

**DURATION ANALYSIS OF LONG-TERM UNEMPLOYMENT
AND IMPACT EVALUATION OF JOB CREATION SCHEMES:
(THE CASE OF DIRE DAWA CITY ADMINISTRATION)**

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ABSTRACT

In this paper duration model and propensity score matching are used to analyze the determinants of duration of unemployment and to evaluate the impact of job creation program on earnings of the registered unemployed in Dire Dawa administration, respectively. The researchers used a cross-sectional data collected in 2017 based on the unemployed individuals registered by the administration food security and micro and small enterprise agency in 2016. From the descriptive analysis it was possible to identify the types of unemployed in the administration. Surprisingly enough the kind of unemployment dominated in the administration was termed, in this research, as unique unemployment caused by school dropout, family responsibility and poverty, which are different from the conventional sources of unemployment.

It was also found that for the registered unemployed who have employed currently the social networking (family, friends, etc.) means of acquiring job was the most important means, followed by the job creation program. Even if the “job search criteria” was not considered to define unemployed in this research, the majority of the unemployed were found to be not seeking job in the last three months during the interview period, indicating either the unemployed have given up in the job market or they were not initially willing to be available at work.

According to the cox-proportional hazard model it was found that sex and age were the significant variables affecting the duration of unemployment. One of the finding regarding to sex is that the probability of employment of women is substantially lower than the male counterparts. And also as age increases the probability of employment has increased. Specifically, the probability of getting job will be low for the young compared to the non-young groups, contrary to what is observed to developed countries. In addition, the hazard rate (the probability of employment) is lower for the first-time job seekers than for those who have previous employment experiences. The administration should consider individuals who have been unemployed for more than six months since after this pick period the probability of employment declines , indicating the six-month definition of ILO long term unemployment applies to the administration and thus great efforts should be made before they reach their long term unemployment. We found no indication that participation in any of the job creation programs leads individuals to improve their earnings; in fact, the amount of earnings was large for the individuals that participated in the program.

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CHAPTER ONE: INTRODUCTION

1.1 BACKGROUND OF THE STUDY

According to the 2011 Ethiopian urban employment and unemployment survey, unemployment is the extent of unutilized human resource in the economy at a given area or region in a certain period of time. Unemployment is best described by two characteristics: incidence and duration (Foley, 1997). Unemployment incidence is measured by unemployment rate which is the proportion of the unemployed out of the total labor force in a country. Unemployment duration is measured by the length of time the unemployed spend to shift from a state of unemployment to employment.

Sources (CSA, 2011; and Yared, Alemayehu and Seid,2016) indicate that Ethiopia is experiencing high incidence of urban unemployment rate, even if it is declining , for example , 21.0% in 2013, 17.4% in 2014 and 16.85% in 2015. It is also combined with a long duration of unemployment as a study by Serneels (2001) has shown that the mean duration of unemployment of Ethiopia lasted 48 months or 4 years. In Dire Dawa context, the unemployment rate in 2014 was 20%, which is less the urban unemployment rate of Ethiopia (20.7%) but greater than the overall unemployment rate of Ethiopia (17.4%) (Dire Dawa MSE, 2017).

According to the International Labor Organization (ILO), Long-term unemployment is defined as referring to people who have been unemployed for 12 months or more (OECD,2011), while lower duration limits (six months or more) are also sometimes considered .There are several reasons to be concerned about people being unemployed for a long period of time from economic and social viewpoints.

Ethiopia has devoted considerable resources to active labor market programs (ALMPs) or job creation schemes to alleviate unemployment problems and to generate employment. According to Ethiopia's National Employment Policy and Strategy (NEPS) (2009), employment generation has three important dimensions (Martha, 2012). The first dimension (the demand side of job creation) is creating jobs for various skill categories as per the requirement of the economy; the second dimension (the supply side of job creation) is concerned with improving and raising labor

productivity; and the third dimension (the labor market institutions) includes employment policies and strategies and employment services.

1.2 PROBLEM STATEMENT

Regional governments were expected to include their own active labor market programs in their respective growth and transformation plans (GTPs) and Dire Dawa was not an exception to this. But there have not been adequate researches on impact evaluations of the active labor market programs in the region, except for the few researches on unemployment and related topics such as micro and small enterprises. Such lack of sufficient researches on job creation schemes misguide the efforts that are being done by the federal and particular by the administration to reduce unemployment problems and to strengthen the poverty reduction process.

This research evaluates the active labor market programs implemented on unemployed individuals registered in 2016 in Dire Dawa city administration. The early assessment of the program helps to indicate whether the program is achieving its targets in the second period of the GTP-II plan and to indicate from the outset to the administration the challenges of the implementation of the program and to take lessons to expand the same program (or other features of the program) for the rest of the GTP period. In addition, in order to properly design the social and economic policy model that should, on the one hand, alleviate the growing problem of long term unemployment and, on the other hand, promote an efficient reallocation of resources, it is important to understand the forces which tend to shape the structure of unemployment duration and its dynamics. Generally, the following questions have been addressed in this research:

- How much of the registered unemployment fall into long run unemployment?
- What does contribute to the registered individual to exit from the unemployment state?
- Do program participants find jobs at a short duration than similar individuals who were registered but not participating in the program?
- Do program participants find jobs that play higher wages than the jobs found by similar individuals?
- Do program participants continue to be engaged in one of the activities of the job creation program?

1.3 OBJECTIVES OF THE STUDY

The general objective of this paper was to assess the unemployment duration in Dire Dawa city and to examine the impact of job creation program on the welfare of the registered unemployed. The specific objectives included are the following:

- To assess the extent of duration of unemployment in Dire Dawa Administration.
- To examine the determinants of the unemployment duration in the study area; and
- To evaluate the impact of employment generation program on the unemployed welfare.

1.4 SIGNIFICANCE OF THE STUDY

The successful accomplishment of the study resulted in identification of the extent of duration of unemployment in the study area and helped to identify its determinants. It also indicated the efforts of the job creation programs to generate income to registered unemployed. Thus, the urban people, policy makers, government and non-governmental organizations working on reduction of unemployment can benefit from this result. It can also serve as reference for those who will be interested to study the duration part of unemployment, which has been given little attention in empirical research in Ethiopia.

1.5 SCOPE AND LIMITATION OF THE STUDY

The study included only those individuals registered as unemployed in urban Kebeles of the region. It was limited to the use of a retrospective cross sectional data to make the duration analysis. This study assumed that each individual unit is at risk of only one event at any one time, i.e. from unemployment spell to employment event. It ignored the possibility that for the same unit to experience repeatable events. Throughout the study, time varying independent variables were not included. It has also ignored the unobserved heterogeneity in the impact evaluation due to cross sectional nature of the data.

CHAPTER TWO: LITERATURE REVIEW

2.1 CONCEPTS AND DEFINITION OF TERMS

Unemployment is one of the indicators that have been used to measure the extent of unutilized human resource in the economy at a given area or region in a certain period of time. It indicates the quantity and quality of the human labor a nation or a region would have, and should be used to promote its economic development, but not actually used (UEUS, 2011). It is important to understand precisely how unemployment is defined and measured.

The International Labor Organization (1983) introduced three criteria that must be satisfied simultaneously to be considered unemployed: “without work”, “Currently available for work”, and “seeking work”. The seeking work criterion can be interpreted as activities or efforts that non-working persons performed to look for jobs during a specified reference period or prior to it. The specific steps include registration at a public or private exchange; applying to employers; checking at worksites, farms, factory gates, market or other assembly places; placing or answering newspaper advertisements; seeking assistance of friends or relatives; visit vacancy boards; looking for land, building, machinery or equipment to establish own enterprise, and arranging financial resources; applying for work permits and licenses, etc. This criterion might be restrictive and might not fully capture the prevailing employment situations in many developing countries including Ethiopia, where the labor market is largely unorganized or of limited scope, where labor absorption is inadequate or where the labor force is largely self-employed.

Hence, in this study, the seeking work criterion is completely relaxed and unemployment is based on the “without work” and “availability” criterion only. The availability in this situation is tested by asking the willingness to take up work for wage or salary in locally prevailing terms, or readiness to undertake self-employment activity; given the necessary resources and facilities, during the coming one month. The without work includes those persons who had no work (even part-time or temporary) or did not work at least four hours or did not have job to return to.

Two reference periods are identified to measure unemployment; shorter reference period (the current activity status approach) and longer reference period (the usual activity status approach). The current activity status approach measures the economic activity status of a person in a short reference period, that is, the seven days prior to the date of the interview. The usual activity

status approach measures the economic activity status of a person based on a long reference period of the six months prior to the date of interview. The choice of appropriate economic activity status measurement approach depends on the extent of variability of economic activities of the population during a specified of time in the study area. In urban areas, activities are relatively less affected by seasonal variations and hence shorter reference period or current activity status approach is found to be more convenient. And it is this approach which is applied in this research.

This approach is also used to measure employed people, which includes those engaged in productive economic activity. This study defined productive economic activity following the 2011 Urban Employment and Unemployment Survey. It involves the production of goods and/ or services for sale or exchange. In addition, production of goods and services for own consumption or own uses are also considered as economic activities. It could be performed for an individual, family or private enterprise, government establishment or social organization. The remuneration may be on daily, weekly, monthly, yearly or contract basis. The practical activities of apprentices are also considered as economic activities.

Measuring unemployment requires fixing the age limit which varies based on different conditions. But in this research the 15 year lower age limit is fixed assuming that people in urban areas of the country start taking part in many types of economic activities at that age. And the 60 year will be the upper limit because it is the maximum legal year where people retire from government employment.

The length of the unemployment spell (unemployment duration), which is the dependent variable in this study, has been defined as the number of months between the date of beginning of job search or without job to the date of its end. If the respondent's employment status has been changed in the middle of a month, it is specified which period covered the longer period of that month and, consequently, the month is considered either the last month of the preceding period or the first month of the following period. To every unemployment spell experienced by a sample member there is a vector of demographic and other individual characteristics.

