

UNEMPLOYMENT IN URBAN ETHIOPIA: DETERMINANTS AND IMPACT ON HOUSEHOLD WELFARE

Abebe Fikre Kassa⁴⁴

Abstract

Data from the 2004 wave of the Ethiopian Urban Socio Economic Survey on four major cities of Ethiopia is used to investigate the determinants of unemployment in urban Ethiopia and its impact on household welfare. Regression results from a binary probit model estimation show that urban unemployment in Ethiopia in 2004 is determined by age, marital status, education beyond primary school and living in the capital Addis Ababa. Moreover, the results from OLS regression of consumption indicate that unemployment adversely affects household consumption expenditure and hence household welfare. One more unemployed household member results in a 4.6 percent decline in per capita real consumption expenditure available to the household. Since unemployment negatively affects household welfare, efforts aiming at reducing unemployment will most likely improve welfare. Mechanisms to reduce household size such as family planning are recommended for better household welfare via their effect on household consumption.

Key words: urban, unemployment, consumption, welfare, probit, OLS

JEL Classification: I31, O18, J64.

⁴⁴ University of Gothenburg, School of Business, Economics and Law; E-mail: abebefikre@gmail.com
I would like to thank Yonas Alem (PhD) and Lennart Flood (Professor) for their comments on the paper.
All errors are my own.

1. Introduction

Unemployment is one of the major challenges facing today's world. Coupled with population growth and increased poverty, it has a significant impact on growth and development at large. It causes a waste of economic resources such as the productive labor force and affects the long run growth potential of an economy. Unemployment gives rise to private and social problems in the society such as increased crimes, suicides, poverty, alcoholism and prostitution (Rafik et al., 2010 and Eita and Ashipala, 2010). High level of unemployment rates can also contribute to the spread of HIV/AIDS in developing countries (Henry et al., 1999 and Haile 2003). In general, unemployment affects household income, health, government revenue and hence GDP and development at large. Studying unemployment therefore helps tackle these problems through some kind of policy actions.

Unemployment is a problem for both developed and developing countries. However, the impact and intensity might differ. According to Rafik et al. (2010), unemployment has been the most consistent problem in both advanced and poor countries. In 2009 for example, as indicated in the World Bank data base (2011), the general unemployment rate stood at 20.5% in Ethiopia, 23.5% in South Africa, 4.3% in China, 5% in Japan, 9.1% in France, 8.3% in Brazil and Sweden and 9.3% in the US. Recently, unemployment has increased due to the global economic crisis of 2007/08 which caused the collapse of aggregate output and led to job cuts. According to Dao and Loungani (2010) there were about 200 million unemployed people in the world in 2010, 75% of which came from the advanced economies and the rest from emerging economies, and the number has increased substantially since 2007. However, though still high, unemployment in the low income countries declined during the recent crisis.

Ethiopia is a poor agrarian country with per capita income of USD350 (World Bank, 2011). Recently, however, the country has been achieving a promising economic growth. According to The Economist (January 6, 2011), the country had the 5th fastest growing economy in the world during the periods 2001-2010 at an average annual GDP growth rate of 8.4% and the 3rd with a forecast of 8.1% during the periods 2011-2015. Despite such improvements, unemployment is high and is one of the socio economic problems in the country. The general unemployment rate was 20.5% in 2009. It was higher for females at 29.9% compared to males which stood at 12.1%. (World Bank, 2011)

The rural population of Ethiopia makes about 83% of the total population but this paper focuses on urban rather than rural unemployment. Even though the urban population makes only about 17% of the total population, its absolute size is big at 15,448,536 (Central Intelligence Agency, 2011). Moreover, most of the educated labor force is concentrated around cities in search of better opportunities and infrastructure, and the rural agricultural sector employs relatively unskilled labor force. The urban sector is also characterized by both skilled and unskilled private sector employment which will all make the analysis of the education effect of unemployment convenient.

