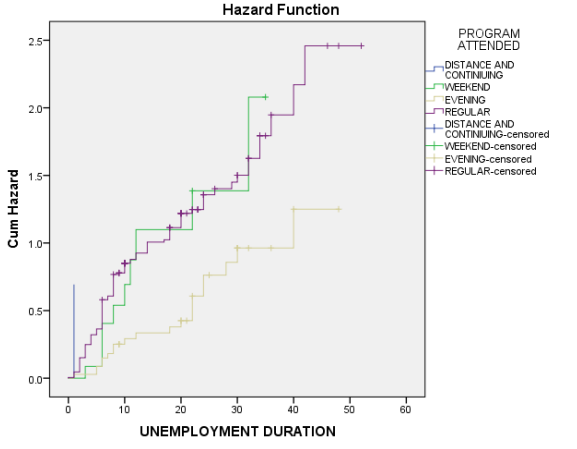
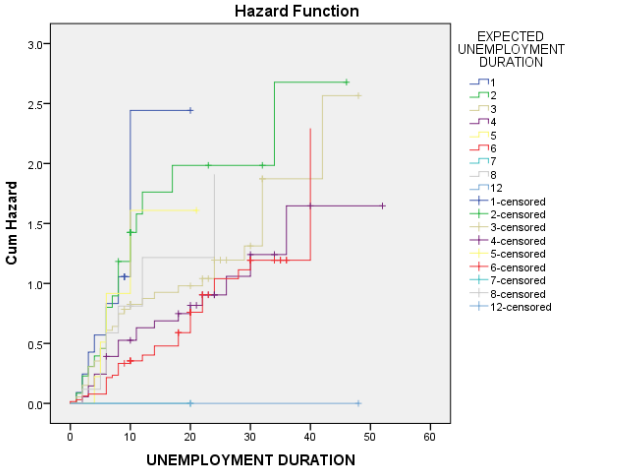
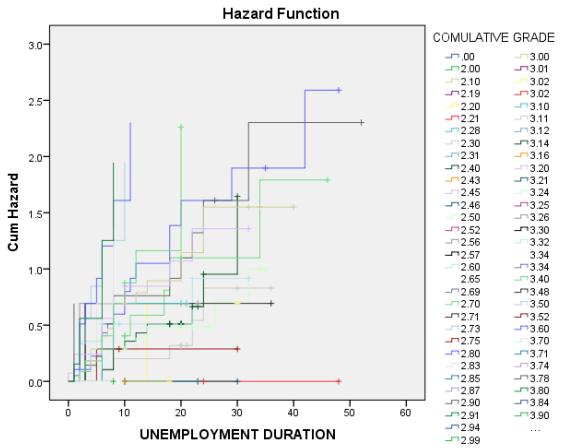
agricaltural sciences-censored
Cum Hazard
UNEMPLOYMENT DURATION


Hazard Function
WORK HABIT EXPERIANCED
NO
YES
NO-censored
YES-censored
Cum Hazard
UNEMPLOYMENT DURATION


Hazard Function
PROGRAM ATTENDED
DISTANCE AND CONTINUING
WEEKEND
EVENING
REGULAR
DISTANCE AND CONTINUING-censored
WEEKEND-censored
EVENING-censored
REGULAR-censored
Cum Hazard
UNEMPLOYMENT DURATION


Hazard Function
EXPECTED UNEMPLOYMENT DURATION
1
2
3
4
5
6
7
8
12
1-censored
2-censored
3-censored
4-censored
5-censored
6-censored
7-censored
8-censored
12-censored
Cum Hazard
UNEMPLOYMENT DURATION


Hazard Function
Cum Hazard
UNEMPLOYMENT DURATION
COMULATIVE GRADE
.00
2.00
2.10
2.19
2.20
2.21
2.28
2.30
2.31
2.40
2.43
2.45
2.46
2.50
2.52
2.56
2.57
2.60
2.65
2.69
2.70
2.71
2.73
2.75
2.80
2.83
2.85
2.87
2.90
2.91
2.94
2.99
3.00
3.01
3.02
3.02
3.10
3.11
3.12
3.14
3.16
3.20
3.21
3.24
3.25
3.26
3.30
3.32
3.34
3.34
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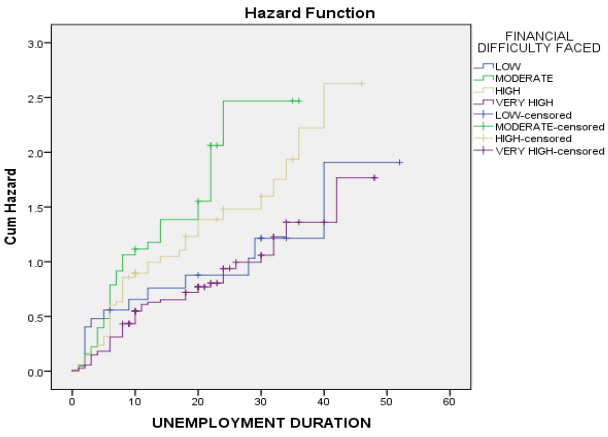
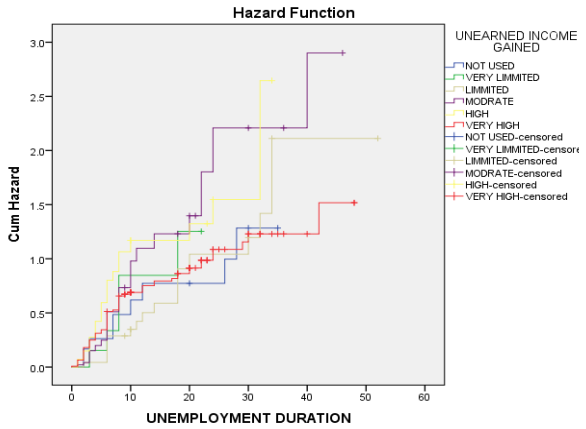
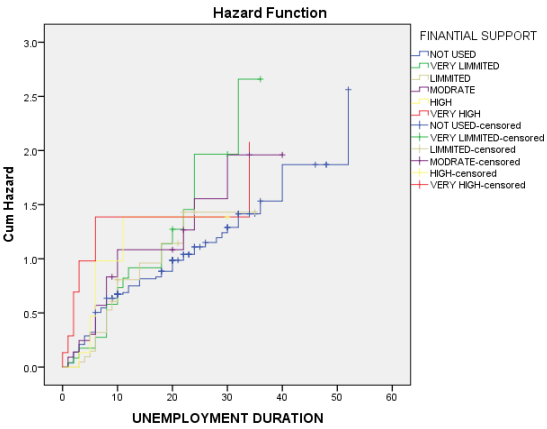
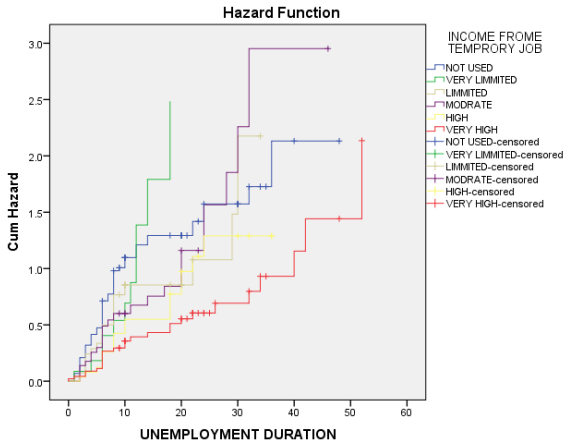
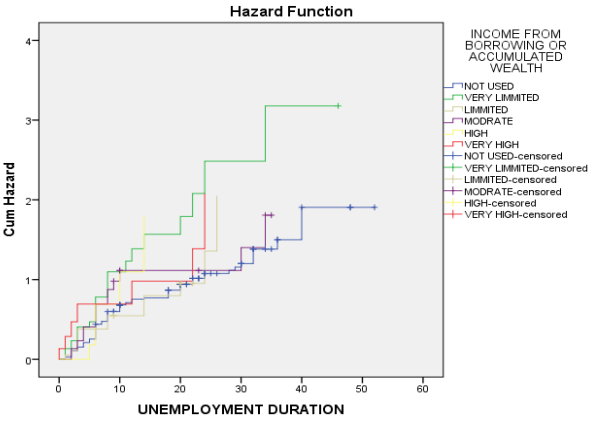
3.74
3.78
3.80
3.84
3.90
...


Hazard Function
Cum Hazard
UNEMPLOYMENT DURATION
FINANCIAL DIFFICULTY FACED
LOW
MODERATE
HIGH
VERY HIGH
LOW-censored
MODERATE-censored
HIGH-censored
VERY HIGH-censored


Hazard Function
Cum Hazard
UNEMPLOYMENT DURATION
UNEARNED INCOME GAINED
NOT USED
VERY LIMMITED
LIMMITED
MODRATE
HIGH
VERY HIGH
NOT USED-censored
VERY LIMMITED-censor
LIMMITED-censored
MODRATE-censored
HIGH-censored
VERY HIGH-censored


Hazard Function
Cum Hazard
UNEMPLOYMENT DURATION
FINANTIAL SUPPORT
NOT USED
VERY LIMMITED
LIMMITED
MODRATE
HIGH
VERY HIGH
NOT USED-censored
VERY LIMMITED-censored
LIMMITED-censored
MODRATE-censored
HIGH-censored
VERY HIGH-censored


Hazard Function
Cum Hazard
UNEMPLOYMENT DURATION
INCOME FROME TEMPRORY JOB
NOT USED
VERY LIMMITED
LIMMITED
MODRATE
HIGH
VERY HIGH
NOT USED-censored
VERY LIMMITED-censored
LIMMITED-censored
MODRATE-censored
HIGH-censored
VERY HIGH-censored


Hazard Function
Cum Hazard
UNEMPLOYMENT DURATION
INCOME FROM BORROWING OR ACCUMULATED WEALTH
NOT USED
VERY LIMMITED
LIMMITED
MODRATE
HIGH
VERY HIGH
NOT USED-censored
VERY LIMMITED-censored
LIMMITED-censored
MODRATE-censored
HIGH-censored
VERY HIGH-censored

Appendix B; Description of Data

TABLE 1: the mean and standard deviation of unemployment duration by observed characteristics (categorical) variables.

		Mean Unemployment duration	Std. Devi	CURRENT EMPLOYEMENT STATUS			
				NO		YES	
				Count	Row N %	Count	Row N %
SEX	FEMALE	15.23	12.119	24	31.2	53	68.8
	MALE	12.41	10.986	44	25.4	129	74.6
ETHNICITY	OROMOO	10.41	9.592	29	22.3	101	77.7
	AMHARA	10.79	8.576	8	18.6	35	81.4
	TIGRE	3.5	2.000	0	0.0	8	100.0
	GURAGE	22.95	10.937	11	57.9	8	42.1
	DAWRO	19.33	9.634	8	44.4	10	55.6
	OTHERS	21.59	14.895	12	37.5	20	62.5
LANGUAGE(MOTHER THONG)	AFAN OROMOO	10.60	9.627	30	23.6	97	76.4
	AMHARIC	9.94	8.928	10	18.5	44	81.5
	TIGRIGNA	3.71	2.059	0	0.0	7	100.0
	GURAGENGA	22.22	10.914	10	55.6	8	44.4
	OTHERS	22.98	12.446	18	40.9	26	59.1
RELIGION	MUSLIM	12.64	11.153	21	22.3	73	77.7
	ORTHODOX	12.29	10.885	19	25.0	57	75.0
	PROTESTANT	14.41	11.606	23	36.5	40	63.5
	WAQEFFATA	14.1	11.445	3	30.0	7	70.0
	OTHERS	21.29	16.899	2	28.6	5	71.4
UNIVERSITY ENTERY	DIPLOMA	13.86	12.033	24	30.8	54	69.2
	EHEELE	13.02	11.124	44	25.6	128	74.4
UNIVERSITY ATTENDED	PRIVATE	19.71	11.978	24	41.4	34	58.6
	GOVERNMENT	11.34	10.498	44	22.9	148	77.1
FEILD OF STUDY	TEACHING	11	14.692	1	16.7	5	83.3
	HEALTH	16	12.166	10	32.3	21	67.7
	BUSINESAND ECONOMICS	11	9.617	26	24.5	80	75.5
	SOCIAL AND BEHAVIORA	19	14.454	6	37.5	10	62.5
	LAW AND GOVERNANC	18	21.138	0	0.0	5	100.0
	NATURAL	16	9.277	3	21.4	11	78.6
	INFORMATION	11	8.649	4	20.0	16	80.0
	ENGENEERING	16	11.542	16	35.6	29	64.4
	AGRICULTURA	13	17.506	2	28.6	5	71.4
PROGRAM ATTENDED	DISTANCE	6	6.364	0	0.0	2	100.0
	WEEKEND	14	10.740	2	16.7	10	83.3
	EVENING	21	12.773	15	41.7	21	58.3
	REGULAR	12	10.693	51	25.5	149	74.5

Table 2: Respondents' characteristics and unemployment duration: continuous/discrete variables (Jimma town April, 2017)