Economists identified three main type of unemployment. This research made duration and impact analysis on the cyclical type of unemployment. Frictional unemployment is when workers leave their old jobs but have not yet found new ones. Most of the time workers leave

voluntarily, either because they need to move, or they have saved up enough money to allow them to look for a better job. Frictional unemployment also occurs when students are looking for that first job, or when mothers are returning to the work force. Frictional unemployment also occurs when workers are fired or, in some cases, laid off due to business specific reasons, such as a plant closure. Frictional unemployment is simply short term unemployment.

Structural unemployment is when shifts occur in the economy that creates a miss-match between the skills workers have and the skills needed by employers. An example is when an industry fires machinery workers and replaces them with robots. The workers need to learn how to manage the robots that replaced them. Those that do not must be retrained for other jobs, or face long-term structural unemployment. A long recession can create structural unemployment. If workers are unemployed for too long, their skills can become outdated. Unless they are willing and able to take a lower level, unskilled job, they may stay unemployed even when the economy recovers.

The third one- cyclical unemployment- is strictly caused by the contraction phase of the business cycle. Demand for goods and services fall dramatically, forcing businesses to lay off large numbers of workers to cut costs. Cyclical unemployment can usually create more unemployment, because the laid off workers now have less money to buy the things they need, further lowering demand.

2.2 THEORETICAL MODEL

As it is mentioned by Kupets(2005), the typical framework used in the empirical analysis of unemployment duration is the job search theory presented in Mortensen(1970) and Mortensen and Pissarides(1999). The theoretical model of job search in a two-state labor market (employment and unemployment) implies that when a worker becomes unemployed, the expected completed duration of unemployment spell ending in re-employment $\lambda(t)$ is influenced by the probability of receiving a job offer $\xi(t)$ (which could be further decomposed into a contact rate and an employer acceptance rate) and the probability then of accepting this job offer $\theta(t)$ determined by his\her reservation wage $r(t)$:

$$\lambda(t) = \xi(t, c(t)) \theta(t) = \xi(t, c(t)) [1 - F(r(t), t)],$$

Where c is the search intensity of the worker, and F is the cumulative distribution function of wage offers facing unemployed individual of duration t . thus, the expected length of an

individual's unemployment duration depends on the effort an individual makes to find a new job (job search intensity), the attractiveness of a person to an employer and local labor demand conditions, a wage offer distribution and the lowest acceptable wage, i.e. reservation wage (Machin and Manning, 1999). It is important to note that the reservation wage is not given as predetermined since according to the general model it is influenced by the individual's skill level (measured by the proportion of jobs open to him), the discount rate, and the level of unemployment benefits or guaranteed income available during unemployment which may vary directly or indirectly with duration t (Mortensen, 1970).

Since even the simple behavioral models relying on job search arguments place too many quite strong restrictions on the shape of duration distributions, it is preferred to study unemployment durations using a reduced form approach (Jenkins, 2008) which implies that the total effects of the variables on the probability of re-employment are estimated rather than separate effects on the probability of receiving a job offer and probability of accepting a job offer:

$$\lambda(t) = \lambda(X(t), t),$$

Where X is a vector of characteristics which in a general model can vary with unemployment duration t but in this model it remains unchanged over time. Vector of explanatory variables X may include local labor market conditions, measures of individual's human capital, demographic characteristics and health status, housing tenure, variables measuring various aspects of labor market experience prior to entering the unemployment spell, labor market status of spouse, income while unemployed and expected income in work, etc. (Devine and Kiefer, 1991). The explanatory variables, which are also known as covariates, used in this study are presented in chapter 3. All these explanatory variables are assumed to be exogenous parameters, i.e. that they are determined outside of the model. However, a strong caveat is required at this point.

Although some variables could reasonably be expected to vary independently of the other variables included in the model (e.g. gender, age, race, nationality, etc.), i.e. to be truly exogenous, many explanatory variables are potentially endogenous. For instance, unemployment duration may influence marital status and number of children, labor market status of spouse, individual's health status, intensity of search for additional sources of subsistence, expected income in work, etc. Thus, the values of the variables have been determined at the starting date of the unemployment spell to ensure their exogeneity.

The job search theory predicts also that the re-employment probability may be negatively associated with the duration of unemployment spell (negative duration dependence) if, for example, discouragement effect takes place (the individual's search intensity declines as the unemployment spell lengthens if he perceives his re-employment prospects as hopeless), or because of human capital decay during long period out of regular job, or if employers screen unemployed individuals applying for job on the basis how long they not been working (employers use unemployment duration as a signal of low productivity). It may be also positively associated with time (positive duration dependence) if, for instance, so-called resources effect takes place when the reservation wage(determined by the level of income while unemployed and the proportion of jobs open to an individual) is declining with unemployment duration.

The reservation wage may decrease, for example, as exhaustion of unemployment benefits approaches (so-called unemployment benefit exhaustion effect) implying that the probability of re-employment rises until the point when benefits lapse, but the empirical evidence of this relationship is found to be ambiguous (Devine and Kiefer, 1991). Therefore, there are a variety of potential influences, one group of which implies negative duration dependence, while the other points to positive duration dependence.

This requires the incorporation of unobserved heterogeneity to analyze whether there is evidence of duration dependence in unemployment or not. But this study ignores the unobserved heterogeneity assuming that the observations with the same values for all covariates are identical in terms of their hazards. In addition, empirical studies such as Tansel and Tasic (2004) and Kupets (2005) found that the inclusion of unobserved heterogeneity is of insignificant importance.

2.3. EMPIRICAL ANALYSIS

Tansel and Tassi(2004) conducted a study on duration aspect of unemployment in Turkey using the results of the Household Labor Surveys of 2000 and 2001 to construct a cross-section of durations of unemployment spells. They analyzed the determinants of probability of leaving unemployment or the hazard rate. The effects of the personal and household characteristics and the local labor market conditions were examined. Non- parametric and parametric estimation methods were used, controlling for the unobserved heterogeneity. Two alternative definitions of

unemployment were considered. The analyses were carried out for men and women separately. Their results indicated that women were experiencing higher unemployment durations than men. Age had a negative and education had a positive effect on the hazard rate. The effect of the local unemployment rate was large and negative. Duration dependence of the exit rate from unemployment was different for men and women. For men, there was slight u-shaped duration dependence, while for women there was no duration dependence.

Using information contained in a nationally representative, longitudinal survey of Russian Citizens, Foley (2004) analyzed the determinants of unemployment duration during the early stages of economic transition. A competing-risk, discrete-time waiting model, augmented to incorporate unobserved heterogeneity, was employed to analyze whether there is evidence of duration dependence in unemployment, and the role of demographic characteristics, alternative income support, and local demand conditions in explaining unemployment duration for working age individuals.

Married women were found to experience significantly longer unemployment spells before exiting to a job compared to married men. Older individuals could expect to be unemployed longer than comparable younger workers. Persons with higher education did not have significantly longer unemployment spells than those with secondary or even primary education. Having children had no effect on the duration of unemployment; however they did appear to motivate women to drop out of the labor force, significantly decreasing the time spent searching for work. Local labor market demand conditions had a significant effect on duration. Individuals in regions with higher unemployment rates, all else equal, had longer unemployment spells. With respect to the reason for the entering unemployment, persons laid off from their last job had shorter durations relative to quitters. Finally, there was evidence of duration dependence in the re-employment hazard in Russia, with a period of positive duration dependence in the first seven months, followed by a declining hazard until approximately eighteen months.

Kupets presented the first evidence on the determinants of unemployment duration in Ukrainian between 1997 and 2003, using individual level data from the first wave of the Ukrainian Longitudinal Monitoring Survey (ULMS-2003). He investigated the conditional probability of an individual leaving unemployment to employment or economic inactivity in any particular month of spell out of work by estimating it in a discrete time independent competing risks framework with flexible baseline hazard rates and gamma-distributed unobserved heterogeneity. The results

in all specifications indicated that no significant effect of receiving unemployment benefits but significant negative effect of having income from casual activities, subsidiary farming, household income or pension on the hazard of re-employment. Multivariate analysis also suggested that policies to reduce long-term unemployment should focus on older workers, less educated individuals, residents of small towns and rural area in the regions with relatively high unemployment rates.

Using individual level data on registered unemployed collected by the Federal Employment Service in Russia (1996-2000), Denisova studied about unemployment duration at an individual city level, i.e. in Voronezh province and tested some basic hypothesis on the influence of individual attributes (gender and education, in particular), working history, the specifics of the regulatory framework, and regional labor market characteristics on the hazard ratios, and hence, on duration of unemployment. He got empirical support to gender and educational differentials in unemployment duration: women tended to stay longer in the pool, and there were gender asymmetries in the influence of employment history on unemployment duration; those with junior professional education had significantly higher exit rates from unemployment as compared with those with secondary general education, while secondary professional and university degrees did not help you leave unemployment. There appeared to be a premium in terms of higher exit rate for males with experience at private enterprise, but not for females, while the configuration of the local labor market did matter for both: those living in municipalities with highly concentrated labor market tended to have longer unemployment spells.

Sereneels contributed much for studying the duration of unemployment in Ethiopia. In his paper on unemployment duration among young men in urban Ethiopia in 2001, he observed that mean duration is very long, namely around four years and analyzed the determinants and the course of the hazard, or the probability of leaving unemployment. He used non-parametric as well as parametric and semi-parametric estimation methods, controlling for unobserved heterogeneity. He found that age had a large negative effect, as expected, while education had a positive effect. Those with a father working in the public sector were more likely to leave unemployment early.

He interpreted this as an information effect, hiring practices, or a household welfare effect. In the latter sense, he said that it contradicts accepted wisdom that household welfare increases duration of unemployment in developing countries. He found that, in contrast to OECD countries, the course of the hazard rate did only fall after very long durations, namely beyond twelve years.

This indicated that unemployment duration had no negative on the probability of leaving unemployment for the vast majority of unemployed. From a theoretical point of view, he explained it by the presence of segmentation in the labor market.

In addition in his study in 2008, he identified four conditions under which genuine negative duration dependence may be offset to get an apparent constant hazard rate. Although it is a common theoretical assumption that the chances to find a job fall with time in unemployment, this is not systematically confirmed by empirical evidence, and there is no evidence for developing countries. Thus, he developed a framework that allowed to test the four major explanations why it is observed non-negative duration dependence while genuine duration dependence is negative: financial support for the unemployed, active labor market policies, a change in the economy over time, and segmentation of the labor market into good and bad jobs. Using data for urban Ethiopia, he observed a constant hazard while controlling for unobserved heterogeneity, and found that labor market segmentation is the only convincing explanation.