Another explanation may be that urban unemployment might be more serious than rural unemployment for example in creating political instability. For instance, the recent uprising in the Middle East especially in Egypt and Tunisia which toppled the respective regimes is motivated by major socioeconomic problems such as rising unemployment (Behr and Aaltola, 2011). It is also vital that the obstacles for productivity (which unemployment can be one) should be studied not only in the agricultural sector but also in the urban non-agricultural sector so as for both to contribute for growth and job creation. Unlike most African countries where poverty incidence differs and is relatively higher in rural than urban areas, it is almost similar both in urban and rural Ethiopia. Urban poverty stood at 37% and rural poverty at 45% in 2005 (World Bank, 2005). Growth, unemployment and job creation in urban areas therefore require equal attention for poverty alleviation.

Studies addressing urban unemployment in Ethiopia are relatively few. Serneels (2004) studies the nature of youth unemployment and analyzes incidence and duration and concludes that urban youth unemployment for males stands high at 50% in 1994 and mean duration is about 4 years. Duration is shorter for those aspiring for high paying public sector jobs and for those with their fathers are civil servants. Haile (2003), using data from the 1994 and 2000 waves of the Ethiopian Urban Socio Economic Survey, studies the incidence of youth unemployment in Ethiopia with special focus on the urban youth and finds that youth unemployment was high at more than 50%. Haile (2008) also studies the determinants of self-employment in urban Ethiopia and concludes that self-employment was less among the young, the educated and those who migrated to urban areas recently.

Dendir (2006) analyzes the determinants of unemployment duration in urban Ethiopia and concludes that mean duration is 3 years for completed spells and 4.7 years for incomplete spells. Denu et al., (2005/07) in a study on the characteristics and

determinants of unemployment, underemployment and inadequate employment in urban Ethiopia, finds that the youth are characterized by relatively high unemployment which differs among the youth group across location, gender and education.

Studies surveyed in this paper are found to mostly concentrate on urban youth unemployment and a few focused on general unemployment. The welfare impact of unemployment is also found to be less explored in the literature at least in the context of Ethiopia. This paper therefore adds to the discussion by focusing on the determinants of unemployment in urban Ethiopia and its impact on household welfare. Specifically it investigates how unemployment behaves over the years 1994-2004. What determines the likelihood of being unemployed in urban Ethiopia in 2004? What is the impact of unemployment on household welfare? The main purpose is answering these questions using household data from the 2004 Ethiopian Urban Socio Economic Survey. Recent data set could not be used due to the absence of one. Even though there may be changes in socio economic factors between 2004 and at present, it is presumed that major factors affecting unemployment will more or less remain the same.

The Ethiopian rural labor market is characterized by disguised unemployment (Denu et al., 2005/07). Disguised unemployment exists when few jobs are filled by many people in which case productivity will be low. There is also not much formal employment in rural Ethiopia as most people work in the traditional agricultural sector. Due to these reasons, together with the absence of any rural data in my data set, I will not address rural unemployment. Two econometric methods will be used to answer the research questions: First, with the aim of understanding the determinants of unemployment, a binary probit model will be used. Second, to analyze the impact of unemployment on household welfare, ordinary least squares regression technique which estimates household per capita consumption as a function of unemployment and other household characteristics will be employed.

The rest of the paper is presented in the following sequence: section two discusses the literature review and section three the econometric framework. Section four discusses the data and descriptive statistics followed by empirical findings. The paper will then wrap up with conclusion and recommendations.

2. Literature Review

2.1 Overview of Unemployment and the Ethiopian Urban Labor Market

2.1.1 Unemployment: Causes, Costs and Overview

The labor market, like any other markets, has both supply and demand sides. The supply side, also called the labor force or the economically active population, has two components: the employed and the unemployed (Husmanns, 1989). The demand side on the other hand consists of jobs (filled posts) and job vacancies (unfilled posts). According to Olsson (2009), since labor is not a "normal" good, we do not have a condition where labor demand equals labor supply at equilibrium wage rate. The prevailing situation in countries around the world is instead the demand for labor is less than the supply due to the higher than equilibrium wage rate and hence there is an excess supply of labor. This gap between the supply and the demand for labor is referred to as unemployment.