.	UNE DUR	A GE	FAMI LY 1	FAMI L 2	FMLF	CGPA	JOB SEAR	JO OPPO RTU	EX UNDU	EX SAL	RES WAGE	ACT SEL
UNE	1	-.089	-.121	.029	-.127*	-.122	.046	-.209**	.328**	-.242**	-.154*	-.398**
DUR		.160	.056	.644	.045	.054	.467	.001	.000	.000	.015	.000
AGE	-.089	1	.296**	.164**	.024	-.022	.100	.089	-.074	-.013	.015	.162*
	.160		.000	.009	.702	.729	.116	.160	.247	.839	.810	.011
FAMILY	-.121	.296**	1	.063	-.071	.015	-.021	.283**	-.063	.048	.042	.187**
1	.056	.000		.325	.265	.816	.744	.000	.324	.452	.505	.003
FAMILY	.029	.164**	.063	1	.544**	-.042	.009	.081	-.067	-.091	-.083	-.012
2	.644	.009	.325		.000	.512	.885	.201	.294	.150	.191	.855
FMLF	-.127*	.024	-.071	.544**	1	-.081	-.002	.039	-.044	.100	.111	.104
	.045	.702	.265	.000		.202	.976	.541	.489	.114	.079	.101
CGPA	-.122	-.022	.015	-.042	-.081	1	-.054	.033	-.090	.096	.096	.130*
	.054	.729	.816	.512	.202		.395	.603	.156	.129	.131	.041
JOB	.046	.100	-.021	.009	-.002	-.054	1	-.149*	.039	.018	.027	.112
SEFOR	.467	.116	.744	.885	.976	.395		.018	.535	.772	.676	.079
JO OPPO	-.209**	.089	.283**	.081	.039	.033	-.149*	1	-.172**	-.023	.037	.167**
RTU	.001	.160	.000	.201	.541	.603	.018		.007	.722	.561	.008
EX	.328**	-.074	-.063	-.067	-.044	-.090	.039	-.172**	1	-.096	-.078	-.200**
UNDU	.000	.247	.324	.294	.489	.156	.535	.007		.129	.220	.001
EXP SER	-.242**	-.013	.048	-.091	.100	.096	.018	-.023	-.096	1	.749**	.372**
	.000	.839	.452	.150	.114	.129	.772	.722	.129		.000	.000
RES	-.154*	.015	.042	-.083	.111	.096	.027	.037	-.078	.749**	1	.335**
WAGE	.015	.810	.505	.191	.079	.131	.676	.561	.220	.000		.000
ACT	-.398**	.162*	.187**	-.012	.104	.130*	.112	.167**	-.200**	.372**	.335**	1
SEL	.000	.011	.003	.855	.101	.041	.079	.008	.001	.000	.000	

Note:

- ** correlation is significant at 1%(2 tailed)
- * correlation Is significant at 5% (2 tailed)
- Number of observation =249
- Unemployment duration is a completed spell for those who are employed. It is an on-going spell for those who are unemployed.

Appendix C; Semi Parametric models

Table 3: Cox regression result table (Jimma town April 2017)

Block 1: Method = Forward Stepwise (Likelihood Ratio)

Omnibus Tests of Model Coefficients

Step	-2 Log Likelihood	Overall (score)			Change From Previous Step			Change From Previous Block		
		Chi-square	df	Sig.	Chi-square	df	Sig.	Chi-square	df	Sig.
1[a]	1683.658	109.279	1	.000	74.482	1	.000	74.482	1	.000
2[b]	1655.017	126.385	2	.000	28.640	1	.000	103.123	2	.000
3[c]	1628.071	157.565	6	.000	26.946	4	.000	130.069	6	.000
4[d]	1612.600	167.074	9	.000	15.471	3	.001	145.540	9	.000
5[e]	1608.911	174.432	10	.000	3.689	1	.055	149.229	10	.000
6[f]	1600.742	181.947	11	.000	8.169	1	.004	157.398	11	.000
7[g]	1594.873	185.567	12	.000	5.869	1	.015	163.267	12	.000
8[h]	1597.373	179.123	11	.000	2.500	1	.114	160.767	11	.000
9[i]	1584.805	192.870	15	.000	12.568	4	.014	173.335	15	.000
10[j]	1574.917	202.185	19	.000	9.889	4	.042	183.224	19	.000
11[k]	1561.844	205.795	24	.000	13.072	5	.023	196.296	24	.000
12[l]	1557.486	210.482	25	.000	4.359	1	.037	200.655	25	.000
13[m]	1552.488	211.862	26	.000	4.998	1	.025	205.652	26	.000
14[n]	1559.638	203.301	22	.000	7.150	4	.128	198.502	22	.000
15[o]	1557.436	208.135	23	.000	2.202	1	.138	200.704	23	.000
16[p]	1559.638	203.301	22	.000	2.202	1	.138	198.502	22	.000

a. Variable(s) Entered at Step Number 1: ACTSEL
b. Variable(s) Entered at Step Number 2: JOOPPORTU
c. Variable(s) Entered at Step Number 3: LANG
d. Variable(s) Entered at Step Number 4: FINDIFF
e. Variable(s) Entered at Step Number 5: CGPA
f. Variable(s) Entered at Step Number 6: MOTEA
g. Variable(s) Entered at Step Number 7: DEVSKILL
h. Variable Removed at Step Number 8: CGPA
i. Variable(s) Entered at Step Number 9: MARDEM
j. Variable(s) Entered at Step Number 10: FATEMSEC
k. Variable(s) Entered at Step Number 11: FATEL
l. Variable(s) Entered at Step Number 12: EXUNDUR
m. Variable(s) Entered at Step Number 13: PRACTIUM
n. Variable Removed at Step Number 14: MARDEM
o. Variable(s) Entered at Step Number 15: CGPA
p. Variable Removed at Step Number 16: CGPA
q. Beginning Block Number 1. Method = Forward Stepwise (Likelihood Ratio)

Iteration models stepwise likelihood ratio regression

Table 3: Forward Stepwise (Likelihood Ratio) omnibus test table 3 above

Variables in the Equation(Jimma town April, 2017)

		B	SE	Wald	df	Sig.	Exp(B)
Step 1	ACTSEL	.000	.000	104.530	1	.000	1.000
Step 2	JOOPPORTU	.021	.004	31.962	1	.000	1.021
	ACTSEL	.000	.000	105.628	1	.000	1.000
	LANG			27.858	4	.000	
	LANG(1)	.787	.233	11.442	1	.001	2.198
	LANG(2)	.818	.258	10.028	1	.002	2.266
Step 3	LANG(3)	2.044	.447	20.933	1	.000	7.724
	LANG(4)	-.130	.406	.102	1	.750	.879
	JOOPPORTU	.020	.004	30.321	1	.000	1.020
	ACTSEL	.000	.000	73.601	1	.000	1.000
	LANG			26.608	4	.000	
	LANG(1)	.850	.234	13.182	1	.000	2.339
	LANG(2)	.880	.259	11.553	1	.001	2.411
	LANG(3)	1.850	.452	16.778	1	.000	6.359
	LANG(4)	-.157	.410	.146	1	.702	.855
Step 4	JOOPPORTU	.022	.004	34.196	1	.000	1.022
	ACTSEL	.000	.000	68.350	1	.000	1.000
	FINDIFF			17.033	3	.001	
	FINDIFF(1)	.170	.293	.336	1	.562	1.185
	FINDIFF(2)	.769	.198	15.077	1	.000	2.157
	FINDIFF(3)	.066	.196	.112	1	.737	1.068
	LANG			26.219	4	.000	
	LANG(1)	.829	.235	12.473	1	.000	2.291
	LANG(2)	.867	.259	11.218	1	.001	2.379
	LANG(3)	1.862	.451	17.014	1	.000	6.437
	LANG(4)	-.156	.410	.145	1	.704	.856
Step 5	CGPA	.071	.028	6.316	1	.012	1.073
	JOOPPORTU	.021	.004	33.653	1	.000	1.022
	ACTSEL	.000	.000	66.975	1	.000	1.000
	FINDIFF			17.204	3	.001	
	FINDIFF(1)	.100	.303	.110	1	.740	1.106
	FINDIFF(2)	.769	.198	15.073	1	.000	2.157
	FINDIFF(3)	.066	.196	.115	1	.735	1.069
	LANG			29.331	4	.000	
	LANG(1)	.858	.236	13.174	1	.000	2.357
	LANG(2)	.927	.261	12.606	1	.000	2.526
	LANG(3)	2.035	.455	19.965	1	.000	7.651
	LANG(4)	-.164	.413	.157	1	.692	.849
	MOTEA	-.456	.160	8.156	1	.004	.634
Step 6	CGPA	.065	.028	5.243	1	.022	1.067
	JOOPPORTU	.021	.004	33.905	1	.000	1.021
	ACTSEL	.000	.000	72.489	1	.000	1.000
	FINDIFF			15.435	3	.001	
	FINDIFF(1)	.058	.305	.037	1	.848	1.060
	FINDIFF(2)	.729	.199	13.461	1	.000	2.073
	FINDIFF(3)	.067	.195	.119	1	.730	1.070
	LANG			30.326	4	.000	
	LANG(1)	.826	.235	12.329	1	.000	2.284
	LANG(2)	.929	.261	12.702	1	.000	2.532
Step 7	LANG(3)	2.046	.455	20.248	1	.000	7.736
	LANG(4)	-.298	.418	.508	1	.476	.742
	MOTEA	-.448	.161	7.765	1	.005	.639
	CGPA	.056	.029	3.802	1	.051	1.057
	DEVSKILL	-.440	.176	6.250	1	.012	.644

	JOOPPORTU	.021	.004	33.221	1	.000	1.021
	ACTSEL	.000	.000	69.688	1	.000	1.000
	FINDIFF			16.323	3	.001	
	FINDIFF(1)	.080	.308	.067	1	.795	1.083
	FINDIFF(2)	.749	.199	14.213	1	.000	2.115
	FINDIFF(3)	.068	.194	.123	1	.726	1.071
	LANG			30.919	4	.000	
	LANG(1)	.844	.234	12.949	1	.000	2.325
	LANG(2)	.942	.261	13.033	1	.000	2.565
	LANG(3)	2.045	.455	20.219	1	.000	7.731
	LANG(4)	-.312	.418	.557	1	.456	.732
	MOTEA	-.459	.160	8.213	1	.004	.632
Step 8	DEVSKILL	-.461	.174	7.001	1	.008	.630
	JOOPPORTU	.021	.004	33.572	1	.000	1.021
	ACTSEL	.000	.000	70.947	1	.000	1.000
	FINDIFF			16.115	3	.001	
	FINDIFF(1)	.150	.298	.252	1	.615	1.161
	FINDIFF(2)	.748	.199	14.183	1	.000	2.113
	FINDIFF(3)	.066	.194	.115	1	.735	1.068
	LANG			23.118	4	.000	
	LANG(1)	.618	.255	5.880	1	.015	1.855
	LANG(2)	.768	.276	7.711	1	.005	2.155
	LANG(3)	1.949	.472	17.051	1	.000	7.024
	LANG(4)	-.369	.425	.752	1	.386	.692
	MOTEA	-.546	.164	11.130	1	.001	.579
	MARDEM			12.654	4	.013	
	MARDEM(1)	-.807	.542	2.219	1	.136	.446
Step 9	MARDEM(2)	-.679	.317	4.595	1	.032	.507
	MARDEM(3)	-.800	.232	11.882	1	.001	.449
	MARDEM(4)	-.381	.210	3.288	1	.070	.683
	DEVSKILL	-.452	.175	6.684	1	.010	.636
	JOOPPORTU	.016	.004	17.827	1	.000	1.016
	ACTSEL	.000	.000	72.495	1	.000	1.000
	FINDIFF			14.665	3	.002	
	FINDIFF(1)	.123	.303	.165	1	.685	1.131
	FINDIFF(2)	.737	.202	13.275	1	.000	2.089
	FINDIFF(3)	.107	.195	.299	1	.585	1.113
	LANG			25.752	4	.000	
	LANG(1)	.624	.257	5.917	1	.015	1.867
	LANG(2)	.805	.283	8.091	1	.004	2.237
	LANG(3)	2.152	.481	20.032	1	.000	8.606
	LANG(4)	-.375	.432	.752	1	.386	.687
	FATEMSEC			9.918	4	.042	
	FATEMSEC(1)	.203	.256	.633	1	.426	1.225
	FATEMSEC(2)	1.112	.518	4.602	1	.032	3.041
	FATEMSEC(3)	-.552	.369	2.244	1	.134	.576
	FATEMSEC(4)	.177	.232	.583	1	.445	1.194
	MOTEA	-.540	.165	10.765	1	.001	.583
Step 10	MARDEM			11.768	4	.019	
	MARDEM(1)	-.744	.551	1.822	1	.177	.475
	MARDEM(2)	-.627	.320	3.835	1	.050	.534
	MARDEM(3)	-.795	.237	11.214	1	.001	.451
	MARDEM(4)	-.345	.213	2.633	1	.105	.708
	DEVSKILL	-.561	.184	9.311	1	.002	.570
	JOOPPORTU	.015	.004	14.850	1	.000	1.015
	ACTSEL	.000	.000	73.113	1	.000	1.000
	FINDIFF			12.297	3	.006	
	FINDIFF(1)	.033	.307	.011	1	.915	1.033
	FINDIFF(2)	.660	.209	9.937	1	.002	1.935
	FINDIFF(3)	.015	.200	.006	1	.939	1.016