The empirical evidences suggest that individual attributes and economic factors are important in determining the duration of unemployment. Even if unemployment insurance benefits are considered in some of the researches, they are not used in this study because the program is not applied in countries like Ethiopia. The studies ignored the lack of longitudinal data on unemployment duration for most developing countries.

CHAPTER THREE: RESEARCH METHODOLOGY

In this study the researchers employed the sample survey method of data collection. The sampling frame of this research obtained from the MSE agency of Dire Dawa was all list of individual persons (11,809) registered as unemployed in the 9 urban Kebeles of the region at the beginning of the second year of the second growth and transformation plan of the country in 2016. Using the Cochran's sample size formula for continuous data, a sample size of 385 was targeted to collect. The study used a structured questionnaire that was tested by pilot study of sample size 40 and by workshop made with stakeholders of the administration job creation programs.

The data collected from the individual respondents was coded and fed into a computer and analyzed through Stata14-software program. Descriptive statistical and econometrics methods of analysis were applied in this research. The econometrics part has two components: Duration model; it is used to examine the determinants of unemployment duration and Propensity Score Matching (PSM); it is used to analyze the impact of employment generation program on the unemployed welfare.

The duration model measures how long individuals (say people, firms, etc.) remain in a certain state, in our research context unemployment state. The cumulative probability distribution function of the duration variable is specified as follows (Jenkins, 2008): $F(t) = P(T_i < t) = \int_0^t f(t)dt$; where T_i be the length of the individual i 's unemployment spell and a random variable with the continuous density function $f(t)$, where t is a realization of T_i . And the probability that the spell is of length at least t is given by the survivor function (which is referred in our research context as the probability of staying in unemployment of length at least t -periods): $S(t) = 1 - F(t) = P(T_i \geq t)$.

Here we are interested in what is known as the hazard function, which is the probability of the spell of unemployment will end in the next short interval of time, say dt , given that it has lasted until time t (**or simply which is termed in this research as the probability of employment**). Then the continuous-time hazard (rate) for an individual i at time t was defined in the methodology part by the equation (Jenkins, 2008): $\lambda_i(t) = \frac{f(t)}{S(t)}$. And it has been estimated by the

semi-parametric cox- proportional hazard model which assumes the effects of covariates to be fixed across time using the partial likelihood method by the ordering of events:

$$h(t,X) = h_0(t) e^{X_i\beta} = h_0(t) \lambda, \text{ where;}$$

- $h_0(t)$ is known as the baseline hazard and depends on t but not X . This part of the hazard rate indicates the pattern of time dependence that is assumed to be common to all units.
- $\lambda = e^{X_i\beta}$ is a unit-specific (non-negative function of covariates (which does not depend on t) which scales the baseline hazard function common to all units up or down.
- X_i is a vector of explanatory variables (covariates) for individual i and
- β is a vector of parameters to be estimated.

But before we go into the interpretation of the hazard ratio and the coefficients of the cox-model we must make sure that the proportional hazard assumption (PH) is not violated in the estimated model. The vector of explanatory variables used for the duration model analysis were the following; sex, age, marital-status(base-category=single), number of children, language(Not-speaking=1), education(base-category=secondary-school), area(urban-area=1), previous employment history, unemployment type(base-category=unique-unemployment), job choice(base-category=sole-proprietorship), job sector(base category=trade) and the amount of subsistence during unemployment. The corresponding hypothesis of the variables is summarized as follows:

- ❖ **Sex:** This variable is important in determining the probability of leaving unemployment; usually women tend to remain unemployed longer than men (Foley, 1997).
- ❖ **Marital Status:** The marital status of unemployed may affect the probability of exit from unemployment in two opposite directions; on the one hand, single persons may have higher probability of exiting from unemployment because of their independence in making labor supply decisions and higher mobility, but on the other hand, married persons especially married men may exit to employment faster than single since they are responsible for maintain sustainable family income (Kupets, 2005).
- ❖ **Number of children:** This may affect job search behavior in two opposite ways depending on the sex of unemployed and their labor supply incentives as in the case of marital status. From the point of view of income support, it is expected that more children would induce

parents to work more and leave unemployment faster, but from the side of time, more small children may mean more time devoted to them and less to work, especially for women, and consequently, longer unemployment spells (ibid).

- ❖ **Age:** This will be an important variable reflecting different labor market position of younger persons in contrast to older ones, since older unemployed individuals may have lower search intensity and lower attractiveness to an employer ad so they have lower probability of leaving unemployment than younger persons (Tansel and Mehmet, 2004).
- ❖ **Education:** Primary or less, Secondary, College and Degree or above): The variable on the level of education may be partly capturing higher attractiveness of more educated persons to an employer and extended job opportunities implying higher probability of receiving a job offer (Denisova, 2002)
- ❖ **Sources of Subsistence during an unemployment spell:** This determines the probability of leaving unemployment; these sources of income are expected to lower the probability of exits to jobs (Kupets, 2005).
- ❖ **Previous Employment State:** The probability of receiving a job offer is likely to differ depending on whether an individual was employed before a spell of unemployment or not. Previously employed are expected to leave unemployment for job faster than those who are first time job seekers (Tansel and Mehmet, 2004).
- ❖ **Local Language:** If individuals could speak the local language it is expected that they will have more probability to exit the unemployment state. Landmesser (2006) found that being a German national leads to a high probability of finding a job than the foreign nationals in Germany.
- ❖ **Job choice:** If individuals have the tendency to compare the available employment opportunities, it will have impact on the probability of exiting the unemployment state.

The impact of employment generation program on the unemployed welfare measured by their earnings (income) is estimated using the propensity Score Matching (PSM) approach. The propensity score is the probability of treatment assignment conditional on observed baseline covariates (Rosenbaum and Rubin, (1983), (1985), Rampichini et al., (2011) and Heinrich et al.

(2010). The administration job creation programs included three ways of intervention namely, MSEs, job assistance and training.

The main purpose of any impact evaluation technique is to estimate the average treatment effect on the treated (ATET), that is, $ATET = E(Y_1 - Y_0 | D=1) = E(Y_1 | D=1) - E(Y_0 | D=1)$, where; Y_1 = treated outcome, Y_0 = untreated outcome, D_1 = Treatment, D_0 = Control. Estimating the ATET is not straightforward because only one of the potential outcomes is observed for each individual. Since the counterfactual mean for the treated sample $E(Y_0 | D=1)$ is usually not observed so it is wise to choose a substitute for it so as to be able to estimate the ATET. If the outcomes of the registered unemployed participating in the employment generation program and the comparison group differ even in the absence of treatment, a problem of self-selection bias arises. The propensity score matching constructs a comparison group with individuals participating in the employment generation program that are comparable to those that are not participating on the basis of observable characteristics. This provides the missing data on the counterfactual, thus a potential solution to the self-selection bias.

Rosenbaum and Rubin (1983, 1985) show that there are a number of assumptions that must be satisfied for identification of the program effect and thus address the self –selection bias. Two critical assumptions for the treatment assignment to be strongly ignorable include the conditional independence assumption (CIA) (also known as confoundedness or selection on observables). This states that there is a set of observable covariates X , which are not affected by treatment, and if controlled for, the potential outcomes are independent of the treatment assignment (Caliendo et al., (2005), and Rampichini et al., (2011). The other includes the common support (overlap condition), which states that for each value of X , there is a probability of being treated and untreated (Heinrich et al., 2010, Caliendo et al., 2005).

The PSM estimator is the mean difference in outcomes over the coming support, appropriately weighted by the propensity score distribution of participants (Caliendo et al., (2005). Once the propensity scores are estimated, there is need to select matching estimators which would show how the treated women would relate with the untreated. Further, bootstrapping methods are applied in order to reduce the bias and show the relationship between the variables. Accordingly, the effect of employment generation program on the registered individuals in the region of common support is defined as: $E[(Y_{1i} - Y_{0i}) / P(X_i), D_i=1, \Theta]$, where E is the expected value; Y_{1i} is observed welfare for the treated groups ; Y_{0i} represents estimated counterfactual

welfare to be generated from the control group; $P(X_i)$ is the conditional probability of participation in the treatment; $D_i = 1$, if the registered individual is treated and Θ represents individuals in the region of common support .

The propensity score matching will be estimated using Logit model to predict the probability of participation of the registered unemployed people in the employment generation program and matching is then performed using propensity scores of each observable characteristics which must be unaffected by the participation. These characteristics include covariates which influence the participation decisions and the outcome of interest (Rosenbaum and Robin, 1983). In estimating the Logit model, the dependent variable is participation in the employment generation program which takes the value of 1 if the registered individual participated in the administration employment generation program and 0 otherwise. The Logit model is specified as follows:

$$P_i = F(Z_i) = F(\alpha + \sum \beta_i X_i) = \frac{1}{1 + e^{-(\alpha + \sum \beta_i X_i)}} \text{ ,where;}$$

- P_i is the probability that an individual is being participated in employment generation program given X_i .
- X_i : represents vector of the i th explanatory variables.
- α is a constant term to be estimated.
- β_i : represents a vector of coefficients to be estimated,
- $i=1, 2, 3, 4, \dots, n, n=254$.
- And e is the base of the natural logarithm.

The odds ratio which is the ratio of the probability that a registered individual is participated in employment generation program to the probability that the individual is not participated is given

$$\text{as: } \frac{P_i}{1-P_i} = \frac{\frac{1}{1+e^{-Z_i}}}{\frac{e^{-Z_i}}{1+e^{-Z_i}}} \text{ , } Z_i = \alpha + \sum \beta_i X_i = e^{Z_i} = e^{\alpha + \sum \beta_i X_i}.$$

Since the above equation is the exponential function, it is possible to change it into natural logarithmic function, and after doing so, by considering the error term it will become:

$$L_i = Z_i = \log\left[\frac{P_i}{1-P_i}\right] = \log[e^{\alpha + \sum \beta_i X_i}].$$

Thus, the Logit model is given as follows:

$$\mathit{logit}_i = \alpha + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \beta_4 X_{4i} + \beta_5 X_{5i} + \beta_6 X_{6i} + \beta_7 X_{7i} + \beta_8 X_{8i} + \beta_9 X_{9i} \\ + \beta_{10} X_{10i} + \beta_{11} X_{11i} + u_i$$

The parameters in Logit model are estimated by maximum likelihood method and the stata14 software is applied, where X_1 = sex, X_2 =age, X_3 = martial-status, X_4 = number of children, X_5 = language, X_6 = education, X_7 = area family size, X_8 =previous employment history, X_9 = unemployment type, X_{10} =job sector and X_{11} =the amount of subsistence during unemployment.