It is important to understand the causes of unemployment and its consequences for possible intervention. In this section, the causes of unemployment which might slightly differ between developed and developing countries will be discussed. The costs of unemployment will also be discussed briefly. To understand the nature of the labor market in urban Ethiopia, earlier studies on the same will be surveyed.

2.1.1.1 Causes of Unemployment in Developed and Developing Countries

The causes of unemployment are among the extensively debated issues by economists. Keynesian economics stresses on the inadequate aggregate demand in the economy as the major cause. Real wage rigidities and/or real interest rates cause low output and high unemployment. Real wage rigidity, "the failure of wages to adjust until labor supply equals labor demand" according to Mankiw (2002), can cause unemployment.

In the real world, wages are set at a higher level than the equilibrium wage rate and the reasons for this can be grouped into three broad views. Efficiency wages theory assumes that higher wages give incentive for workers to exert more effort and reduce shirking. Hence, firms pay higher wages. "The insider-outsider theory" asserts that firms are prevented from cutting wages by labor unions and contracts (Romer, 2005 and Olsson, 2009). The major assumption of this model is that labor unions try to maximize the interests of only their members (the insiders) who are already employed and do not care about non-members (the outsiders). In doing so, firms and the insiders bargain to

knock the outsiders out of the job market and thereby create unemployment. Another explanation for higher than equilibrium wages is the search and matching model which emphasizes on the heterogeneity of workers and jobs as the cause for unemployment. Heterogeneity of workers in skills and preferences, information asymmetry and heterogeneity of jobs in their attributes all make it difficult to find the right person for the right job-hence, unemployment.

According to Krugman (1994), the welfare system in developed countries particularly in Europe can have an impact on unemployment. Krugman also argues that productivity growth may not come with good employment performance or the vice versa. Instead, increased productivity and employment creation are features of competitiveness and unemployment is part of a decline in economic performance. On technology and unemployment, he asserts that the rapid information and communication technology growth has increased skills premium and possibly played a role in unemployment problem in Europe.

Another study by Bassanin and Duval (2006) on unemployment in OECD countries shows that among the determining factors for rising unemployment are high and continuous unemployment benefits, "high tax wedges", and "stringent and anti-competitive product market regulations". According to Stiglitz (1974), unemployment in developing countries like those in East Africa is a result of rural to urban migration motivated by the high wage differential. Noveria (1997), on the other hand, states that the major causes of rising unemployment in urban areas in LDCs are education expansion, urbanization which results in rural to urban migration, population growth and job aspiration.

In the Ethiopian case, the World Bank (2007) indicates that the potential causes of urban unemployment include the increasing number of the youth labor force, the rising internal migration and literacy rate. Another study by Haile (2003) states that some of the most important causes in developing countries especially in Ethiopia are the rapidly growing size of the labor force, poor to modest macroeconomic performance, low level of job creation and low level of aggregate demand in the economy.

Kingdon and Knight (2004) analyze unemployment in South Africa and they show that unemployment is determined by education, race, age, gender, home ownership and location among others. Echibiri (2005) investigates unemployment in Nigeria using data from 220 randomly selected youths in the city of Umuahia and finds that

unemployment is influenced by age, marital status, dependency ratio, education, current income and employment preference (paid or self-employment).

Eita and Ashipala (2010) study the determinants of unemployment in Namibia for the periods 1971-2007 and conclude that unemployment is positively correlated with investment, wage increase and with an output level below the potential output. They also found that unemployment is negatively related to inflation. Another study by Alhawarin and Kreishan (2010) on long term unemployment in Jordan indicates that age, gender, marital status, region, work experience and education are the major determinants.

2.1.1.2 Costs of Unemployment

Unemployment comes up with costs. According to Feldstein (1997), one who wants to analyze the costs of unemployment should start by disaggregation. The costs of unemployment can be classified broadly as private and social. The private costs of unemployment are those costs borne by the unemployed themselves. The social costs on the other hand refer to those costs to the nation at large and can be the cumulative result of private costs. In this approach, the cost of unemployment can be seen as the opportunity cost of unemployment to the nation i.e., the cost is the national income forgone (Feldstein, 1997 and Haile, 2003).