	LANG			22.636	4	.000	
	LANG(1)	.666	.266	6.238	1	.013	1.946
	LANG(2)	.800	.290	7.600	1	.006	2.224
	LANG(3)	2.100	.502	17.480	1	.000	8.169
	LANG(4)	-.335	.441	.577	1	.447	.715
	FATEL			12.703	5	.026	
	FATEL(1)	-.707	.349	4.109	1	.043	.493
	FATEL(2)	-1.138	.349	10.628	1	.001	.321
	FATEL(3)	-.482	.342	1.990	1	.158	.618
	FATEL(4)	-.471	.305	2.379	1	.123	.625
	FATEL(5)	-.070	.301	.054	1	.816	.932
	FATEMSEC			13.978	4	.007	
	FATEMSEC(1)	-.144	.294	.242	1	.623	.866
	FATEMSEC(2)	.778	.530	2.154	1	.142	2.177
Step 11	FATEMSEC(3)	-.798	.381	4.383	1	.036	.450
	FATEMSEC(4)	.369	.240	2.356	1	.125	1.446
	MOTEA	-.402	.169	5.642	1	.018	.669
	MARDEM			12.181	4	.016	
	MARDEM(1)	-.694	.554	1.574	1	.210	.499
	MARDEM(2)	-.522	.327	2.543	1	.111	.593
	MARDEM(3)	-.785	.239	10.818	1	.001	.456
	MARDEM(4)	-.212	.217	.954	1	.329	.809
	DEVSKILL	-.589	.187	9.947	1	.002	.555
	JOOPPORTU	.016	.004	15.627	1	.000	1.016
	ACTSEL	.000	.000	77.531	1	.000	1.000
	FINDIFF			9.945	3	.019	
	FINDIFF(1)	-.055	.319	.030	1	.863	.946
	FINDIFF(2)	.589	.215	7.497	1	.006	1.803
	FINDIFF(3)	-.019	.201	.009	1	.924	.981
	LANG			22.558	4	.000	
	LANG(1)	.657	.267	6.065	1	.014	1.929
	LANG(2)	.848	.291	8.495	1	.004	2.335
	LANG(3)	2.064	.502	16.867	1	.000	7.874
	LANG(4)	-.354	.438	.653	1	.419	.702
	FATEL			12.934	5	.024	
	FATEL(1)	-.681	.350	3.789	1	.052	.506
	FATEL(2)	-1.137	.349	10.605	1	.001	.321
	FATEL(3)	-.422	.340	1.537	1	.215	.656
	FATEL(4)	-.461	.306	2.268	1	.132	.631
	FATEL(5)	-.068	.300	.051	1	.821	.934
	FATEMSEC			15.564	4	.004	
	FATEMSEC(1)	-.085	.297	.082	1	.775	.919
	FATEMSEC(2)	.887	.530	2.807	1	.094	2.429
Step 12	FATEMSEC(3)	-.806	.382	4.442	1	.035	.447
	FATEMSEC(4)	.430	.242	3.169	1	.075	1.537
	MOTEA	-.399	.170	5.505	1	.019	.671
	MARDEM			9.002	4	.061	
	MARDEM(1)	-.372	.571	.424	1	.515	.689
	MARDEM(2)	-.356	.335	1.129	1	.288	.701
	MARDEM(3)	-.702	.243	8.358	1	.004	.496
	MARDEM(4)	-.204	.217	.883	1	.347	.816
	DEVSKILL	-.593	.185	10.242	1	.001	.553
	JOOPPORTU	.014	.004	12.691	1	.000	1.015
	EXUNDUR	-.097	.047	4.267	1	.039	.907
	ACTSEL	.000	.000	74.040	1	.000	1.000
	FINDIFF			11.118	3	.011	
	FINDIFF(1)	-.052	.320	.026	1	.872	.950
	FINDIFF(2)	.628	.216	8.427	1	.004	1.874
	FINDIFF(3)	-.015	.203	.005	1	.942	.985
Step 13	LANG			22.622	4	.000	

	LANG(1)	.628	.267	5.535	1	.019	1.874
	LANG(2)	.719	.299	5.783	1	.016	2.051
	LANG(3)	2.121	.498	18.134	1	.000	8.343
	LANG(4)	-.353	.434	.660	1	.416	.703
	FATEL			12.944	5	.024	
	FATEL(1)	-.694	.349	3.947	1	.047	.500
	FATEL(2)	-1.141	.350	10.635	1	.001	.319
	FATEL(3)	-.444	.339	1.714	1	.190	.641
	FATEL(4)	-.536	.309	3.007	1	.083	.585
	FATEL(5)	-.084	.300	.079	1	.778	.919
	FATEMSEC			14.007	4	.007	
	FATEMSEC(1)	-.116	.292	.159	1	.690	.890
	FATEMSEC(2)	.900	.533	2.847	1	.092	2.459
	FATEMSEC(3)	-.797	.381	4.380	1	.036	.451
	FATEMSEC(4)	.355	.242	2.162	1	.141	1.427
	MOTEA	-.343	.172	3.983	1	.046	.709
	MARDEM			6.983	4	.137	
	MARDEM(1)	-.387	.568	.462	1	.496	.679
	MARDEM(2)	-.336	.333	1.016	1	.313	.715
	MARDEM(3)	-.632	.244	6.725	1	.010	.532
	MARDEM(4)	-.212	.217	.954	1	.329	.809
	PRACTIUM	.417	.187	4.962	1	.026	1.517
	DEVSKILL	-.762	.201	14.352	1	.000	.467
	JOOPPORTU	.016	.004	13.736	1	.000	1.016
	EXUNDUR	-.123	.049	6.206	1	.013	.885
	ACTSEL	.000	.000	71.466	1	.000	1.000
	FINDIFF			12.320	3	.006	
	FINDIFF(1)	-.084	.318	.069	1	.793	.920
	FINDIFF(2)	.685	.218	9.830	1	.002	1.983
	FINDIFF(3)	.046	.205	.051	1	.821	1.047
	LANG			26.136	4	.000	
	LANG(1)	.729	.250	8.500	1	.004	2.073
	LANG(2)	.820	.282	8.430	1	.004	2.270
	LANG(3)	2.144	.483	19.679	1	.000	8.532
	LANG(4)	-.323	.429	.567	1	.451	.724
	FATEL			14.268	5	.014	
	FATEL(1)	-.681	.346	3.877	1	.049	.506
	FATEL(2)	-1.144	.346	10.922	1	.001	.319
	FATEL(3)	-.413	.339	1.481	1	.224	.662
	FATEL(4)	-.633	.309	4.184	1	.041	.531
	FATEL(5)	-.064	.300	.046	1	.830	.938
	FATEMSEC			13.769	4	.008	
Step 14	FATEMSEC(1)	-.034	.291	.014	1	.906	.966
	FATEMSEC(2)	.937	.524	3.198	1	.074	2.551
	FATEMSEC(3)	-.667	.365	3.344	1	.067	.513
	FATEMSEC(4)	.450	.240	3.517	1	.061	1.568
	MOTEA	-.283	.169	2.824	1	.093	.753
	PRACTIUM	.482	.181	7.063	1	.008	1.619
	DEVSKILL	-.749	.198	14.267	1	.000	.473
	JOOPPORTU	.019	.004	22.774	1	.000	1.019
	EXUNDUR	-.144	.046	9.805	1	.002	.866
	ACTSEL	.000	.000	68.602	1	.000	1.000
	FINDIFF			13.463	3	.004	
	FINDIFF(1)	-.044	.315	.019	1	.890	.957
	FINDIFF(2)	.717	.217	10.927	1	.001	2.049
	FINDIFF(3)	.048	.206	.054	1	.817	1.049
	LANG			25.921	4	.000	
Step 15	LANG(1)	.716	.250	8.185	1	.004	2.046
	LANG(2)	.819	.281	8.475	1	.004	2.269
	LANG(3)	2.146	.483	19.724	1	.000	8.548

	LANG(4)	-.306	.429	.510	1	.475	.736
	FATEL			13.907	5	.016	
	FATEL(1)	-.651	.349	3.485	1	.062	.522
	FATEL(2)	-1.089	.350	9.697	1	.002	.336
	FATEL(3)	-.360	.343	1.101	1	.294	.698
	FATEL(4)	-.586	.314	3.492	1	.062	.556
	FATEL(5)	.011	.307	.001	1	.971	1.011
	FATEMSEC			14.001	4	.007	
	FATEMSEC(1)	-.073	.294	.061	1	.804	.930
	FATEMSEC(2)	.936	.524	3.185	1	.074	2.549
	FATEMSEC(3)	-.662	.365	3.285	1	.070	.516
	FATEMSEC(4)	.453	.240	3.563	1	.059	1.573
	MOTEA	-.279	.169	2.725	1	.099	.757
	CGPA	.055	.031	3.178	1	.075	1.057
	PRACTIUM	.500	.182	7.531	1	.006	1.649
	DEVSKILL	-.734	.200	13.519	1	.000	.480
	JOOPPORTU	.019	.004	23.035	1	.000	1.019
	EXUNDUR	-.143	.046	9.540	1	.002	.867
	ACTSEL	.000	.000	68.023	1	.000	1.000
	FINDIFF			13.832	3	.003	
	FINDIFF(1)	-.129	.326	.157	1	.692	.879
	FINDIFF(2)	.714	.217	10.812	1	.001	2.042
	FINDIFF(3)	.043	.206	.043	1	.836	1.044
	LANG			26.136	4	.000	
	LANG(1)	.729	.250	8.500	1	.004	2.073
	LANG(2)	.820	.282	8.430	1	.004	2.270
	LANG(3)	2.144	.483	19.679	1	.000	8.532
	LANG(4)	-.323	.429	.567	1	.451	.724
	FATEL			14.268	5	.014	
	FATEL(1)	-.681	.346	3.877	1	.049	.506
	FATEL(2)	-1.144	.346	10.922	1	.001	.319
	FATEL(3)	-.413	.339	1.481	1	.224	.662
	FATEL(4)	-.633	.309	4.184	1	.041	.531
	FATEL(5)	-.064	.300	.046	1	.830	.938
	FATEMSEC			13.769	4	.008	
Step 16	FATEMSEC(1)	-.034	.291	.014	1	.906	.966
	FATEMSEC(2)	.937	.524	3.198	1	.074	2.551
	FATEMSEC(3)	-.667	.365	3.344	1	.067	.513
	FATEMSEC(4)	.450	.240	3.517	1	.061	1.568
	MOTEA	-.283	.169	2.824	1	.093	.753
	PRACTIUM	.482	.181	7.063	1	.008	1.619
	DEVSKILL	-.749	.198	14.267	1	.000	.473
	JOOPPORTU	.019	.004	22.774	1	.000	1.019
	EXUNDUR	-.144	.046	9.805	1	.002	.866
	ACTSEL	.000	.000	68.602	1	.000	1.000
	FINDIFF			13.463	3	.004	
	FINDIFF(1)	-.044	.315	.019	1	.890	.957
	FINDIFF(2)	.717	.217	10.927	1	.001	2.049
	FINDIFF(3)	.048	.206	.054	1	.817	1.049

APPENDIX D: Cox-Parametric Regression Result Tables

Table 4: Result summary from Cox proportional regression (Jimma town April 2017)

Log likelihood = -725.80352 Prob > chi2 = 0.0000

_t	Haz. Ratio	Std. Err.	z	P>|z|	[95% Conf.	Interval]
LANG1	2.719793	.7423803	3.67	0.000	1.592929	4.64382
LANG2	3.084802	.940644	3.69	0.000	1.69696	5.607675
LANG3	10.54994	5.479343	4.54	0.000	3.812064	29.19713
LANG4	.9158646	.3965143	-0.20	0.839	.3920236	2.139687
LANG5	1	(omitted)				
cgpa	1.031088	.0348291	0.91	0.365	.9650345	1.101662
actsel	1.000064	.0000524	1.23	0.219	.9999617	1.000167
exundur	.8340133	.0406446	-3.72	0.000	.7580375	.917604
MOTHEL1	.4787087	.224795	-1.57	0.117	.1907036	1.201666
MOTHEL2	.5564861	.2805557	-1.16	0.245	.2071649	1.494832
MOTHEL3	.39673	.190919	-1.92	0.055	.1544792	1.018873
MOTHEL4	.4325844	.2141624	-1.69	0.091	.163931	1.141513
MOTHEL5	.6442622	.3199557	-0.89	0.376	.2434086	1.705255
MOTHEL6	1	(omitted)				
MOTHEL6	1	(omitted)				
FATHEL6	1	(omitted)				
FATHEL5	.698361	.220053	-1.14	0.255	.3765885	1.295069
FATHEL4	.6538335	.209875	-1.32	0.186	.3485288	1.226579
FATHEL3	.7549973	.2825568	-0.75	0.453	.3625637	1.572195
FATHEL1	.4133704	.1503837	-2.43	0.015	.2026157	.8433455
FATHEL2	.3806351	.1352515	-2.72	0.007	.1896927	.763778
FATHEMSEC1	1.040669	.3180949	0.13	0.896	.5716508	1.894498
FATHEMSEC2	1.719306	.9237617	1.01	0.313	.5998091	4.928255
FATHEMSEC3	.2695303	.113369	-3.12	0.002	.1181892	.6146636
FATHEMSEC4	1.397633	.3408469	1.37	0.170	.8665767	2.254133
FATHEMSEC5	1	(omitted)				
MARDEM1	1.162215	.682117	0.26	0.798	.3678808	3.671691
MARDEM2	.7805131	.2628664	-0.74	0.462	.403373	1.510266
MARDEM3	.5594758	.131328	-2.47	0.013	.3531631	.8863134
MARDEM4	.7931408	.1723691	-1.07	0.286	.5180399	1.214332
MARDEM5	1	(omitted)				
DEVSKILL	1.56253	.307435	2.27	0.023	1.062553	2.297768
FINDIFF1	1	(omitted)				
FINDIFF2	.9771856	.3392463	-0.07	0.947	.4948439	1.929683
FINDIFF3	1.390204	.3039819	1.51	0.132	.9056383	2.134038
FINDIFF4	.8122359	.1733863	-0.97	0.330	.5345373	1.234202
FINDIFF5	1	(omitted)				

Stratified by EXTSTATUS curempsta

Table 5; robust result from Cox-proportional hazard model (Jimma April 2017)

Cox regression -- Breslow method for ties

No. of subjects	= 249	Number of obs	= 249
No. of failures	= 181		
Time at risk	= 3320		
		Wald chi2(29)	= 272.73
Log pseudolikelihood	= -781.08205	Prob > chi2	= 0.0000