CHAPTER FOUR: DATA ANALYSIS

4.1. DESCRIPTION OF THE SAMPLE

As it is mentioned in the methodology part of this research, the research team has taken a random sample of 389 individuals out of 11,809 individuals registered as unemployed in 2016 in Dire-Dawa Administration. The responses that were collected are classified into six groups, which have their own explanations and in addition implications for the future registration process of the unemployed. The following table depicts that almost thirteen (**13**) percent of the sampled individuals were missed in the final data collection and this is not a bad non-response rate because almost eighty seven (**87**) percent of them have responded, but out of the total sample only **68** percent is used for analysis purpose. Except for the “**Not-able to respond**”, which cannot be improved and also has insignificant percentage, the other response options have to be specifically considered for they will have a room to be improved and will have a policy implication on the future registration of the unemployed even at the outset of the data analysis.

The research team has taken maximum effort within the given budget to reduce the “**Not-willingness response**”, that is way it has become almost less than one percent of the total sample size. Regarding to “**Incorrect address**” and “**Not-accessible**” responses” the administration will have an assignment to correctly identify the unemployed and even report their status within some interval of times to reduce the non-accessibility of the unemployed.

Table: 4.1.1 Information about the Sample Data

Types of Respondents	Frequency	Percent
Missing	51	13.11
Incorrect Address	34	8.74
Not able to Respond (due to such as sickness)	1	0.26
Not Accessible	32	8.23
Not willingness to Respond	3	0.77
Sample	268	68.89
Total	389	100

The proportion of the sample in terms of sex is in line with the target population where females dominate the registered unemployed. Similarly, the sample is also composed of young unemployed individuals who resemble the total registered unemployed. In terms of education the sample individuals who achieved their education as college or vocational diploma or university degree are almost 19%. In the same token for the target population out of the 11,809 registered unemployed individuals only 1406 (almost 12%) were either college or university graduates, while the majority of them (81%) dominate education level below college or university degree for the sample and 88% for the population. Thus the sample is also similar with target population with respect to education besides the sex and age dynamics.

Table: 4.1.2 Sex of the Registered Unemployed

Sex	Frequency	Percent
Male	102	38.06
Female	166	61.94
Total	264	100

Table: 4.1.3 Age Composition of the Registered Unemployed

Age Group	Frequency	Percent
Non-Young(Adult/Old/Not-Child)	95	35.45
Young	173	64.55
Total	264	100

Specifically, the sample shows that almost 32% of respondents have achieved secondary education, followed by senior primary education. Respondents who have degree and above were asked about their program type and universities where they have attended their education. The departments are evenly distributed among the unemployed and the sample has two private and 14 government universities, where 8 of them came from the first generations of the government university and 6 of them from the second generations.

Table: 4.1.4 The Highest level of Education achieved by the Registered Unemployed

Type of Education	Frequency	Percentage
No-Formal Education	21	7.84
Junior Primary(1-4)	18	6.72
Senior Primary(5-8)	64	23.88
Secondary School	86	32.09
Preparatory School	24	8.96
Certificate	4	1.49
TVET College	19	7.09
Non-Vocational Diploma	16	5.97
University Graduate	16	5.97
Total	268	100

4.2. FEATURES OF THE REGISTERED UNEMPLOYMENT

As it is already defined, the labor force consists of all that part of the population who are fit for work within a specified age bracket. Thus, the kind of disability that prevents from engaging in productive activity is one factor that leads to individuals to be out of the labor force; based on this definition 4 of the sample respondents are rejected from the sample. In addition, the age limitation (definition) of the labor force of Ethiopia is between and including 15 and 60 but all the sample satisfies the age criteria because the minimum age is 18 and maximum age is 50.

The employed or unemployed individuals are part of the labor force in the population. The employed includes those individuals which are engaging in any kind of productive activities or which have jobs to return to, while the unemployed labor force is expected to satisfy two strict conditions in addition to being without employment; that is the unemployed person should be seeking a job and be willing to be available at available job. But these criteria are very restrictive in developing countries context, thus are not considered in the analysis but their information is gathered in this research.

Yet since the respondents were not asked directly whether they are employed or unemployed some of them have given responses during registration that they have got their current jobs even before registration or they have job experiences which extend even after registration and this make them employed before registration and are not the target population. These people (whose number are actually 10) are not actually unemployed at the time when they come to registration but their issues can be considered in another economic context such as poverty alleviation or food insecurity because these factors might have dragged these people to come to registration. Therefore, in this research the total sample used for final analysis (**n=254**) are considered as part of the labor force which were actually without jobs during registration and are currently unemployed or unemployed.

The seventy percent (70%) of the sample individuals had not previously participated in productive activities when they were registered as unemployed, while the rest , almost 30% of them were previously employed. This unemployment has been short-term for 12 % and long-term for almost 59% of the sampled individuals. The respondents were asked about the reasons why they were registered as unemployed and these reasons are also used to classify the types of unemployment for the registered unemployed. *Frictional unemployment* consists of the “**Voluntarily Leaving Job**”; “**Finishing School Recently**”; “ **Planning to Returning to Labor force**”; and “ **Laid off from Previous Work**”. *Structural unemployment* is created due to the mismatch between requirements of jobs and the qualifications of the unemployed, which is captured by “**Skill not Matching with Job Requirement**” in this research. *The cyclical unemployment* is also captured by the response “**No Demand for My Skill**”. This research assumes *seasonal unemployment* independently and classifies the types of unemployment induced by the “**School Dropout**”, “**Family Responsibility**” and “**Poverty**” as “*Unique Unemployment*”. Here table 4.2.2 describes the distribution of these unemployment’s.

4.2.1 The Unemployment History of the Registered Unemployed

Unemployment History	Frequency	Percent
Having Previous Employment	74	29.13
Having Previous Short-Term Unemployment	31	12.20
Having Previous Long-Term Unemployment	149	58.66
Total	254	100

4.2.2 The Unemployment Type of the Registered Unemployed

Type of Unemployment	Frequency	Percentage
<i>Frictional unemployment</i>	64	25.20
<i>Structural unemployment</i>	4	1.57
<i>Cyclical Unemployment</i>	7	2.76
<i>Seasonally Unemployment</i>	63	24.80
<i>Unique Unemployment</i>	100	39.37
<i>Others</i>	16	6.30
Total	254	100

In terms of job choice, the majority of the sampled registered unemployed choose dominantly the “sole-proprietorship” type of business, followed by “any available work”. Trade and services cover the majority of choices of sector of the sample 40.94% and 26.77%, respectively, while agriculture has been the least mentioned sector (3.54%).

Table: 4.2.3 Previous Choice of Job for the total Labor Force

Job Status	Frequency	Percent
Government Employment	40	15.75
Private Employment	5	1.97
NGO Employment	1	0.39
Sole-Proprietorship	110	43.31
Partnership	22	8.66
Cooperatives	11	4.33
Daily Laborer	1	0.39
Any Available Work	52	20.47
Others	12	4.72
Total	254	100

Table: 4.2.4 Previous Choice of Job Sector for the total Labor Force

Job Sector	Frequency	Percent
Agriculture	9	3.54
Industry/ Manufacturing	34	13.39
Construction	39	15.35
Trade	104	40.94
Services	68	26.77
Total	254	100

4.2.1 THE EMPLOYED STATUSQUO

Out of the 254 labor force in our sample 60 of them (almost 24%) have engaged in any kind of productive activities such as work for payment, for family gain or profit, produce for own consumption, during the last 7 days prior to the date of interview for at least four hours or have a job, business or holding which they will return to. These currently employed registered unemployed individuals reported that the main means of acquiring their current jobs was “social networking (friends, relatives, etc.)”, followed by the “job creation program” of the administration. The micro and small enterprises and the job assistance were mentioned in the job creations programs, none of them used the training given by the administration to get their current jobs.

Table 4.2.1.1 Employment Status of the Registered Individuals

Status	Frequency	Percent
Employed	60	23.62
Unemployed	194	76.38
Total	254	100

The registered unemployed individuals are examined in terms of their long term-unemployment based on the ILO definition. The ILO 6-month and 12-mnth definitions of long –term unemployment are depicted in the following tables; for example 79.92 percent of the sample individuals have fallen in the long term unemployment based on the twelve-month definition of long term unemployment.

Table 4.2.1.2 Current Unemployment Type based on the Six-Month Approach

Status	Frequency	Percent
Short-Term Unemployment	24	9.45
Long-Term Unemployment	230	90.55
Total	254	100

Table 4.2.1.3 Current Unemployment Type based on the Twelve-Month Approach

Status	Frequency	Percent
Short-Term Unemployment	51	20.08
Long-Term Unemployment	203	79.92
Total	254	100

Table 4.2.1.4 Means of Acquiring of Current Job by the Employed

Means	Frequency	Percent
Unemployed	194	76.38
Vacancy Boards	6	2.36
Social Networking (Friends, Relatives, etc.)	24	9.45
Establishing Own Enterprises	4	1.57
Direct Application to Employers	2	0.79
Checking at Work Sites	3	1.18
Job Creation Program	11	4.33
Others	10	3.94
Total	254	100

Table: 4.2.1.5 The Dire Dawa Administration Job Creation Program

Program	Frequency	Percent
Unemployed	194	76.38
Non-Job Creation Program	49	19.29
Micro and Small Enterprises	7	2.76
Job Assistance	3	1.18
Others	1	0.39
Total	254	100

The currently employed individuals have received their subsistence during their unemployment predominantly from their parents, followed by engaging themselves in causal work. And that level of subsistence extends from 150 birr to 5000 birr. They are primarily employed as paid-private worker and as sole-proprietor establishing their own business. The majority of the employment (almost 9%) has occurred in the service sector and the least employment has been generated by the industry/manufacturing sector (almost 2%). The permanent employment type has taken the lion share, followed by the contract and temporary types of employment.