_t	Haz. Ratio	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
cgpa	1.049249	.0170408	2.96	0.003	1.016376	1.083186
exundur	.8327676	.0358188	-4.25	0.000	.7654417	.9060151
actsel	1.000308	.0000508	6.07	0.000	1.000209	1.000408
LANG2	1.030524	.1983715	0.16	0.876	.7066521	1.502834
LANG3	3.929747	1.643276	3.27	0.001	1.731504	8.918786
LANG4	.3648902	.1077824	-3.41	0.001	.2045181	.6510176
LANG5	.5072699	.1055895	-3.26	0.001	.3373335	.7628142
FINDIFF2	.8404415	.2596223	-0.56	0.574	.4587344	1.539762
FINDIFF3	1.993527	.3509487	3.92	0.000	1.411799	2.814953
FINDIFF4	1.184504	.2198225	0.91	0.362	.8233205	1.704136
FINDIFF5	1	(omitted)				
MOTHEL2	1.041831	.2484371	0.17	0.864	.6528572	1.662557
MOTHEL3	1.312028	.2755885	1.29	0.196	.8692608	1.980323
MOTHEL4	1.43547	.3314412	1.57	0.117	.9129707	2.256999
MOTHEL5	2.246774	.5470216	3.32	0.001	1.394175	3.620772
MOTHEL6	1.738376	.7396932	1.30	0.194	.7550066	4.002552
DEVSKILL	2.01249	.3585721	3.93	0.000	1.419294	2.853614
MARDEM2	1.193108	.5824001	0.36	0.718	.4583287	3.105866
MARDEM3	.7870802	.3550809	-0.53	0.596	.3250952	1.905581
MARDEM4	1.249703	.5639714	0.49	0.621	.5160273	3.0265
MARDEM5	1.692636	.7807547	1.14	0.254	.6853836	4.180166
FATHEMSEC2	3.743429	1.266479	3.90	0.000	1.928816	7.265216
FATHEMSEC3	.4485861	.1764071	-2.04	0.041	.2075437	.9695762
FATHEMSEC4	1.453867	.378518	1.44	0.151	.8727947	2.421794
FATHEMSEC5	.9469664	.2691138	-0.19	0.848	.5425449	1.65285
FATHEL2	.5086714	.1301357	-2.64	0.008	.308085	.8398546
FATHEL3	1.031587	.270533	0.12	0.906	.6169914	1.724777
FATHEL4	.9592901	.192306	-0.21	0.836	.6476079	1.420979
FATHEL5	1.091676	.2655545	0.36	0.718	.6776971	1.758539
FATHEL6	1	(omitted)				
PRACTIUM	.5956774	.1056952	-2.92	0.004	.4207039	.8434236

Appendix E; Parametric Models Regression with gamma heterogeneity Results

Table 6; Exponential model with gamma heterogeneity (Jimma April 2017)

```
Exponential regression -- log relative-hazard form
                       Gamma frailty

No. of subjects =          249                 Number of obs    =       249
No. of failures =          181
Time at risk    =         3320
                                               LR chi2(64)      =    212.99
Log likelihood  =   -255.99921                 Prob > chi2      =    0.0000
```

_t	Haz. Ratio	Std. Err.	z	P>|z|	[95% Conf.	Interval]
age	1.016148	.0366068	0.44	0.657	.9468744	1.09049
famsi1	1.200872	.1054387	2.08	0.037	1.01102	1.426375
famsi2	1.025552	.0519456	0.50	0.618	.9286309	1.132588
fmlf	.9973775	.0734839	-0.04	0.972	.8632677	1.152321
cgpa	1.051615	.0348001	1.52	0.128	.9855725	1.122082
josefort	.9902868	.0153801	-0.63	0.530	.9605965	1.020895
exundur	.9165689	.0440303	-1.81	0.070	.8342093	1.00706
exsar	1.000122	.0000897	1.36	0.175	.999946	1.000297
reswage	.9998065	.0001223	-1.58	0.114	.9995669	1.000046
actsel	1.000284	.000047	6.06	0.000	1.000192	1.000376
SEX	1.243145	.250686	1.08	0.280	.8372844	1.84574
ETHEN1	1.377275	.4616252	0.96	0.340	.7140375	2.656564
ETHEN2	1.850507	.6744922	1.69	0.091	.9058073	3.780468
ETHEN3	4.069596	2.284174	2.50	0.012	1.354537	12.22677
ETHEN4	.7493897	.3654059	-0.59	0.554	.288176	1.948756
ETHEN5	1.452999	.6777094	0.80	0.423	.5824341	3.624797
ETHEN6	1	(omitted)				
RELIG1	2.155074	1.244248	1.33	0.184	.6950482	6.682047
RELIG2	1.920787	1.091866	1.15	0.251	.6303998	5.852511
RELIG3	1.870762	1.068617	1.10	0.273	.6106539	5.731152
RELIG4	1.044122	.7310326	0.06	0.951	.2647218	4.118247
RELIG5	1	(omitted)				
FATHEL1	1.020136	.4188377	0.05	0.961	.4562255	2.281058
FATHEL2	.6409565	.2575562	-1.11	0.268	.2916012	1.40886
FATHEL3	.9330502	.383847	-0.17	0.866	.41661	2.089683
FATHEL4	.9180813	.3399804	-0.23	0.817	.4442909	1.89712
FATHEL5	.9035843	.3346488	-0.27	0.784	.4372403	1.867313
FATHEL6	.8788488	.5271158	-0.22	0.830	.2712568	2.847395
MOTHEL1	1.077408	.4348949	0.18	0.853	.4884203	2.37666
MOTHEL2	.7918592	.3310381	-0.56	0.577	.3489809	1.796777
MOTHEL3	1.37172	.5435888	0.80	0.425	.6308837	2.98251
MOTHEL4	1.2542	.5495585	0.52	0.605	.5313642	2.960341
MOTHEL5	1	(omitted)				
MOTHEL6	1	(omitted)				
FATHEMSEC1	1.546073	.5312651	1.27	0.205	.7883843	3.031948
FATHEMSEC2	2.505619	1.613317	1.43	0.154	.7093229	8.850875
FATHEMSEC3	1.169189	.4799981	0.38	0.703	.5229173	2.614186
FATHEMSEC4	1.90665	.5091047	2.42	0.016	1.129763	3.217769
FATHEMSEC5	1	(omitted)				
MOTHEMSEC1	1.814555	.7363033	1.47	0.142	.8191675	4.019458
MOTHEMSEC2	1.539875	1.302361	0.51	0.610	.293478	8.079703
MOTHEMSEC3	.9252987	.3799184	-0.19	0.850	.4137968	2.069078
MOTHEMSEC4	1.131531	.2591773	0.54	0.590	.7222685	1.772696
MOTHEMSEC5	1	(omitted)				
UNETRYQUAL	.6607544	.143954	-1.90	0.057	.4311166	1.012711
FLDSDY1	1.725084	1.347669	0.70	0.485	.3731084	7.976001
FLDSDY2	1.355088	.8423044	0.49	0.625	.4007488	4.582082
FLDSDY3	1.163904	.6552099	0.27	0.787	.3861362	3.508277
FLDSDY4	.9946279	.6524402	-0.01	0.993	.2749812	3.597645
FLDSDY5	1.394464	1.102725	0.42	0.674	.2959971	6.569422
FLDSDY6	.8810515	.5897655	-0.19	0.850	.2372559	3.271792
FLDSDY7	1.238388	.7475592	0.35	0.723	.3793363	4.042862
FLDSDY8	.6846157	.4239461	-0.61	0.541	.2033963	2.304362
FLDSDY9	1	(omitted)				
UNIATEND	1.772442	.4551024	2.23	0.026	1.071551	2.931781
PROATEND1	8.627348	7.978863	2.33	0.020	1.408177	52.85636
PROATEND2	1.369881	.5411139	0.80	0.426	.6316139	2.971079
PROATEND3	.6458207	.1875016	-1.51	0.132	.3655796	1.140885
PROATEND4	1	(omitted)				
FINDIFF1	1	(omitted)				
FINDIFF2	.8305562	.3143804	-0.49	0.624	.395525	1.744071
FINDIFF3	1.764016	.4259364	2.35	0.019	1.098937	2.831603
FINDIFF4	1.307122	.2987496	1.17	0.241	.8351598	2.045798
FINDIFF5	1	(omitted)				
UNEARINC1	1.295824	.5078068	0.66	0.508	.6011429	2.79328
UNEARINC2	1.09709	.5581925	0.18	0.855	.4047212	2.973913
UNEARINC3	.8770623	.3023731	-0.38	0.704	.4462446	1.723804
UNEARINC4	1.263526	.2871256	1.03	0.303	.8093867	1.97248
UNEARINC5	.5944761	.1852855	-1.67	0.095	.3227254	1.095055
UNEARINC6	1	(omitted)				
INMFTEJOB1	2.326006	.6807475	2.88	0.004	1.310664	4.127911
INMFTEJOB2	1.282006	.5986539	0.53	0.595	.5133431	3.201642
INMFTEJOB3	1.779684	.6665934	1.54	0.124	.8541206	3.708229
INMFTEJOB4	2.119728	.7496931	2.12	0.034	1.05982	4.239632
INMFTEJOB5	1.877276	.6987828	1.69	0.091	.9050729	3.893793
INMFTEJOB6	1	(omitted)				
INMFTEJOB6	1	(omitted)				
_cons	.001424	.0018268	-5.11	0.000	.0001152	.017597
/ln_the	-15.97867	497.8515	-0.03	0.974	-991.7496	959.7923
theta	1.15e-07	.0000572			0	.

```
Likelihood-ratio test of theta=0: chibar2(01) =     0.00 Prob>=chibar2 = 1.000

. stset unedu, failure(EXTSTATUS==1) scale(1) noshow

     failure event:  EXTSTATUS == 1
obs. time interval:  (0, unedu]
 exit on or before:  failure
```

Table 7; Weibull model with gamma heterogeneity (Jimma April, 2017)

```
Weibull regression -- log relative-hazard form
                  Gamma frailty

No. of subjects =          249                 Number of obs    =       249
No. of failures =          181
Time at risk    =         3320
                                               LR chi2(64)      =    320.75
Log likelihood  =    -192.2163                 Prob > chi2      =    0.0000
```

_t	Haz. Ratio	Std. Err.	z	P>|z|	[95% Conf.	Interval]
age	1.120606	.0724709	1.76	0.078	.9871994	1.272041
famsi1	1.132625	.1850993	0.76	0.446	.8222016	1.560248
famsi2	1.074866	.1009833	0.77	0.442	.8940959	1.292184
fmlf	.9851356	.1379723	-0.11	0.915	.748655	1.296314
cgpa	1.082008	.0653445	1.31	0.192	.9612246	1.217969
josefort	.9599492	.0296012	-1.33	0.185	.9036503	1.019756
exundur	.7523403	.0711867	-3.01	0.003	.6249903	.9056394
exsar	1.000063	.0001595	0.40	0.692	.9997505	1.000376
reswage	.9995507	.000222	-2.02	0.043	.9991158	.9999859
actsel	1.00126	.0002071	6.09	0.000	1.000854	1.001666
SEX	1.154843	.4372303	0.38	0.704	.5498614	2.425453
ETHEN1	5.901489	3.820771	2.74	0.006	1.6591	20.99185
ETHEN2	10.0234	7.270837	3.18	0.001	2.418604	41.53986
ETHEN3	94.58272	118.6592	3.63	0.000	8.089713	1105.835
ETHEN4	.8240172	.6455398	-0.25	0.805	.1774598	3.826242
ETHEN5	5.480309	4.739089	1.97	0.049	1.006305	29.8456
ETHEN6	1	(omitted)				
RELIG1	7.764127	8.988932	1.77	0.077	.8028094	75.08839
RELIG2	5.337387	6.019809	1.48	0.138	.5851877	48.68131
RELIG3	6.899254	7.83658	1.70	0.089	.7446584	63.92152
RELIG4	.4752465	.6881141	-0.51	0.607	.0278263	8.116749
RELIG5	1	(omitted)				
FATHEL1	1.411817	1.108905	0.44	0.661	.302835	6.581891
FATHEL2	.8476703	.6342325	-0.22	0.825	.1955926	3.673682
FATHEL3	1.150286	.879233	0.18	0.855	.2571468	5.145535
FATHEL4	1.488136	1.087161	0.54	0.586	.3554637	6.230028
FATHEL5	.6056413	.3919911	-0.77	0.438	.1703294	2.153482
FATHEL6	1.958832	2.260543	0.58	0.560	.2040272	18.80642
MOTHEL1	1.807131	1.2502	0.86	0.392	.4657101	7.012349
MOTHEL2	.6801852	.4731029	-0.55	0.580	.1740099	2.658768
MOTHEL3	1.828521	1.22521	0.90	0.368	.4917543	6.799108
MOTHEL4	.8056743	.6050294	-0.29	0.774	.1849017	3.510573
MOTHEL5	1	(omitted)				
MOTHEL6	1	(omitted)				
FATHEMSEC1	4.133341	2.731492	2.15	0.032	1.131853	15.09428
FATHEMSEC2	5.012158	5.968025	1.35	0.176	.4858372	51.70812
FATHEMSEC3	.2597295	.2096836	-1.67	0.095	.0533744	1.26389
FATHEMSEC4	3.184355	1.581704	2.33	0.020	1.202875	8.429902
FATHEMSEC5	1	(omitted)				
MOTHEMSEC1	3.455597	2.390628	1.79	0.073	.890534	13.40898
MOTHEMSEC2	.4870687	.6840428	-0.51	0.609	.0310568	7.638777
MOTHEMSEC3	.1576316	.1324083	-2.20	0.028	.0303841	.8177875
MOTHEMSEC4	1.428334	.6029077	0.84	0.398	.6245004	3.266831
MOTHEMSEC5	1	(omitted)				
UNETRYQUAL	.4844205	.1861079	-1.89	0.059	.2281404	1.028591
FLDSDY1	10.62792	15.62336	1.61	0.108	.5958775	189.557
FLDSDY2	1.118079	1.273501	0.10	0.922	.1199355	10.42311
FLDSDY3	1.431453	1.451031	0.35	0.723	.1963059	10.43808
FLDSDY4	1.241631	1.410606	0.19	0.849	.1339524	11.50893
FLDSDY5	.4848311	.7358637	-0.48	0.633	.0247548	9.495576
FLDSDY6	.7423154	.8858195	-0.25	0.803	.0715868	7.697399
FLDSDY7	1.829662	2.035361	0.54	0.587	.2067634	16.1908
FLDSDY8	.8619052	.9333436	-0.14	0.891	.1032064	7.198008
FLDSDY9	1	(omitted)				
UNIATEND	3.909719	1.814646	2.94	0.003	1.574241	9.710014
PROATEND1	3628.517	8563.488	3.47	0.001	35.55079	370347.1
PROATEND2	1.41102	.9778624	0.50	0.619	.3627729	5.488217
PROATEND3	.2466372	.1404025	-2.46	0.014	.080816	.7526961
PROATEND4	1	(omitted)				
FINDIFF1	1	(omitted)				
FINDIFF2	.6745281	.510259	-0.52	0.603	.1531416	2.971029
FINDIFF3	4.645169	2.123603	3.36	0.001	1.896108	11.37994
FINDIFF4	4.15161	2.087689	2.83	0.005	1.549456	11.12382
FINDIFF5	1	(omitted)				
UNEARINC1	1.198672	.8343818	0.26	0.795	.3063295	4.690422
UNEARINC2	.3358152	.3137825	-1.17	0.243	.0537955	2.096306
UNEARINC3	.4177522	.2613453	-1.40	0.163	.1225767	1.423736
UNEARINC4	1.493148	.6289798	0.95	0.341	.6539417	3.40931
UNEARINC5	.9221925	.4997738	-0.15	0.881	.3188018	2.667611
UNEARINC6	1	(omitted)				
INMFTEJOB1	8.906328	5.071952	3.84	0.000	2.917149	27.19185
INMFTEJOB2	1.610776	1.426953	0.54	0.590	.2837745	9.14317
INMFTEJOB3	8.834042	6.760072	2.85	0.004	1.971491	39.58442
INMFTEJOB4	8.223195	5.453229	3.18	0.001	2.241633	30.16592
INMFTEJOB5	4.07577	2.620815	2.19	0.029	1.155759	14.37316
INMFTEJOB6	1	(omitted)				
INMFTEJOB6	1	(omitted)				
_cons	9.71e-10	3.18e-09	-6.34	0.000	1.59e-12	5.95e-07
/ln_p	1.251537	.1233144	10.15	0.000	1.009845	1.493228
/ln_the	.4288113	.2658147	1.61	0.107	-.0921759	.9497985
p	3.49571	.4310714			2.745175	4.451443
1/p	.2860649	.0352759			.2246463	.3642755
theta	1.535431	.4081402			.9119448	2.585189

```
Likelihood-ratio test of theta=0: chibar2(01) =     49.60 Prob>=chibar2 = 0.000

. stset unedu, failure(EXTSTATUS==1) scale(1) noshow

     failure event:  EXTSTATUS == 1
obs. time interval:  (0, unedu]
 exit on or before:  failure

------------------------------------------------------------------------------
      250  total observations
        1  observation ends on or before enter()
------------------------------------------------------------------------------
      249  observations remaining, representing
      181  failures in single-record/single-failure data
     3320  total analysis time at risk and under observation
                                             at risk from t =         0
                                  earliest observed entry t =         0
                                       last observed exit t =        52
```

Table 8; gompertz regression with gamma heterogeneity (Jimma April, 2017)

```
Gompertz regression -- log relative-hazard form
                    Gamma frailty

No. of subjects =          249                     Number of obs    =       249
No. of failures =          181
Time at risk    =         3320
                                                   LR chi2(64)      =    256.77
Log likelihood  =   -234.09249                     Prob > chi2      =    0.0000
```

_t	Haz. Ratio	Std. Err.	z	P>|z|	[95% Conf.	Interval]
age	1.01977	.0444413	0.45	0.653	.9362831	1.110702
famsi1	1.172427	.129225	1.44	0.149	.9446403	1.455142
famsi2	1.02047	.0639936	0.32	0.747	.9024465	1.153929
fmlf	1.024005	.0962392	0.25	0.801	.8517329	1.231121
cgpa	1.079023	.046063	1.78	0.075	.9924152	1.17319
josefort	.9708109	.0196476	-1.46	0.143	.9330561	1.010093
exundur	.8647974	.0519416	-2.42	0.016	.7687575	.9728354
exsar	1.000131	.0001107	1.18	0.238	.9999137	1.000348
reswage	.9996109	.0001542	-2.52	0.012	.9993088	.9999132
actsel	1.000622	.0001025	6.07	0.000	1.000421	1.000823
SEX	1.304771	.3301646	1.05	0.293	.7945897	2.142525
ETHEN1	2.851543	1.272525	2.35	0.019	1.189116	6.838104
ETHEN2	4.314965	2.096937	3.01	0.003	1.664639	11.18496
ETHEN3	12.56247	9.552084	3.33	0.001	2.830412	55.75713
ETHEN4	.8906581	.5348565	-0.19	0.847	.2745042	2.889835
ETHEN5	2.869114	1.69188	1.79	0.074	.9032442	9.113609
ETHEN6	1	(omitted)				
RELIG1	4.51585	3.44951	1.97	0.048	1.010495	20.18109
RELIG2	3.181083	2.334055	1.58	0.115	.7551328	13.40068
RELIG3	3.926807	2.915382	1.84	0.065	.9163921	16.82665
RELIG4	1.015279	.9216418	0.02	0.987	.1713516	6.015648
RELIG5	1	(omitted)				
FATHEL1	1.132599	.600742	0.23	0.814	.4004889	3.203038
FATHEL2	.9401509	.4858674	-0.12	0.905	.3414278	2.588786
FATHEL3	1.300478	.6754064	0.51	0.613	.4699257	3.598957
FATHEL4	1.314389	.6326582	0.57	0.570	.5116968	3.376252
FATHEL5	1.157862	.5173984	0.33	0.743	.4822714	2.779853
FATHEL6	1.393609	1.039271	0.45	0.656	.3231211	6.010582
MOTHEL1	1.30767	.6343379	0.55	0.580	.5053457	3.383823
MOTHEL2	.7246568	.3606039	-0.65	0.518	.2732482	1.921797
MOTHEL3	1.425887	.6742295	0.75	0.453	.5644103	3.60226
MOTHEL4	1.25682	.6641451	0.43	0.665	.4461388	3.540593
MOTHEL5	1	(omitted)				
MOTHEL6	1	(omitted)				
FATHEMSEC1	1.267243	.552668	0.54	0.587	.5390574	2.979096
FATHEMSEC2	2.501058	2.034204	1.13	0.260	.507937	12.3151
FATHEMSEC3	.504485	.2746115	-1.26	0.209	.1735821	1.466194
FATHEMSEC4	1.65753	.5291939	1.58	0.113	.886546	3.099
FATHEMSEC5	1	(omitted)				
MOTHEMSEC1	2.472593	1.214832	1.84	0.065	.9439326	6.476856
MOTHEMSEC2	1.318407	1.3355	0.27	0.785	.1810558	9.600342
MOTHEMSEC3	.5568654	.3013782	-1.08	0.279	.1927862	1.608513
MOTHEMSEC4	1.182323	.3389015	0.58	0.559	.6741362	2.0736
MOTHEMSEC5	1	(omitted)				
UNETRYQUAL	.5529852	.1505805	-2.18	0.030	.3242854	.942974
FLDSDY1	3.092462	2.943742	1.19	0.236	.4786722	19.97885
FLDSDY2	1.405075	1.063857	0.45	0.653	.3185733	6.197115
FLDSDY3	1.310064	.8896138	0.40	0.691	.3461582	4.958046
FLDSDY4	1.020624	.8112231	0.03	0.980	.214934	4.846483
FLDSDY5	1.000711	1.024258	0.00	0.999	.1346104	7.439418
FLDSDY6	1.019189	.8209749	0.02	0.981	.2101828	4.942112
FLDSDY7	1.839446	1.371731	0.82	0.414	.4265012	7.933299
FLDSDY8	.8494054	.6385781	-0.22	0.828	.1946196	3.707178
FLDSDY9	1	(omitted)				
UNIATEND	2.76219	.906868	3.09	0.002	1.451414	5.25673
PROATEND1	25.70064	30.1447	2.77	0.006	2.579618	256.0544
PROATEND2	1.654699	.8100893	1.03	0.304	.6338658	4.319574
PROATEND3	.4923126	.1827752	-1.91	0.056	.2378073	1.019194
PROATEND4	1	(omitted)				
FINDIFF1	1	(omitted)				
FINDIFF2	.3762734	.1927576	-1.91	0.056	.1378635	1.026969
FINDIFF3	2.248865	.6886137	2.65	0.008	1.234017	4.098317
FINDIFF4	1.579636	.470185	1.54	0.125	.8814413	2.830874
FINDIFF5	1	(omitted)				
UNEARINC1	1.397587	.6828799	0.69	0.493	.5363773	3.64156
UNEARINC2	.6731946	.4292543	-0.62	0.535	.1929223	2.349086
UNEARINC3	.7845734	.3346486	-0.57	0.569	.3400679	1.810095
UNEARINC4	1.408038	.4063758	1.19	0.236	.7997382	2.479025
UNEARINC5	.8623536	.3260002	-0.39	0.695	.411056	1.80913
UNEARINC6	1	(omitted)				
INMFTEJOB1	4.413378	1.693406	3.87	0.000	2.080494	9.362156
INMFTEJOB2	1.787051	1.064297	0.97	0.330	.5561536	5.74221
INMFTEJOB3	3.316694	1.656298	2.40	0.016	1.246323	8.826331
INMFTEJOB4	4.061762	1.870123	3.04	0.002	1.647414	10.01443
INMFTEJOB5	3.47232	1.649712	2.62	0.009	1.368393	8.811073
INMFTEJOB6	1	(omitted)				
INMFTEJOB6	1	(omitted)				
_cons	.0000338	.0000582	-5.98	0.000	1.16e-06	.0009862
/gamma	.1150896	.0188921	6.09	0.000	.0780617	.1521176
/ln_the	-.7414815	.2912455	-2.55	0.011	-1.312312	-.1706507
theta	.4764076	.1387516			.2691969	.843116

```
Likelihood-ratio test of theta=0: chibar2(01) =      9.77 Prob>=chibar2 = 0.001

. stset unedu, failure(EXTSTATUS==1) scale(1) noshow

     failure event:  EXTSTATUS == 1
obs. time interval:  (0, unedu]
 exit on or before:  failure

------------------------------------------------------------------------------
      250  total observations
        1  observation ends on or before enter()
------------------------------------------------------------------------------
      249  observations remaining, representing
      181  failures in single-record/single-failure data
     3320  total analysis time at risk and under observation
                                                at risk from t =         0
                                     earliest observed entry t =         0
                                          last observed exit t =        52
```

Table 9; log normal regression with gamma heterogeneity (Jimma April, 2017)

```
Lognormal regression -- accelerated failure-time form
                     Gamma frailty

No. of subjects =          249                 Number of obs    =       249
No. of failures =          181
Time at risk    =         3320
                                               LR chi2(64)      =    310.25
Log likelihood  =   -195.98186                 Prob > chi2      =    0.0000
```