Table: 4.2.1.6 The First Most Important Source of Subsistence

Source of Subsistence	Frequency	Percent
Unemployed	194	76.38
Relative	2	0.79
Parent	25	9.84
Spouse	12	4.72
Rent	1	0.39
Savings	2	0.79
Causal Work	18	0.79
Total	254	100

Table: 4.2.1.7 Current Job Status for the Employed

Job Status	Frequency	Percent
Unemployed	194	76.38
Government Employee	5	1.97
Paid Private Employee	13	5.12
NGO Employee	1	0.39
Sole-Proprietor	13	5.12
Partnership	2	0.79
Cooperatives	6	2.36
Employer	1	0.39
Daily Laborer	6	2.36
Any Available Work	6	2.36
Others	7	2.76
Total	254	100

Table: 4.2.1.8 Current Job Sector for the Employed

Job Sector	Frequency	Percent
Unemployed	194	76.38
Industry/ Manufacturing	6	2.36
Construction	16	6.30
Trade	14	5.51
Services	24	9.45
Total	254	100

Table: 4.2.1.9 Terms of Employment for the Employed

Job Sector	Frequency	Percent
Unemployed	194	76.38
Permanent	19	7.48
Temporary	13	5.12
Contract	14	5.51
Casual	6	2.36
Others	8	3.15
Total	254	100

4.2.2 THE UNEMPLOYED STATUS-QUO

Here, the unemployed characteristics of the registered individuals will be discussed. Out of the unemployed registered individuals 44% of them did not seek jobs in the last three months and almost 33% of them were either seeking jobs or trying to establish own businesses. For those seeking jobs the three dominant means were vacancy boards, social networking, and establishing own businesses. In terms of availability, the majority of them were willing to attend at the available job.

Table: 4.2.2.1 Methods of Seeking Jobs of the Registered Individuals

Unemployed Not-Seeking a Job	111	43.70
Vacancy Boards	27	10.63
Media (News Paper, Radio and TV)	2	0.79
Online Job Searches	3	1.18
Social Networking (Friends, Relatives, etc.)	22	8.66
Establishing Own Enterprises	12	4.72
Direct Application to Employers	1	0.39
Checking at Work Sites	7	2.76

Job Creation Program	6	2.36
Others	3	1.18
Employed	60	23.62
Total	254	100

Those unemployed registered individuals who are willing to be available at work have responded that sole-proprietorship, any available work and government employments were their three main choices at time of their interview. These might be because the education of the unemployed is lower. Trade and services represent the two dominant sectors which are demanded by the unemployed sample. Like the employed during their unemployment period, the unemployed individuals are primarily supported by their parents for their subsistence during unemployment, followed by their spouse. The amount of subsistence extends from 100 birr to 4000 birr.

Table: 4.2.2.2 Choice of Current Job for the Unemployed

Unemployed but not Available	10	3.94
Government Employment	31	12.20
Private Employment	5	1.97
Sole-Proprietorship	82	32.28
Partnership	14	5.51
Cooperatives	6	2.36
Daily Labor	1	0.39
Any available work	39	15.35
Others	6	2.36
Employed	60	23.62
Total	254	100

Table: 4.2.2.3 Choice of Current Job sector for the Unemployed

	Frequency	Percent
Unemployed but not Available	10	3.94
Agriculture	9	3.54
Industry/Manufacturing	21	8.27
Construction	27	10.63
Trade	82	32.28

Services	45	17.72
Employed	60	23.62
Total	254	100

Table: 4.2.2.4 The First Most Important Source of Subsistence

Source of Subsistence	Frequency	Percent
Employed	60	23.62
Relative	15	5.91
Parent	98	38.58
Spouse	57	22.44
Savings	4	1.57
Causal Work	19	7.48
Others	1	0.39
Total	254	100

The respondents, who are employed or unemployed, were asked about their choices of current jobs or current job sectors to know whether they have matching jobs or sectors with their initial choices or not while they were registering as unemployed. 61.81% of them are matching and 38.19% of them are not matching with their current jobs, while in terms of sectors almost 74.02% of them are matching. Specifically out of 60 employed only 22 of them found jobs that they wanted while they were registering as unemployed. For the total 194 unemployed the majority of them 135 of them have still the same job choices while they were registered as unemployed. In terms of sectors both the unemployed and the employed have more matching of their current choices with their previous choices.

Table: 4.2.2.5 Whether the jobs are matching before and after registration

	Employment of the Registered Individuals		Total
	Unemployed	Employed	
Not-Matching	59	38	97
	23.23%	14.96%	38.19%
Matching	135	22	157

	53.15%	8.66%	61.81%
Total	194	60	254
	76.38%	23.62%	100%

Table: 4.2.2.6 Whether the job sectors are matching before and after registration

	Employment of the Registered Individuals		Total
	Unemployed	Employed	
Not-Matching	43	23	66
	16.93%	9.06%	25.98%
Matching	151	37	188
	59.45%	14.57%	74.02%
Total	194	60	254
	76.38%	23.62%	100%

4.3 THE JOB CREATION PROGRAM IN DIRE DAWA ADMINISTRATION

Finally, it will be discussed descriptively about the job creation program. And it has been found that almost 24% of the sample households participated after registration (the treatment group), while almost 76% of them are the control groups not participated in the job creation programs. The participants were engaged in the three main active labor market programs namely; MSEs, job assistance and training programs, with a minimum and maximum frequency of participations 1 and 4, respectively. Out of the total program participants the majority of them are also planning to continue to participate in the job creations program, that is almost 84% of the treatment group.

Table: 4.3.1. Participation of the Registered Individuals in the Administrative Job Creation Schemes

Program Participation	Frequency	Percent
Program-Participant (Treatment Group)	61	24.02
Non-Participant (Control Group)	193	75.98
Total	254	100

Table: 4.3.2. Types of Schemes Delivered by the Administration

Program Type	Frequency	Percent
Non- Participant in Job Creation Program	193	75.98

Micro and Small Enterprises	26	10.24
Training	16	6.30
Job Assistance	17	6.69
Others	2	0.79
Total	254	100

The treatment groups were asked about their expenditure and earnings before and after the program, while the control groups were asked only about their current expenditures and earnings. The descriptive statistics and t-test for the dependent variable of the propensity score matching (the earnings) is depicted in table 4.3.4. Surprisingly, the non-program participants have earned, in actual figure, more earnings (1606 birr per month) than that of the program participants (which is 1435.738 birr per month, but in terms of employment the employed have more earnings (2170 birr per month) than the unemployed (1378.067 birr per month) so that this indicates that most of the participants may be the unemployed ones (actually 62% of the participants were unemployed) and this might be the reason why they have less earning than the non-participants(the control group).

Table: 4.3.3. Continuation of Participation of Job Creation Program

Continuation Status	Frequency	Percent
Non- Participant in Job Creation Program	193	75.98
Continuing Participation	51	20.08
Not-Continuing Participation	10	3.94
Total	254	100

Table: 4.3.4. The Descriptive Statistics and t-test for the dependent variable of the propensity score matching (the earnings)

Variable Group	Observation	Mean	Std.Err.	Std.Dev.	Maximum
Program Participant	61	1435.738	128.0754	1000.301	
Non-Program Participant	193	1606.036	92.46357	1284.545	
Combined	254	1565.138	76.71468	1222.631	
$H_0 : \text{mean}(\text{Program-Participant}) - \text{mean}(\text{Non-Participant}) = \text{diff} = 0$ vs $H_1 : \text{diff} \neq 0$ t = -0.948 p-value = 0.3440					

The t-test shows that the difference in earnings between program participant and non-participants is not statistically significant, for the p-value =34.4% we do not reject the hypothesis the difference is zero. This does not guarantee us the conclusion that the job creation program has no effect on the earning welfare of the registered unemployed individuals unless we compare the treatment group with their true counterfactual. The first approximate potential counterfactual will be the control group but it might have characteristics observable or unobservable those differ from the treatment group. In literature of impact evaluation this is known as selection bias and experimental and non-experimental techniques have used to tackle this problem. The propensity score matching method applied in this research is a quasi-experimental non-parametric method, that does not specify a functional relationship between the dependent and independent variables and not make a distributional assumption about the outcome variable(in our case the earnings). We will discuss about this in the next econometrics section with the duration model.

Table: 4.3.5. The Reason of the Registered Individuals for Non-Participation in any Job Creation Program

Reason	Frequency	Percentage
Program-participant	61	24.02
Lack of Information	117	46.06
Program Non-Compatibility	15	5.91
No-Contact from the Government	30	11.81
Not-Inclusive	3	1.18
Not-Accessible	9	3.54
Lack of Initiation	9	3.54
Community Negative Attitude	2	0.79
Good Governance Problem	1	0.39
Unnecessary Criteria	5	1.97
Others	2	0.79
Total	254	100

The program non-participants responded that their three main reasons not to participate in any of the job creations schemes after registrations are “lack of information” , “no-contact from the government” and the “non-compatibility” of the programs, in their respective order. In a very amazing way it can be said that all most all of the non-participants did not have plans to

participate in the job creations programs, this is not good for the administration and will have another far-reaching outcomes for such kind of programs.

Table: 4.3.6. Planning of Continuation of the Participation of Job Creation Program

Reason	Frequency	Percentage
Planning to Participate	1	0.39
Not-Planning	192	75.59
Participating in Job Creation Program	61	24.02
Total	254	100

4.4. ECONOMETRICS MODEL

4.4.1 THE DURATION MODEL

In chapter three it was defined that duration model measures how long individuals (say people, firms, etc.) remain in a certain state, in our research context unemployment state. Before conducting the duration analysis, it is first mandatory to declare the survival time or duration data. The spell of unemployment from the registration period on June 8, 2016 up to the end of the study period June 8, 2017 is considered as the duration variable. Out of the 389 hypothetical samples only 254 of them are to be used for analysis as it is explained in the descriptive analysis. But some of the registered unemployed experienced the event(the failure event) of finding job before the end of the study period (since the analysis is a single event record survival analysis , repeated experience of events of the same subject is ignored) , while the rest of them named censored subjects continue without the event and assumed to experience only employment (if they do) after some period of time in the future because we are not examining other competing risks such as leaving the labor force.

In this respective the total amount of risk, which is the amount of time the subjects will be exposed to employment from the origin of time when they are exposed to unemployment (where the registration type is assumed to be the starting of exposure time when the study starts under investigation of duration of unemployment and left-truncation is not considered by which individuals might be exposed to unemployment even before registration), is 2725 months. 60 of

the subjects (23.62% out of the total sample used for analysis) are assumed as failure in duration analysis (which have actually got jobs in the analysis), while 194 of them (76.38% of them) are censored because they did not get jobs until the end of the study period.

Out of all the explanatory variables used for the duration model only sex (female=1), age and previous employment (previously unemployed =1) were found significant at 5% level of significance for the former two and at 10% for the latter. Thus estimation has been conducted using only these three variables (known as Restricted Model) and a likelihood ratio test has been made to check the restricted model were the same or different from the Unrestricted estimation. The p-value of 0.6849 for the LR $\chi^2(31)$ proved the registered model was not different from the estimation of the cox-model when all the covariates were included.

But before we go into the interpretation of the hazard ratio and the coefficients of the cox-model we must make sure that the proportional hazard assumption (PH) is not violated in the estimated model. With the null hypothesis that the PH assumption holds the statistical test conducted proves that sex and age variables satisfy the PH conditions but the previous employment status variable fails. Thus the research team finally estimates the cox-model using the previous employment status variable as strata to avoid the violation of proportional hazard assumption and the hazard ratios and their coefficients can now be interpreted.

Table-4.4.1. 1: Test of proportional-hazards assumption

Variable	rho	chi2	df	Prob>chi2	
Sex	-0.15277	1.38	1	0.2393	
Age	0.13373	0.83	1	0.3624	
Previous-Employment	-0.34769	6.70	1	0.0097	
Global Test			3	0.0068	

In PH models, the sign of the coefficients indicates how a covariate affects the hazard rate. Thus the negative coefficient of the sex variable, that means being a female, decreases the hazard rate (i.e. it decreases the probability of employment) and, therefore, increases the duration of unemployment, while the positive coefficient of the age variable increases the hazard rate (i.e. it increases the probability of employment) and, therefore, decreases the duration of unemployment.

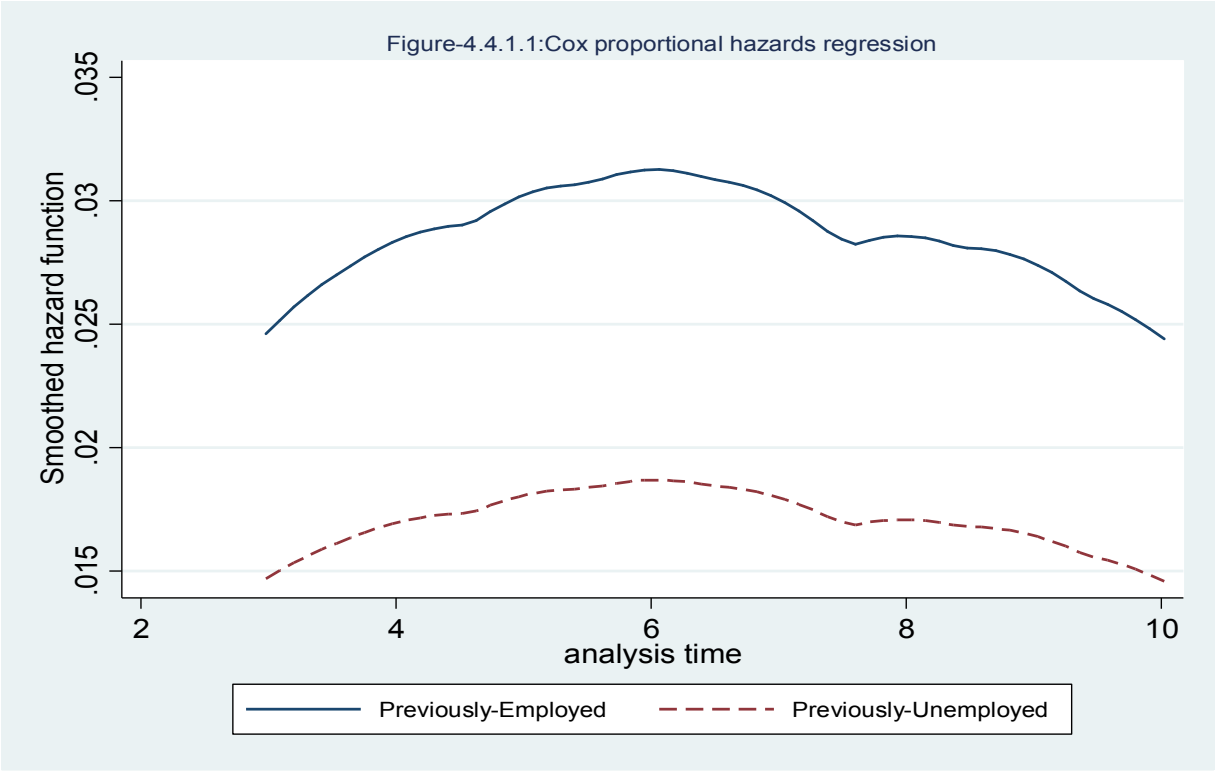
In addition, the coefficients of the PH models is exponentiated to obtain hazard ratios and if one is subtracted from it and multiplied by 100% gives the factor change or percentage change in the baseline hazard associated with a one unit increase in a covariate. The hazard ratio of being a female is 0.5529583 and subtracting one from it and multiplying by 100% gives a percentage change of the baseline hazard of - 44.71 % $[(0.5529583-1)*100\%]$, meaning **the probability of employment of females will be 44.71% lower than the male counterparts**. The hazard ratio for the age variable is 1.044489, indicating **a one year increase in age increases the probability of employment by 4.45%**. The chi(2) statistics for the LR test and the global test imply that the cox-model is overall significant and the PH assumption is not violated for the sex and age variables, respectively.

Table-4.4.1. 2: Econometrics Result of the Duration Analysis

Stratified Cox PH Regressions		
Variable	Hazard Ratio (5%) (standard error) (p-value > z)	Coefficients (5%) (standard error) (p-value)
Sex	0.5529583 (0.1461236) (0.0250)	-0.5924726 (0.2642579) (0.025)
Age	1.044489 (0.0163643) (0.005)	0.0435278 (0.0156673) (0.005)
LR chi2(2)	10.82	
Prob>chi2	(0.0045)	
Global Test: chi2(2)	2.24	
Prob>chi2	(0.3262)	

The hazard function (the probability of employment) has been estimated graphically in Figure-4.4.4.1 controlling the previously employed and unemployed individuals. In both cases the probability of employment initially increases, reaches its maximum at 6 months and finally declines. As it is discussed in many of literatures getting employment after some duration of

unemployment will be challenging and this 6-months period should be considered as measure of long term unemployment for the administration. Evidently, the higher hazard curve for the previously employed individuals show that those who had employment experience will have high probability of employment than those who were first-time job seekers.



4.4.2 THE PROPENSITY SCORE MATCHING (PSM) MODEL

The administration job creation programs have three ways of interventions (MSEs, job assistance and training) and a one-way analysis of variance has been conducted to check whether these three types of programs have different impact on earnings, so that a p-value of 0.7180 for the F-statistic shows that the programs can be considered as one intervention (treatment) by the administration. According to Table-4.3.4, the t-test between program participants and non-

participants has shown that the job creation program has no effect on earnings, but this might have been due to selection bias. Based on an individual t-and anova tests, sex, educations, previous employment experience, unemployment types, duration of unemployment after registration and amount of money received as subsistence during unemployment have been found as significant observable variables between the treatment and the control groups.

Therefore our impact evaluation should control these variables, and the PSM chosen in this research does this purpose. In addition, it is a non-parametric approach in which the functional relationship between the dependent and independent variables is not specified, and in which no distributional assumptions are made for the outcome variable (in this research context the earning).

The main interest of the research was the average treatment effect on the treated specified as $ATT = E(Y_1 - Y_0 | D=1) = E(Y_1 | D=1) - E(Y_0 | D=1)$, where Y_1 =treated outcome, Y_0 = untreated outcome, $D=1$ if the individual receives treatment and 0 otherwise. The evaluation problem arises from the fact the untreated outcome for the treated individual, $E(Y_0 | D=1)$, can never be observed, thus it will be estimated by the untreated outcome for untreated individual, $E(Y_0 | D=0)$. But the research team identified the control and treatment groups were different by some observable variables, and these results in the selection bias in impact evaluation.

The propensity score matching solves this problem [$E(Y_0 | D=1) = E(Y_0 | D=0)$] by using the conditional independence assumption which states that the untreated outcome is independent of the treatment status given a covariate, that is, $(Y_0 \perp\!\!\!\perp D | X)$. For more than one explanatory variables (when there is a multidimensional vector of characteristics), the assumption is adjusted as follows: $Y_0 \perp\!\!\!\perp D | P(x)$, where $P(x) = P(D=1 | X=X_1, X_2, \dots, X_K)$ is the probability of participating in the treatment group (the job creation program) and it is known as the propensity score and assumed to be less than one to due to the common support (overlap) assumption used for estimation purpose.