_t	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
age	-.0388007	.0182052	-2.13	0.033	-.0744822	-.0031192
famsi1	-.0327792	.0498121	-0.66	0.511	-.1304092	.0648508
famsi2	-.0217658	.0279368	-0.78	0.436	-.0765211	.0329894
fmlf	.0233809	.0422629	0.55	0.580	-.0594528	.1062146
cgpa	-.0217	.0202484	-1.07	0.284	-.0613861	.0179861
josefort	.0147762	.0091936	1.61	0.108	-.003243	.0327953
exundur	.0901276	.0259484	3.47	0.001	.0392696	.1409856
exsar	-.0000211	.0000474	-0.44	0.656	-.000114	.0000718
reswage	.0001282	.000066	1.94	0.052	-1.17e-06	.0002575
actsel	-.0003557	.0000362	-9.83	0.000	-.0004266	-.0002847
SEX	-.0985371	.1136786	-0.87	0.386	-.3213432	.1242689
ETHEN1	-.5337886	.1781427	-3.00	0.003	-.8829419	-.1846353
ETHEN2	-.6978503	.1950209	-3.58	0.000	-1.080084	-.3156165
ETHEN3	-1.259528	.3174809	-3.97	0.000	-1.881779	-.6372773
ETHEN4	.1190608	.2367838	0.50	0.615	-.3450269	.5831486
ETHEN5	-.5270891	.2424827	-2.17	0.030	-1.002346	-.0518317
ETHEN6	0	(omitted)				
RELIG1	-.5549914	.329144	-1.69	0.092	-1.200102	.090119
RELIG2	-.4670582	.3195046	-1.46	0.144	-1.093276	.1591593
RELIG3	-.5076179	.3226652	-1.57	0.116	-1.14003	.1247942
RELIG4	.2095865	.3898288	0.54	0.591	-.5544638	.9736368
RELIG5	0	(omitted)				
FATHEL1	-.1091538	.2287922	-0.48	0.633	-.5575783	.3392706
FATHEL2	.0484695	.22208	0.22	0.827	-.3867993	.4837382
FATHEL3	-.1434706	.2214941	-0.65	0.517	-.5775912	.2906499
FATHEL4	-.1379557	.2150835	-0.64	0.521	-.5595116	.2836003
FATHEL5	.1528352	.1921026	0.80	0.426	-.2236789	.5293493
FATHEL6	-.1715866	.3134615	-0.55	0.584	-.7859597	.4427866
MOTHEL1	-.1245996	.204938	-0.61	0.543	-.5262707	.2770715
MOTHEL2	.1856534	.2065379	0.90	0.369	-.2191534	.5904602
MOTHEL3	-.1423391	.2011861	-0.71	0.479	-.5366566	.2519785
MOTHEL4	.0210208	.2235571	0.09	0.925	-.4171431	.4591848
MOTHEL5	0	(omitted)				
MOTHEL6	0	(omitted)				
FATHEMSEC1	-.3667822	.1947998	-1.88	0.060	-.7485827	.0150183
FATHEMSEC2	-.3840178	.3612877	-1.06	0.288	-1.092129	.3240931
FATHEMSEC3	.2928887	.2247493	1.30	0.193	-.1476118	.7333892
FATHEMSEC4	-.3227141	.1353991	-2.38	0.017	-.5880914	-.0573368
FATHEMSEC5	0	(omitted)				
MOTHEMSEC1	-.3005942	.2029114	-1.48	0.138	-.6982932	.0971048
MOTHEMSEC2	.3642045	.4354689	0.84	0.403	-.4892988	1.217708
MOTHEMSEC3	.5856714	.2359014	2.48	0.013	.1233131	1.04803
MOTHEMSEC4	-.0100573	.1277115	-0.08	0.937	-.2603672	.2402526
MOTHEMSEC5	0	(omitted)				
UNETRYQUAL	.1932843	.113432	1.70	0.088	-.0290383	.4156068
FLDSDY1	-.593374	.4214762	-1.41	0.159	-1.419452	.2327042
FLDSDY2	.0002907	.3384939	0.00	0.999	-.6631452	.6637266
FLDSDY3	-.0726708	.3035156	-0.24	0.811	-.6675504	.5222088
FLDSDY4	.0404569	.3480566	0.12	0.907	-.6417214	.7226353
FLDSDY5	.2294807	.4498014	0.51	0.610	-.6521138	1.111075
FLDSDY6	.061101	.3501359	0.17	0.861	-.6251527	.7473548
FLDSDY7	-.1096943	.3382542	-0.32	0.746	-.7726603	.5532717
FLDSDY8	.0980506	.3252738	0.30	0.763	-.5394743	.7355756
FLDSDY9	0	(omitted)				
UNIATEND	-.4127114	.1347193	-3.06	0.002	-.6767564	-.1486665
PROATEND1	-2.230127	.5209305	-4.28	0.000	-3.251132	-1.209122
PROATEND2	-.1270677	.2193339	-0.58	0.562	-.5569542	.3028187
PROATEND3	.3627929	.1620554	2.24	0.025	.0451702	.6804156
PROATEND4	0	(omitted)				
FINDIFF1	0	(omitted)				
FINDIFF2	.1029596	.2111115	0.49	0.626	-.3108113	.5167305
FINDIFF3	-.4592609	.1279852	-3.59	0.000	-.7101073	-.2084145
FINDIFF4	-.4305541	.128745	-3.34	0.001	-.6828897	-.1782186
FINDIFF5	0	(omitted)				
UNEARINC1	-.0132462	.2165511	-0.06	0.951	-.4376785	.4111861
UNEARINC2	.3410781	.2804123	1.22	0.224	-.2085199	.8906762
UNEARINC3	.2222731	.1802981	1.23	0.218	-.1311047	.5756509
UNEARINC4	-.0994619	.1271091	-0.78	0.434	-.3485911	.1496674
UNEARINC5	.0635365	.1596288	0.40	0.691	-.2493302	.3764033
UNEARINC6	0	(omitted)				
INMFTEJOB1	-.6719777	.1579786	-4.25	0.000	-.98161	-.3623454
INMFTEJOB2	-.1841236	.250511	-0.73	0.462	-.6751162	.306869
INMFTEJOB3	-.6349947	.2077476	-3.06	0.002	-1.042173	-.2278168
INMFTEJOB4	-.6058431	.1887088	-3.21	0.001	-.9757055	-.2359806
INMFTEJOB5	-.4048984	.1984387	-2.04	0.041	-.7938311	-.0159657
INMFTEJOB6	0	(omitted)				
INMFTEJOB6	0	(omitted)				
_cons	5.979493	.6803068	8.79	0.000	4.646116	7.31287
/ln_sig	-.6444635	.0748862	-8.61	0.000	-.7912378	-.4976892
/ln_the	-1.210564	.3578555	-3.38	0.001	-1.911948	-.5091799
sigma	.5249441	.0393111			.4532834	.6079339
theta	.2980292	.1066514			.1477922	.6009883

```
Likelihood-ratio test of theta=0: chibar2(01) =    19.23 Prob>=chibar2 = 0.000
```

Table 10; log-logistic regression with gamma heterogeneity (Jimma April, 2017)

```
Loglogistic regression -- accelerated failure-time form
                       Gamma frailty

No. of subjects =          249                     Number of obs    =       249
No. of failures =          181
Time at risk    =         3320
                                                   LR chi2(64)      =    332.49
Log likelihood  =   -188.52499                     Prob > chi2      =    0.0000
```

_t	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
age	-.0349292	.0169244	-2.06	0.039	-.0681004	-.001758
famsi1	-.0251116	.0449011	-0.56	0.576	-.1131162	.062893
famsi2	-.019038	.0252614	-0.75	0.451	-.0685495	.0304735
fmlf	-.0073957	.0383684	-0.19	0.847	-.0825963	.067805
cgpa	-.022226	.0160616	-1.38	0.166	-.0537062	.0092543
josefort	.0105842	.0085124	1.24	0.214	-.0060999	.0272683
exundur	.0826839	.0237762	3.48	0.001	.0360835	.1292844
exsar	-2.12e-06	.000045	-0.05	0.962	-.0000902	.000086
reswage	.0001124	.0000602	1.87	0.062	-5.61e-06	.0002305
actsel	-.0003793	.0000338	-11.21	0.000	-.0004456	-.000313
SEX	.0009982	.1057487	0.01	0.992	-.2062655	.2082619
ETHEN1	-.5034769	.1632425	-3.08	0.002	-.8234263	-.1835276
ETHEN2	-.6709349	.1795696	-3.74	0.000	-1.022885	-.3189849
ETHEN3	-1.258541	.2998149	-4.20	0.000	-1.846167	-.6709146
ETHEN4	.0186663	.2142406	0.09	0.931	-.4012375	.4385701
ETHEN5	-.4778162	.225008	-2.12	0.034	-.9188238	-.0368085
ETHEN6	0	(omitted)				
RELIG1	-.543571	.3156093	-1.72	0.085	-1.162154	.0750117
RELIG2	-.4614918	.3050907	-1.51	0.130	-1.059459	.1364749
RELIG3	-.5258082	.3096016	-1.70	0.089	-1.132616	.0809997
RELIG4	.2917873	.41676	0.70	0.484	-.5250473	1.108622
RELIG5	0	(omitted)				
FATHEL1	-.1512204	.217956	-0.69	0.488	-.5784062	.2759655
FATHEL2	-.0361084	.2080717	-0.17	0.862	-.4439215	.3717046
FATHEL3	-.0510709	.2137972	-0.24	0.811	-.4701057	.3679639
FATHEL4	-.180062	.2021975	-0.89	0.373	-.5763617	.2162378
FATHEL5	.1443879	.1759203	0.82	0.412	-.2004096	.4891855
FATHEL6	-.1541667	.3118822	-0.49	0.621	-.7654445	.4571111
MOTHEL1	-.2023602	.1879504	-1.08	0.282	-.5707363	.1660159
MOTHEL2	.0803466	.1864135	0.43	0.666	-.2850172	.4457103
MOTHEL3	-.1818475	.1801839	-1.01	0.313	-.5350014	.1713064
MOTHEL4	.0826238	.2008599	0.41	0.681	-.3110543	.4763019
MOTHEL5	0	(omitted)				
MOTHEL6	0	(omitted)				
FATHEMSEC1	-.4667859	.1732269	-2.69	0.007	-.8063043	-.1272675
FATHEMSEC2	-.5026364	.3188773	-1.58	0.115	-1.127624	.1223517
FATHEMSEC3	.4354025	.2131211	2.04	0.041	.0176928	.8531122
FATHEMSEC4	-.3120117	.1246427	-2.50	0.012	-.5563069	-.0677165
FATHEMSEC5	0	(omitted)				
MOTHEMSEC1	-.3485633	.1903522	-1.83	0.067	-.7216468	.0245202
MOTHEMSEC2	.208234	.3704844	0.56	0.574	-.517902	.93437
MOTHEMSEC3	.5767736	.2128278	2.71	0.007	.1596389	.9939084
MOTHEMSEC4	-.1094197	.1153392	-0.95	0.343	-.3354803	.1166409
MOTHEMSEC5	0	(omitted)				
UNETRYQUAL	.2018148	.1074124	1.88	0.060	-.0087096	.4123393
FLDSDY1	-.6839145	.3910064	-1.75	0.080	-1.450273	.082444
FLDSDY2	.0030194	.3103457	0.01	0.992	-.605247	.6112858
FLDSDY3	-.1142299	.2777427	-0.41	0.681	-.6585956	.4301358
FLDSDY4	-.09976	.3111667	-0.32	0.749	-.7096356	.5101156
FLDSDY5	.2946789	.4051682	0.73	0.467	-.4994361	1.088794
FLDSDY6	.0896473	.3301231	0.27	0.786	-.5573822	.7366767
FLDSDY7	-.1838622	.3030329	-0.61	0.544	-.7777957	.4100714
FLDSDY8	.0069949	.2982795	0.02	0.981	-.5776223	.5916121
FLDSDY9	0	(omitted)				
UNIATEND	-.3663756	.1241394	-2.95	0.003	-.6096842	-.1230669
PROATEND1	-2.412778	.6095791	-3.96	0.000	-3.607531	-1.218024
PROATEND2	-.0696785	.1913389	-0.36	0.716	-.4446958	.3053388
PROATEND3	.4276713	.1449701	2.95	0.003	.1435352	.7118074
PROATEND4	0	(omitted)				
FINDIFF1	0	(omitted)				
FINDIFF2	.0908683	.2130246	0.43	0.670	-.3266523	.5083889
FINDIFF3	-.4421123	.1162446	-3.80	0.000	-.6699476	-.214277
FINDIFF4	-.4378297	.121464	-3.60	0.000	-.6758948	-.1997647
FINDIFF5	0	(omitted)				
UNEARINC1	-.048439	.1878617	-0.26	0.797	-.4166411	.3197631
UNEARINC2	.333757	.2426316	1.38	0.169	-.1417921	.8093061
UNEARINC3	.2659902	.167588	1.59	0.112	-.0624762	.5944565
UNEARINC4	-.1299078	.1175729	-1.10	0.269	-.3603465	.1005308
UNEARINC5	-.0000628	.1498718	-0.00	1.000	-.2938062	.2936806
UNEARINC6	0	(omitted)				
INMFTEJOB1	-.597223	.1421972	-4.20	0.000	-.8759243	-.3185216
INMFTEJOB2	-.0946094	.2413928	-0.39	0.695	-.5677307	.3785119
INMFTEJOB3	-.6315368	.1933209	-3.27	0.001	-1.010439	-.2526348
INMFTEJOB4	-.5913039	.172268	-3.43	0.001	-.928943	-.2536648
INMFTEJOB5	-.3976398	.1739239	-2.29	0.022	-.7385245	-.0567551
INMFTEJOB6	0	(omitted)				
INMFTEJOB6	0	(omitted)				
_cons	6.069482	.6049306	10.03	0.000	4.88384	7.255125
/ln_gam	-1.258916	.0848698	-14.83	0.000	-1.425257	-1.092574
/ln_the	-1.54658	.4431207	-3.49	0.000	-2.415081	-.6780797
gamma	.2839618	.0240998			.2404466	.3353522
theta	.2129751	.0943736			.0893601	.5075908

```
Likelihood-ratio test of theta=0: chibar2(01) =      9.87 Prob>=chibar2 = 0.001

. stset unedu, failure(EXTSTATUS==1) scale(1) noshow

     failure event:  EXTSTATUS == 1
obs. time interval:  (0, unedu]
 exit on or before:  failure

------------------------------------------------------------------------------
      250  total observations
        1  observation ends on or before enter()
------------------------------------------------------------------------------
      249  observations remaining, representing
      181  failures in single-record/single-failure data
     3320  total analysis time at risk and under observation
                                     at risk from t =         0
                          earliest observed entry t =         0
                               last observed exit t =        52
```

APPENDIX F; Parametric Models with invGaurssian heterogeneity Results

Table 11; Exponential regression with invGaurssian heterogeneity (Jimma April 2017)

```
Exponential regression -- log relative-hazard form
                       Inverse-Gaussian frailty

No. of subjects =          249                     Number of obs    =       249
No. of failures =          181
Time at risk    =         3320
                                                   LR chi2(64)      =    213.14
Log likelihood  =   -255.99921                     Prob > chi2      =    0.0000
```