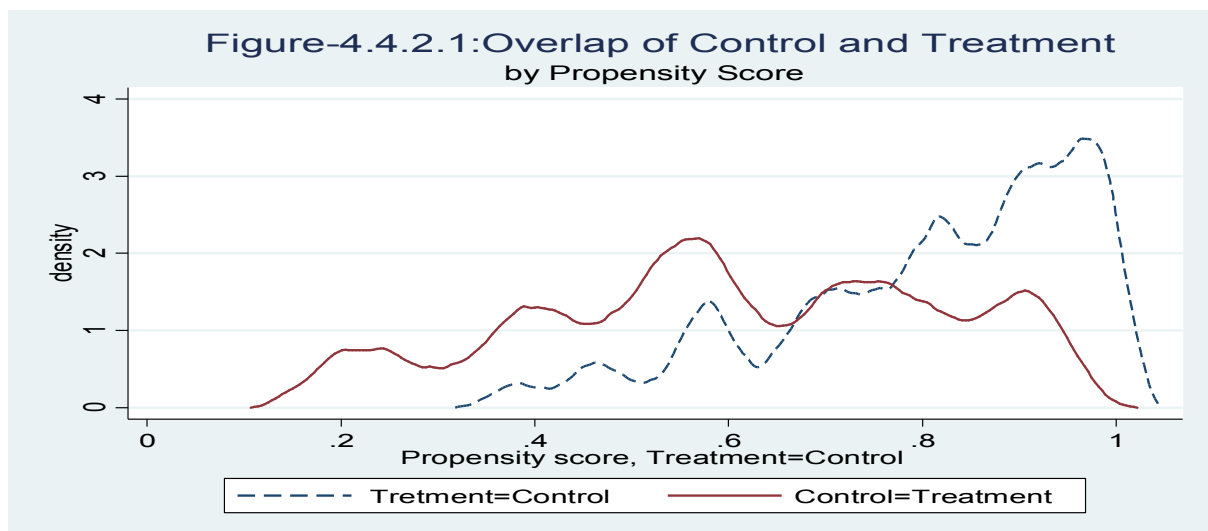
The propensity score has been estimated using the logit model based on the following fixed variables which are not affected by the job creation programs: ; sex, age, marital-status(base-category=single), number of children, language(Not-speaking=1), education(base-category=secondary-school), area(urban-area=1), previous employment history, unemployment type(base-category=unique-unemployment), job sector(base category=trade) and the amount of

subsistence during unemployment. In Table: 4.4.2.1 it has been calculated manually and tested that the untreated outcome (Y_0) of the control and treatment groups are equal, thus suggesting that the conditional assumption is satisfied; $E(Y_0 | D=0) = E(Y_0 | D=1)$. In addition, it seems that the common support assumption is also satisfied because the probability of treatment lays between 0.001 and 0.81. This further can be understood in Figure-4.4.2.1, where the overlap assumption is satisfied because there is a chance of seeing observations in both the control and the treatment groups at each combination of the propensity scores.

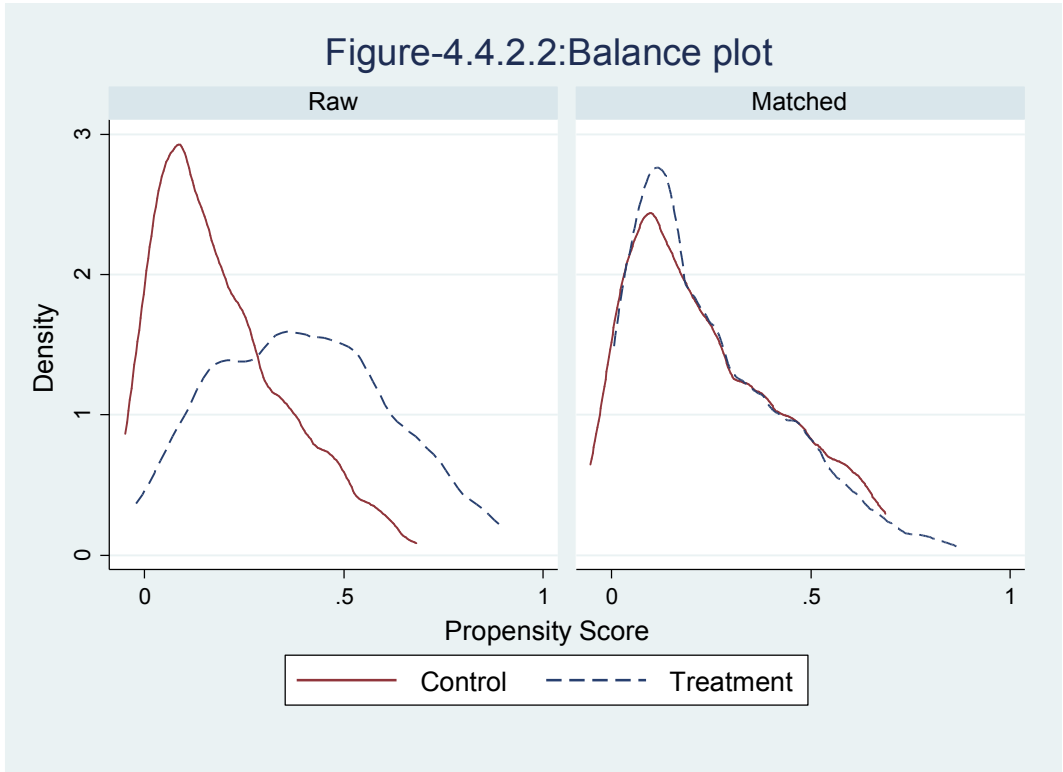
Table: 4.4.2.1 T t-test for the Untreated Outcome Y_0 between the Treatment and Control

Variable Group	Observation	Mean	Std.Err.	Std.Dev.
Non-Program Participant (Control)	193	1606.036	92.46357	1284.545
Program Participant (Treatment)	61	1392.049	143.6139	1121.661
Combined	254	1554.646	78.34343	1248.589

H_0 : mean(Program Non-Participant) - mean(Program-Participant)= diff =0 vs H_1 : diff \neq 0
 t = 1.1676
 p-value = 0.2441



Before we go into the interpretation of the average treatment effect estimated, let us see how the propensity matching, where the one nearest neighbor matching is used with all ties, balances the covariates (in our case the propensity scores); note that covariate is said to be balanced when its distribution does not vary over treatment levels.



Now we can confidentially evaluate the effect of the job creation program, as the result is depicted in Table-4.4.2.2. The job creation program participants have a monthly earning (income) of 314.6457 Birr more than that of the registered unemployed who did not participate in the administration job creation program after registration. But this amount is not statistically different from zero at 5% level of significance. Thus, any of the job creation programs contributed to earning or income improvements for the registered unemployed.

Table-4.4.2.2: Econometrics Result of the Average Treatment Effect (ATE)

Estimator: Propensity Score Matching					
Treatment Model: Logit					
Matching: One Nearest Neighbor Matching with all Ties					
Outcome	Obs.	ATE Coefficient	Std. Err.	z	P> z
Earning	254	314.6457	248.812	1.27	0.205

In most of researches the average treatment effect on the treated will be presented in any of impact evaluation programs. Similarly, the result shows that there was no significant impact of the job creation programs on the monthly earnings of the registered unemployed individuals in Dire Dawa Administration.

Table-4.4.2.3: Econometrics Result of the Average Treatment Effect on the Treated (ATET)

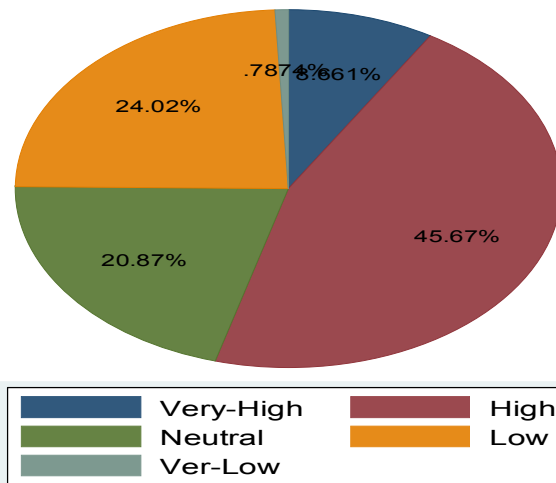
Estimator: Propensity Score Matching					
Treatment Model: Logit					
Matching: One Nearest Neighbor Matching with all Ties					
Outcome	Obs.	ATET Coefficient	Std. Err.	z	P> z
Earning	254	43.68852	182.4043	0.24	0.811

4.5. TRIANGULATION USING RESPONDENTS OPINION AND KEY FORMANTS

The respondents were finally asked their opinions about the job creation programs implemented by the administrations based on 11 factors. The majority of the respondents, almost 54%, have high and very high opinion that the job creation programs improve motivation of individual to be entrepreneurs. This is an advantage that should be taken in to account by the administration as input. The distribution of their opinions in five likert scales has been depicted in pie charts for all the factors.

In terms of whether the job creation programs are participatory, whether they are compatible with the needs of the unemployed, whether they improve access to jobs, whether they are one manifestations of good governance, whether they have achieved their programs, whether they improve beneficiaries earnings, and whether they have strengthened the social and economic aspects of the administration, respondents have given almost similar opinions. That means less than half of the respondents have high and more opinion to these criteria, while even if it less similarly less than half of the respondents have also low and very low opinion to the same criteria. This shows that there have been good achievements by the administration with regard to the job creation programs, but it is not inclusive and accessible to all the registered unemployed.

**Figure-4.5.1: Motivational Effect of the Job Creation Program
Opinion by the Registered Unemployed**

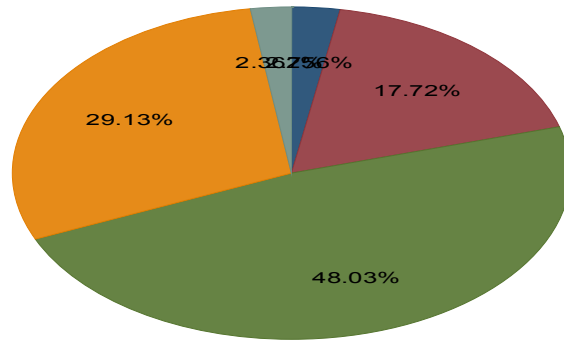


Source: Own Survey, 2017

Like the previous cases, some of the respondents have high and more and the other some, here more dominant, have less and very low opinions that the job creation programs have brought additional support in terms of finance, skill and knowledge and have improved individuals consumption. In this respect it requires more work by the administration, and the information of key formants has been included after the final workshop and the external validity has been conducted with stake holders.