_t	Haz. Ratio	Std. Err.	z	P>|z|	[95% Conf.	Interval]
age	1.016148	.0366066	0.44	0.657	.9468751	1.09049
famsi1	1.200861	.1054368	2.08	0.037	1.011012	1.426359
famsi2	1.025554	.0519454	0.50	0.618	.9286332	1.13259
fmlf	.9973737	.0734832	-0.04	0.972	.863265	1.152316
cgpa	1.051613	.0348	1.52	0.128	.9855713	1.12208
josefort	.9902858	.0153799	-0.63	0.530	.9605958	1.020893
exundur	.9165705	.0440301	-1.81	0.070	.8342111	1.007061
exsar	1.000122	.0000897	1.36	0.175	.999946	1.000297
reswage	.9998065	.0001223	-1.58	0.114	.9995669	1.000046
actsel	1.000284	.000047	6.06	0.000	1.000192	1.000376
SEX	1.243132	.250682	1.08	0.280	.8372775	1.845717
ETHEN1	1.377298	.4616318	0.96	0.340	.7140508	2.656605
ETHEN2	1.85052	.6744958	1.69	0.091	.9058151	3.780491
ETHEN3	4.069635	2.284184	2.50	0.012	1.354558	12.22682
ETHEN4	.7493921	.3654063	-0.59	0.554	.2881775	1.948759
ETHEN5	1.453009	.6777127	0.80	0.423	.5824393	3.624815
ETHEN6	1	(omitted)				
RELIG1	2.155069	1.244244	1.33	0.184	.6950469	6.682029
RELIG2	1.920763	1.091851	1.15	0.251	.630393	5.852431
RELIG3	1.870755	1.068612	1.10	0.273	.6106519	5.731125
RELIG4	1.044089	.7310073	0.06	0.951	.2647147	4.118099
RELIG5	1	(omitted)				
FATHEL1	1.020159	.418846	0.05	0.961	.4562374	2.281104
FATHEL2	.6409869	.2575663	-1.11	0.268	.291617	1.408917
FATHEL3	.9330782	.383857	-0.17	0.866	.4166239	2.089739
FATHEL4	.9181017	.3399866	-0.23	0.818	.444302	1.897157
FATHEL5	.9035887	.3346479	-0.27	0.784	.4372448	1.867312
FATHEL6	.8788675	.5271235	-0.22	0.830	.2712647	2.847433
MOTHEL1	1.077415	.4348949	0.18	0.853	.4884253	2.376663
MOTHEL2	.7918576	.3310356	-0.56	0.577	.3489818	1.796765
MOTHEL3	1.371715	.5435834	0.80	0.425	.6308839	2.982484
MOTHEL4	1.254181	.5495469	0.52	0.605	.5313583	2.96028
MOTHEL5	1	(omitted)				
MOTHEL6	1	(omitted)				
FATHEMSEC1	1.546053	.5312534	1.27	0.205	.7883796	3.031891
FATHEMSEC2	2.505567	1.613278	1.43	0.154	.7093108	8.850655
FATHEMSEC3	1.169125	.479968	0.38	0.703	.5228922	2.614026
FATHEMSEC4	1.906589	.5090817	2.42	0.016	1.129734	3.217643
FATHEMSEC5	1	(omitted)				
MOTHEMSEC1	1.814533	.7362903	1.47	0.142	.8191616	4.019392
MOTHEMSEC2	1.539792	1.302287	0.51	0.610	.2934638	8.079228
MOTHEMSEC3	.9252607	.3799022	-0.19	0.850	.4137804	2.06899
MOTHEMSEC4	1.131528	.2591751	0.54	0.590	.7222681	1.772686
MOTHEMSEC5	1	(omitted)				
UNETRYQUAL	.660765	.1439554	-1.90	0.057	.4311246	1.012724
FLDSDY1	1.725115	1.347686	0.70	0.485	.3731187	7.976077
FLDSDY2	1.355071	.8422917	0.49	0.625	.4007449	4.582011
FLDSDY3	1.163891	.6552011	0.27	0.787	.3861331	3.508229
FLDSDY4	.9946349	.6524436	-0.01	0.993	.2749838	3.597662
FLDSDY5	1.39441	1.102678	0.42	0.674	.2959873	6.569129
FLDSDY6	.881057	.5897668	-0.19	0.850	.2372587	3.271794
FLDSDY7	1.238385	.7475561	0.35	0.723	.3793366	4.042843
FLDSDY8	.684634	.4239564	-0.61	0.541	.2034023	2.304417
FLDSDY9	1	(omitted)				
UNIATEND	1.772427	.4550969	2.23	0.026	1.071543	2.93175
PROATEND1	8.627415	7.9789	2.33	0.020	1.408196	52.85647
PROATEND2	1.369889	.5411144	0.80	0.426	.6316192	2.971085
PROATEND3	.6458255	.1875024	-1.51	0.132	.3655831	1.140892
PROATEND4	1	(omitted)				
FINDIFF1	1	(omitted)				
FINDIFF2	.830537	.3143714	-0.49	0.624	.3955176	1.744023
FINDIFF3	1.764005	.4259313	2.35	0.019	1.098933	2.831577
FINDIFF4	1.307147	.2987526	1.17	0.241	.8351788	2.045828
FINDIFF5	1	(omitted)				
UNEARINC1	1.295834	.5078078	0.66	0.508	.6011498	2.793289
UNEARINC2	1.097063	.5581761	0.18	0.856	.4047131	2.973825
UNEARINC3	.8770732	.302375	-0.38	0.704	.446252	1.723818
UNEARINC4	1.263532	.2871257	1.03	0.303	.809392	1.972486
UNEARINC5	.5945129	.1852932	-1.67	0.095	.3227494	1.095109
UNEARINC6	1	(omitted)				
INMFTEJOB1	2.326002	.6807437	2.88	0.004	1.310665	4.127895
INMFTEJOB2	1.282007	.5986507	0.53	0.595	.5133456	3.201626
INMFTEJOB3	1.779696	.6665939	1.54	0.124	.85413	3.708237
INMFTEJOB4	2.119722	.7496886	2.12	0.034	1.059819	4.239611
INMFTEJOB5	1.87729	.6987855	1.69	0.091	.9050819	3.893812
INMFTEJOB6	1	(omitted)				
INMFTEJOB6	1	(omitted)				
_cons	.001424	.0018267	-5.11	0.000	.0001152	.0175965
/ln_the	-16.27821	580.4608	-0.03	0.978	-1153.961	1121.404
theta	8.52e-08	.0000495			0	.

```
Likelihood-ratio test of theta=0: chibar2(01) =     0.00 Prob>=chibar2 = 1.000
```

Table 12; Gompertz regression with invGaurssian heterogeneity (Jimma April 2017)

```
Gompertz regression -- log relative-hazard form
                    Inverse-Gaussian frailty

No. of subjects =          249                 Number of obs    =       249
No. of failures =          181
Time at risk    =         3320
                                               LR chi2(64)      =    247.12
Log likelihood  =   -238.97622                 Prob > chi2      =    0.0000
```

_t	Haz. Ratio	Std. Err.	z	P>|z|	[95% Conf.	Interval]
age	1.020725	.0389627	0.54	0.591	.9471462	1.10002
famsi1	1.257712	.1139648	2.53	0.011	1.053056	1.502142
famsi2	1.005888	.0530461	0.11	0.911	.9071123	1.11542
fmlf	1.056939	.0807275	0.73	0.468	.909989	1.227618
cgpa	1.074115	.0357559	2.15	0.032	1.006272	1.146531
josefort	.9870336	.0155169	-0.83	0.406	.9570848	1.01792
exundur	.8705827	.0440703	-2.74	0.006	.7883532	.9613891
exsar	1.000197	.0000939	2.10	0.036	1.000013	1.000381
reswage	.9997273	.0001269	-2.15	0.032	.9994785	.9999761
actsel	1.000302	.0000476	6.34	0.000	1.000209	1.000395
SEX	1.38203	.2919336	1.53	0.126	.9135105	2.090842
ETHEN1	1.698814	.6021366	1.50	0.135	.848089	3.402908
ETHEN2	2.612852	1.014044	2.47	0.013	1.221138	5.590684
ETHEN3	6.084012	3.566166	3.08	0.002	1.928658	19.19221
ETHEN4	.8286032	.4279114	-0.36	0.716	.3011375	2.279966
ETHEN5	1.957782	.9622525	1.37	0.172	.7471322	5.130161
ETHEN6	1	(omitted)				
RELIG1	2.940076	1.720861	1.84	0.065	.9335558	9.259273
RELIG2	2.589749	1.492116	1.65	0.099	.8371962	8.011025
RELIG3	2.696976	1.558302	1.72	0.086	.8690731	8.369467
RELIG4	1.331471	.9471763	0.40	0.687	.3302232	5.368536
RELIG5	1	(omitted)				
FATHEL1	.9204095	.3889939	-0.20	0.844	.4020098	2.107296
FATHEL2	.5340213	.22125	-1.51	0.130	.2370816	1.202872
FATHEL3	.8664604	.3687986	-0.34	0.736	.3762226	1.995504
FATHEL4	.952815	.358742	-0.13	0.898	.4555382	1.992932
FATHEL5	.9781095	.3771755	-0.06	0.954	.4593565	2.082692
FATHEL6	.9845796	.6076847	-0.03	0.980	.2936888	3.300763
MOTHEL1	1.147372	.4841368	0.33	0.745	.5018077	2.62344
MOTHEL2	.7815085	.3435069	-0.56	0.575	.3302127	1.849582
MOTHEL3	1.420948	.583943	0.85	0.393	.6350005	3.17967
MOTHEL4	1.425376	.6560939	0.77	0.441	.5782629	3.513448
MOTHEL5	1	(omitted)				
MOTHEL6	1	(omitted)				
FATHEMSEC1	1.532109	.5366032	1.22	0.223	.7711991	3.043779
FATHEMSEC2	2.926044	1.931703	1.63	0.104	.8023024	10.67145
FATHEMSEC3	1.178241	.5128995	0.38	0.706	.5019932	2.765478
FATHEMSEC4	2.19677	.6221581	2.78	0.005	1.260989	3.826992
FATHEMSEC5	1	(omitted)				
MOTHEMSEC1	2.363808	1.011786	2.01	0.044	1.021575	5.469581
MOTHEMSEC2	2.208816	1.911847	0.92	0.360	.4049482	12.04813
MOTHEMSEC3	1.005127	.4257285	0.01	0.990	.4382167	2.305437
MOTHEMSEC4	1.165954	.2791215	0.64	0.521	.7293057	1.864032
MOTHEMSEC5	1	(omitted)				
UNETRYQUAL	.5118899	.1208353	-2.84	0.005	.3222881	.8130342
FLDSDY1	2.12345	1.7083	0.94	0.349	.43879	10.27608
FLDSDY2	1.633448	1.033885	0.78	0.438	.4724331	5.647683
FLDSDY3	1.493342	.8573805	0.70	0.485	.484679	4.601127
FLDSDY4	1.017602	.6844341	0.03	0.979	.2723103	3.802699
FLDSDY5	1.557617	1.271665	0.54	0.587	.3144309	7.716066
FLDSDY6	1.014092	.7022974	0.02	0.984	.2609685	3.940641
FLDSDY7	1.562734	.9621912	0.73	0.468	.4675108	5.223704
FLDSDY8	.7189175	.4537446	-0.52	0.601	.208662	2.476935
FLDSDY9	1	(omitted)				
UNIATEND	2.434511	.6671872	3.25	0.001	1.422777	4.165689
PROATEND1	13.8124	13.11958	2.76	0.006	2.14666	88.87408
PROATEND2	1.460049	.5980188	0.92	0.355	.6542224	3.258439
PROATEND3	.4976942	.1534278	-2.26	0.024	.2719922	.910686
PROATEND4	1	(omitted)				
FINDIFF1	1	(omitted)				
FINDIFF2	.6657246	.2591678	-1.05	0.296	.3103989	1.427805
FINDIFF3	1.997181	.5043664	2.74	0.006	1.217463	3.276266
FINDIFF4	1.207806	.2843145	0.80	0.423	.7614235	1.915878
FINDIFF5	1	(omitted)				
UNEARINC1	1.19782	.4901967	0.44	0.659	.5370874	2.671393
UNEARINC2	1.067795	.5508936	0.13	0.899	.3884534	2.935197
UNEARINC3	.7329469	.2630383	-0.87	0.387	.3627398	1.480982
UNEARINC4	1.265233	.2963159	1.00	0.315	.7995029	2.002261
UNEARINC5	.4580314	.1520036	-2.35	0.019	.2390084	.8777633
UNEARINC6	1	(omitted)				
INMFTEJOB1	3.531886	1.120844	3.98	0.000	1.896173	6.57863
INMFTEJOB2	1.685305	.8318316	1.06	0.290	.640535	4.434186
INMFTEJOB3	2.445954	.97505	2.24	0.025	1.119765	5.342807
INMFTEJOB4	3.136715	1.185683	3.02	0.002	1.49527	6.58007
INMFTEJOB5	2.457639	.9645872	2.29	0.022	1.138765	5.303984
INMFTEJOB6	1	(omitted)				
INMFTEJOB6	1	(omitted)				
_cons	.0001982	.0002787	-6.06	0.000	.0000126	.0031191
/gamma	.0632888	.0106875	5.92	0.000	.0423416	.0842359
/ln_the	-14.78652	920.4793	-0.02	0.987	-1818.893	1789.32
theta	3.79e-07	.0003486			0	.

```
Likelihood-ratio test of theta=0: chibar2(01) =     0.00 Prob>=chibar2 = 1.000
```

Table13; log-logistic regression with invGaurssian heterogeneity (Jimma April 2017)

```
Loglogistic regression -- accelerated failure-time form
                       Inverse-Gaussian frailty

No. of subjects =          249                 Number of obs    =       249
No. of failures =          181
Time at risk    =         3320
                                               LR chi2(64)      =    329.74
Log likelihood  =   -189.21785                 Prob > chi2      =    0.0000
```