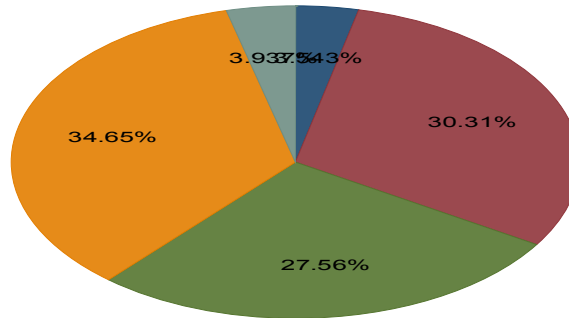
And it indicated that in 2016/2017 the Ethiopian government allocated 10 billion Birr for job creation programs, and 4.5 billion Birr has been disbursed so far. Out of the total amount of money 50 million Birr has been allocated for Dire Dawa administration, and up to the almost the end of November, 2017, 21 million Birr was only disbursed to the administration. But it was found that it was not clear whether this budget goes to first time job seekers or to those who were initially at the front line of the job market. It was understood that it will not be a problem if it goes to those who have already established their own enterprises, but must be enterprises which are in the process of transformation to generate more capital and employment.

**Figure-4.5.3:Consumption Effect of the Job Creation Program
Opinion by the Registered Unemployed**



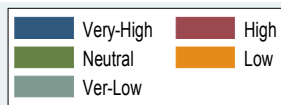
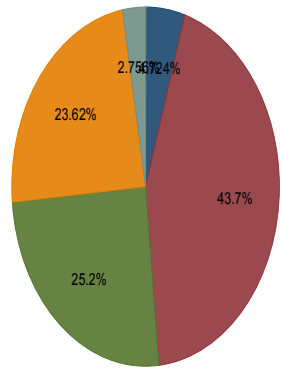
Source:Own Survey,2017

**Figure-4.5.2:Additional Support of the Job Creation Program
Opinion by the Registered Unemployed**



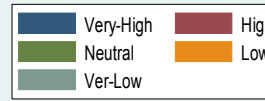
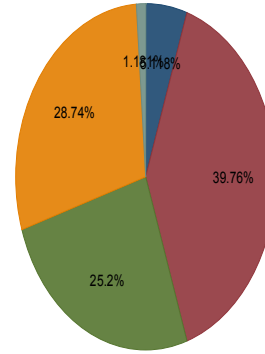
Source:Own Survey,2017

Figure-4.5.4: Participatory of the Job Creation Program
Opinion by the Registered Unemployed



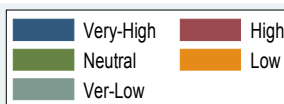
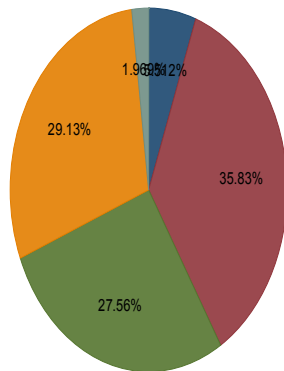
Source: Own Survey, 2017

Figure-4.5.6: Improving Acceses to Job by Job Creation Program
Opinion by the Registered Unemployed



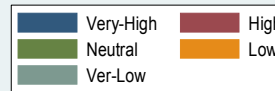
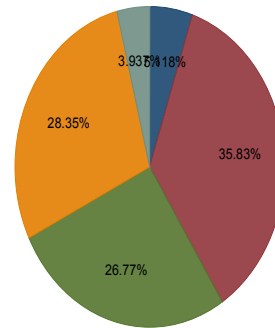
Source: Own Survey, 2017

Figure-4.5.5: Compatibility of the Job Creation Program
Opinion by the Registered Unemployed



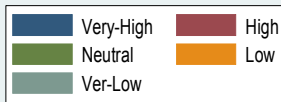
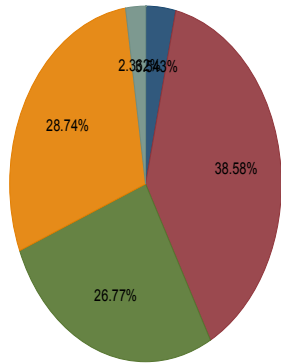
Source: Own Survey, 2017

Figure-4.5.7: Good Governance Effect of Job Creation Program
Opinion by the Registered Unemployed



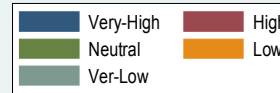
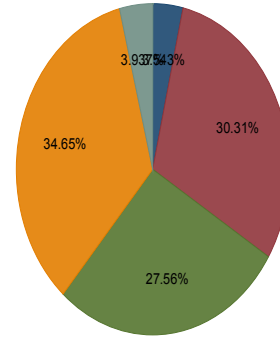
Source: Own Survey, 2017

Figure-4.5.8: Objective Achievement of Job Creation Program
Opinion by the Registered Unemployed



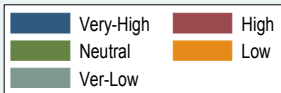
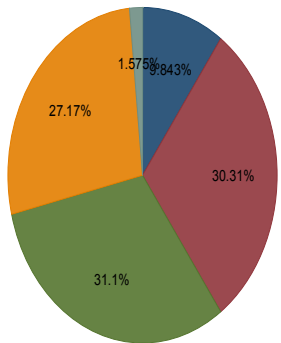
Source: Own Survey, 2017

Figure-4.5.10: Social Effect of the Job Creation Program
Opinion by the Registered Unemployed



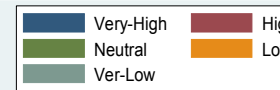
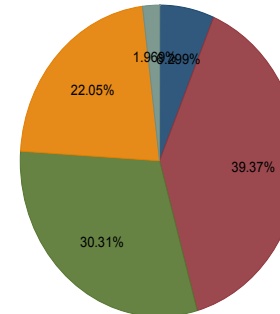
Source: Own Survey, 2017

Figure-4.5.9: Earning Effect of the Job Creation Program
Opinion by the Registered Unemployed



Source: Own Survey, 2017

Figure-4.5.11: Economic Effect of the Job Creation Program
Opinion by the Registered Unemployed



Source: Own Survey, 2017

CHAPTER FIVE: CONCLUSION AND POLICY RECOMMENDATION

5.1. CONCLUSION

In this paper we used duration model and propensity score matching to analyze the determinants of duration of unemployment and to evaluate the impact of job creation program on earnings of the registered unemployed in Dire Dawa administration. We used a cross-sectional data collected in 2017 based on the unemployed individuals registered by the administration food security and micro and small enterprise agency in 2016. Even if we had data good enough to represent the target population, we found an indication that there should be an improvement from the outset in process of registering the unemployed in terms of the addresses the unemployed individuals give, the definitions of who are unemployed, and the follow-up of the career path of the unemployed.

From the descriptive analysis it was possible to identify the types of unemployed in the administration. Surprisingly enough the kind of unemployment dominated in the administration was termed as in this research as unique unemployment caused by school dropout, family responsibility and poverty, which are different from the conventional sources of unemployment. Specifically, the cyclical unemployment, which is caused by the “no demand for the unemployed individual labor” and which was assumed to be significant in the administration from the current Ethiopian economy context, was the least mentioned type of unemployment. This could be the case that the registration of the unemployed was not inclusive of all the unemployed individuals in the administration or may be a fact that unique unemployment is the kind of unemployment to be considered by the administration.

Appreciating the fact that registration of the unemployed is one element of the job creation program (the institution side), we got that the feeling that it should be clear for what purpose it was collected and what agency should conduct and be responsible for the registration process. It was also found that for the registered unemployed who have employed currently the social networking (family, friends, etc.) means of acquiring job was the most important means, followed by the job creation program. Even if the “job search criteria” was not considered to define unemployed in this research, the majority of the unemployed were found to be not seeking job in the last three months during the interview period, indicating either the unemployed have given up in the job market or they were not initially willing to be available at work. Besides it

was noticed that most of the program non-participants were not willing to continue participation in any of the job creation programs, and this might be a challenge to the administration to adopt such similar programs.

According to the cox-proportional hazard model it was found that sex and age were the significant variables affecting the duration of unemployment. One of the finding regarding to sex is that the probability of employment of women is substantially lower than the male counterparts. This may indicate that women may spend much of their time in home productions. Or it may also be an indication of discrimination against women in the labor market. And also as age increases the probability of employment has increased. Specifically, the probability of getting job will be low for the young compared to the non-young groups, contrary to what is observed to developed countries.

In addition, the hazard rate (the probability of employment) is lower for the first-time job seekers than for those who have previous employment experiences. This implies that an important target group is the first-time job seekers who could be supported with counseling and job search strategies and primarily supported by job creation programs. The administration should consider individuals who have been unemployed for more than six months since after this pick period the probability of employment declines , indicating the six-month definition of ILO long term unemployment applies to the administration and thus great efforts should be made before they reach their long term unemployment.

We found no indication that participation in any of the job creation programs leads individuals to improve their earnings; in fact, the amount of earnings was large for the individuals that participated in the program. It could be the case that participation of the job creation programs might have increased earnings in the administration among the beneficiaries of these programs but the implication of this research is on the registered unemployed targeted for intervention.

5.2. POLICY IMPLICATION

The following points can be inferred from this research:

- ✚ Careful attention should be given at the outset of registering the unemployed. This helps to actually identify who the actual unemployed are and to recommend the right active labor market programs properly.
- ✚ Females, young, and first-time job seekers should be targeted by the administration.
- ✚ Great endeavors should be made before individuals reach their long term unemployment, 6 months of unemployment.
- ✚ We should consider all the job creation programs and work hard to improve the welfare of the unemployed, for example, in terms of earnings.
- ✚ We need to focus on the registered individuals with regard to any application of the job creation programs. Thus, we get trust on our policies and give the opportunities to know the pros and cons of their implementation. This further brings others to come to administration registration services.
- ✚ All stake holders working to create employment should come together from the first stage of registering the unemployed till creating and giving jobs to them. For example, those organizations in the administration should have the custom of organizing and reporting their vacant positions, and some other organizations, in addition to the agency registering the unemployed, should develop some central system to collect the information and adjust the jobs according to the needs.
- ✚ This research has a future prospective of engaging the same approach to other cities or regions of the country.

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