_t	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
age	-.0343923	.0170468	-2.02	0.044	-.0678034	-.0009811
famsi1	-.0267128	.0455701	-0.59	0.558	-.1160284	.0626029
famsi2	-.0194907	.0255508	-0.76	0.446	-.0695694	.0305879
fmlf	-.0045939	.0386966	-0.12	0.906	-.0804379	.0712501
cgpa	-.0221684	.0163113	-1.36	0.174	-.0541379	.0098011
josefort	.0108234	.0085653	1.26	0.206	-.0059642	.027611
exundur	.0822776	.0240119	3.43	0.001	.0352151	.1293401
exsar	-5.21e-06	.0000452	-0.12	0.908	-.0000937	.0000833
reswage	.0001157	.0000607	1.91	0.057	-3.33e-06	.0002346
actsel	-.0003756	.000034	-11.06	0.000	-.0004422	-.0003091
SEX	-.0084916	.1061218	-0.08	0.936	-.2164865	.1995032
ETHEN1	-.5047548	.1649039	-3.06	0.002	-.8279606	-.1815491
ETHEN2	-.6679056	.1814584	-3.68	0.000	-1.023558	-.3122537
ETHEN3	-1.268473	.3020299	-4.20	0.000	-1.860441	-.6765051
ETHEN4	.0262836	.2160443	0.12	0.903	-.3971554	.4497227
ETHEN5	-.4800724	.2275339	-2.11	0.035	-.9260307	-.034114
ETHEN6	0	(omitted)				
RELIG1	-.5535309	.3190955	-1.73	0.083	-1.178947	.0718848
RELIG2	-.4656801	.3091286	-1.51	0.132	-1.071561	.1402009
RELIG3	-.5326817	.3129138	-1.70	0.089	-1.145981	.0806181
RELIG4	.2694649	.4168308	0.65	0.518	-.5475085	1.086438
RELIG5	0	(omitted)				
FATHEL1	-.1388676	.2194107	-0.63	0.527	-.5689048	.2911695
FATHEL2	-.0167391	.2091183	-0.08	0.936	-.4266034	.3931252
FATHEL3	-.0480611	.2151075	-0.22	0.823	-.4696641	.373542
FATHEL4	-.1657715	.2035071	-0.81	0.415	-.564638	.233095
FATHEL5	.1458354	.1773826	0.82	0.411	-.201828	.4934989
FATHEL6	-.1633403	.3158975	-0.52	0.605	-.782488	.4558073
MOTHEL1	-.1964384	.1901126	-1.03	0.301	-.5690523	.1761755
MOTHEL2	.0850079	.1885623	0.45	0.652	-.2845674	.4545832
MOTHEL3	-.1811424	.1823725	-0.99	0.321	-.5385859	.176301
MOTHEL4	.078337	.2032707	0.39	0.700	-.3200663	.4767402
MOTHEL5	0	(omitted)				
MOTHEL6	0	(omitted)				
FATHEMSEC1	-.4544638	.1748257	-2.60	0.009	-.7971159	-.1118117
FATHEMSEC2	-.494508	.3234369	-1.53	0.126	-1.128433	.1394166
FATHEMSEC3	.4241247	.2147119	1.98	0.048	.0032972	.8449522
FATHEMSEC4	-.3167221	.1260347	-2.51	0.012	-.5637456	-.0696987
FATHEMSEC5	0	(omitted)				
MOTHEMSEC1	-.3506733	.1916259	-1.83	0.067	-.7262532	.0249066
MOTHEMSEC2	.2072146	.3750441	0.55	0.581	-.5278584	.9422875
MOTHEMSEC3	.5658854	.2148928	2.63	0.008	.1447032	.9870676
MOTHEMSEC4	-.1072228	.1167756	-0.92	0.359	-.3360987	.1216532
MOTHEMSEC5	0	(omitted)				
UNETRYQUAL	.2017652	.1083894	1.86	0.063	-.010674	.4142045
FLDSDY1	-.6806361	.3954603	-1.72	0.085	-1.455724	.0944519
FLDSDY2	-.0039232	.3138073	-0.01	0.990	-.6189742	.6111278
FLDSDY3	-.1121153	.2804178	-0.40	0.689	-.661724	.4374934
FLDSDY4	-.0930457	.3140986	-0.30	0.767	-.7086676	.5225761
FLDSDY5	.279335	.4117084	0.68	0.497	-.5275986	1.086269
FLDSDY6	.0862542	.3333498	0.26	0.796	-.5670995	.7396079
FLDSDY7	-.1821211	.3060743	-0.60	0.552	-.7820158	.4177735
FLDSDY8	.0143081	.3008993	0.05	0.962	-.5754437	.6040599
FLDSDY9	0	(omitted)				
UNIATEND	-.3701283	.1250722	-2.96	0.003	-.6152653	-.1249912
PROATEND1	-2.406612	.6053032	-3.98	0.000	-3.592984	-1.220239
PROATEND2	-.0758759	.1929445	-0.39	0.694	-.4540402	.3022885
PROATEND3	.4225891	.1463958	2.89	0.004	.1356586	.7095196
PROATEND4	0	(omitted)				
FINDIFF1	0	(omitted)				
FINDIFF2	.0946734	.2143958	0.44	0.659	-.3255346	.5148814
FINDIFF3	-.4410876	.1174919	-3.75	0.000	-.6713675	-.2108077
FINDIFF4	-.4318698	.1225004	-3.53	0.000	-.6719662	-.1917735
FINDIFF5	0	(omitted)				
UNEARINC1	-.0472314	.1902467	-0.25	0.804	-.420108	.3256452
UNEARINC2	.3309458	.2460711	1.34	0.179	-.1513446	.8132362
UNEARINC3	.2632537	.1691838	1.56	0.120	-.0683404	.5948478
UNEARINC4	-.1262862	.1182029	-1.07	0.285	-.3579597	.1053872
UNEARINC5	.0034596	.1510906	0.02	0.982	-.2926726	.2995918
UNEARINC6	0	(omitted)				
INMFTEJOB1	-.6037004	.1433271	-4.21	0.000	-.8846164	-.3227844
INMFTEJOB2	-.105351	.2436796	-0.43	0.665	-.5829542	.3722522
INMFTEJOB3	-.6316695	.1943489	-3.25	0.001	-1.012586	-.2507526
INMFTEJOB4	-.5937341	.1740465	-3.41	0.001	-.934859	-.2526092
INMFTEJOB5	-.3978836	.1764938	-2.25	0.024	-.743805	-.0519622
INMFTEJOB6	0	(omitted)				
INMFTEJOB6	0	(omitted)				
_cons	6.043562	.6105683	9.90	0.000	4.84687	7.240254
/ln_gam	-1.257513	.0921763	-13.64	0.000	-1.438176	-1.076851
/ln_the	-1.328025	.599574	-2.21	0.027	-2.503169	-.1528815
gamma	.2843603	.0262113			.2373604	.3406666
theta	.2650001	.1588872			.0818253	.8582315

```
Likelihood-ratio test of theta=0: chibar2(01) =     8.49 Prob>=chibar2 = 0.002
```

Appendix G: Research Questionnaire

Jimma University
College of Business and Economics
Department of Economics

RESEARCH QUESTIONNAIRE;

Dear Respondent; *this self-administered* **questionnaire** *is designed to collect data from both employed and unemployed university graduates of 2004-2008 for an academic thesis titled* ***"The Determinants of Graduate Unemployment Duration and its impact: Evidence from Jimma Town, South West Ethiopia****. Its objective is for the preparation of thesis required for partial fulfillment of Master degree in Economic Policy Analysis (MSc). The information supplied by you would play a great role for the success of this study and keep in secret.*

I glad to extend my thanks for your cooperation in advance!!

- *Use this "✓" mark for the answer you select on the box in front provided.*
- *No need of writing your name.*

PART I: Personal Information;

1. Age _____
2. Sex; ☐Male ☐ Female
3. Ethnicity; ☐Oromo ☐Amhara ☐Tigre ☐Gurage ☐Dawro ☐Others
4. Language proficiency;

i. Your ''Mother thoungh'' language is _____

ii. Among languages in the table, give usage profficience level as scaled bellow.

Seri. No.	language	Self-perceived ordinal scale(level) of language usage					
		Excellent (5)	V. good (4)	Good (3)	modest (2)	limited (1)	Non-user (0)
1	English						
2	Afan Oromoo						
3	Amharic						
4	Tigrigna						
5	guragegn						
6	Others						

5. Religion; ☐Muslim ☐Orthodox ☐Protestant ☐Waqoffata ☐Others
6. Hometown during you are/was searching for a job?

☐ Town (local area under city administration) ☐Rural (area under rural administration)

7. Marital status at during you are/was searching for a job?; ☐ Married ☐ single
8. If married, family size in number; Male _____ Female_____ Total _____
9. Are you Head of household in your family? ☐ Yes. ☐ No.

PART II: Your Parent Background;

1. Family size in number;

   Male_____ Female _____ Total _____
2. Working **labor force** family member in number;

   Male_____ Female _____ Total _____
3. Alive **parent** you have;

   ☐Both ☐ Mather only ☐Father only ☐None of them
4. Father's **education** level; ☐ No school at all ☐read and write only ☐grade 1-8 ☐grade9- 12☐College diploma ☐degree/ above
5. Your mother's **education** level; ☐ No school at all ☐read and write only ☐grade 1-8 ☐grade9- 12 ☐College diploma ☐degree/ above
6. Is your father doing income generating **economic activities** during you are/were searching for a job? ☐ Yes ☐No
7. If yes, in which sector he employed?

   ☐ Government /public sector ☐Non-government organization ☐private organization ☐self-employed
8. Does he have an official position in government administrative office? ☐ Yes ☐No
9. Is your mother doing income generating **economic activities** during you are/were searching for a job? ☐ Yes ☐No
10. If yes, in which sector she employed?

    ☐ Government/public ☐Non-government organization ☐private organization ☐self-employed
11. Does she have an official position in government administrative office? ☐ Yes ☐No
12. Responsibilities you are/were taking /taken in helping your parent during a job search?

    ☐Very high ☐High ☐Medium ☐ Limited ☐Very limited

PART III: Educational background;

1. University **entry** qualification;

☐Ethiopian Higher Education Entrance (EHEELE) qualification certificate

☐College/university Diploma

2. Institution(University) name you were attended; _____
3. **The Institution** (university) in which you were studied; ☐Government ☐Private
4. **Field** of study _____
5. The Program you have attended;

   ☐ Regular ☐Weekend C. ☐Evening ☐Continuing and distance education
6. How you perceived the marketability (demand) of your field of study;

   ☐Very high ☐ High ☐Moderate ☐ Low ☐ Very low
7. Cumulative grade point average**(CGPA**); _____
8. Have you taken practicum (industrial training) during education?

   ☐Yes ☐ No
9. Do you have a job you are/were doing during educational vacations?

   ☐Yes ☐ No
10. Did you have work experience you got from work you were done during university vacations?

    ☐Yes ☐ No
11. Do you have developed skill from a job you were doing during university vacations?

    ☐Yes ☐ No
12. Overall life happiness during university all years;

    ☐Very happy ☐Happy ☐Moderately happy ☐Unhappy ☐Very unhappy
13. Overall life happiness during university final year;

    ☐Very happy ☐Happy ☐Moderately happy ☐Unhappy☐ Very unhappy
14. Expectation you have on getting job or employment after graduation;

    ☐Very high ☐High ☐Medium☐ Low ☐Very low
15. When did you **graduate**? Date/Month/Year_____/_____/_____

PART V: Job search related issues;

1. Have you taken **training** on how job searching (interviewing)? ☐Yes ☐ No
2. After your graduation, did you **searched** for job vacancies? ☐Yes ☐ No
3. If your answer above is yes, in which organization you have **preferred to search a job**?

☐Government/public ☐ Private organization (corporate as well as non-corporate)

☐ Non-Government Organization ☐All/No preference

4. For How much **job vacancies** you have submitted your applications? In number_____
5. Among your applications, list vacancies and available job opportunity you remember while you are job searching, write three of them in the table below.

S.No.	Job vacancy you observed	Number of applicants	Number of accepted applicants	remarks
1				
2				
3				

6. After How much months of job searching you were expected to get a job? _____Months.
7. The amount of salary you have expected for your employment _____ETB.
8. The minimum salary you would have willing to accept employment contract while you have searched for a job is _____ ETB.
9. Updated market information on the job (vacancies) during you are/were searching for a job you have? ☐Very high ☐High ☐Medium☐ Low ☐Very low

PART VI: Employment condition;

1. Have you employed now? ☐Yes ☐ No
2. If yes, when did you employed? Date/Month/Year_____/_____/_____
   A. In which organization have you employed?
   ☐Government/public ☐Private Organization ☐Nongovernment organization
   B. Salary of your employment; _____ETB.
3. If your answer to question 1 above is **not**,
   A. Estimated Average income you may get from all sources (from family, relatives, friends, temporary job if any and others) per month in Birr you can? _____.
   B. What do you expect after now?
   ☐ I would search job until employed ☐I would do my own job
   ☐I wouldn't expect anything ☐ I don't know ☐others

PART VII: Financial difficulties and Source of income while unemployed;

1. Financial difficulties you faced during job search is;

☐Very high ☐ High ☐Moderate ☐Low ☐Very low

2. Did you have support (temporary income) during unemployment?

   ☐Very high ☐High ☐Medium☐ Low ☐Very low

3. If your answer to question 2 above is yes, Expected sources of income you might it have/were used while you have not employed is listed in the table below. According to their essentiality, order them using an ordinal scale.

S. No	Expected Source of finance	Self-perceived ordinal scale					
		V.High	High	Moderate	Limited	V.limited	None
1	Family/Relatives/Friends						
2	Government or Non-Government						
3	Daily laborer/ Temporary job						
4	Borrowing/Accumulated wealth						
5	others (from begging, Criminal activities, underground economic activities)						

Thank you!