Unemployment results in a waste of economic resources such as the productive labor force and thereby affect the long run growth potential of the economy. It gives rise to increased crimes, suicides, poverty rates, alcoholism and prostitution (Rafik et al., 2010 and Eita et al, 2010). These evils in turn come up with a cost (cost of crime prevention) and channel resources to their prevention which rather could have been used for other developmental purposes.

Unemployment may also have a scary effect. Previous spell in unemployment has a discouraging effect on future participation in the labor force, earnings and welfare in general (Haile, 2003). Children are affected by the unemployment situation of their parents. According to Dao and Longani (2010), children of jobless parents tend to perform less in their education in the short run. In the long run, a parent's lost income due to unemployment reduces the child's earning prospect. Unemployment has an adverse effect on health and mortality via its economic, social and psychological effect on the unemployed. It is also considered as one of the risk factors for HIV/AIDS.

2.1.2 Unemployment in Ethiopia and the urban labor market

In this section, the Ethiopian labor market and studies on unemployment will be briefly reviewed.

Studies addressing urban unemployment in Ethiopia are relatively few and most of those surveyed in this paper concentrate on youth unemployment. Krishnan (1996) studies the role of family background and education on employment in urban Ethiopia and finds that family background (especially father's education) strongly affects entry to public sector employment but it is not significant in determining entry to lower status private employment. Entry to public sector employment is also affected positively by education while age (being older) positively affects being in the labor force.

Dendir (2006) studies unemployment duration in urban Ethiopia and finds that the mean duration is 3 years for completed spells and 4.7 years for incomplete spells. Haile (2003), using data from the Ethiopian Urban Socio Economic Survey from 1994 to 2000, finds high urban youth unemployment in Ethiopia with more than 50% of the youth unemployed. Between the periods 1994-2000 teen age youth unemployment increased and was higher for women. Those from families of at least secondary school education are found to be affected less according to this study.

Serneels (2004), using the 1994 Ethiopian Urban Socio Economic Survey, studies the incidence and duration of unemployment in urban Ethiopia emphasizing on the youth. According to this study, in the year 1994 Ethiopia's urban unemployment rate was one of the highest in the world with male unemployment standing at 34% and the urban youth unemployment rate was even higher at 50%. Serneels indicates that mean duration of unemployment is 4 years and those youth whose parents are civil servants have shorter durations. It is also indicated that public sector was the top employer hiring one third of the adult men. A negative relationship is found between unemployment incidence and duration, and household welfare. There is evidence that households reduce their savings and consumption to cope with unemployment. With regard to job aspirations, well-educated first time job seekers who aspire to well-paying jobs are more affected. On family background, Serneels concludes that mother's education may play a role but father's education has a strong effect for labor market performance in urban Ethiopia.

Denu et al. (2005/07) study the characteristics and determinants of youth unemployment and underemployment in Ethiopia from 1984-2001 and conclude that the youth is substantially affected by unemployment and significant differences exist within the youth group across location (urban-rural), gender and education. The urban youth unemployment stood at 7.2% while it was 37.5% for the rural, the latter facing high rate of underemployment. Unemployment for the youth women was 17.3% in 1999 while it was 6.9% for their men counterparts. Regarding education, 44.5% and 32.6% of the unemployed youth were illiterate or had only primary education. The paper indicates that the private sector plays a huge role in employment as a result of policy change by the current government to promote the private sector as opposed to the previous government's policy where most enterprises were government owned. Using data from the Ethiopian Urban Socio Economic Survey from 1994 to 2000, Haile (2008) studies the nature of self-employment "for the first time in Ethiopia" and finds that the young, the educated, those that migrate to urban areas recently and those whose parents are not self-employed are less likely to be found in self-employment.

The World Bank (2007), with its report in two volumes, acknowledges important improvements in urban unemployment between 1995 and 2005 though the labor market situation remained unchanged. According this study, the rapid rise in the urban labor force creates pressure on the labor market and it can be seen as both a challenge and an opportunity for the Ethiopian government. The rising number of educated labor force entering the market each year as a result of education expansion and internal migration necessitate enhanced job creation in the country. Another feature of the Ethiopian urban labor market indicated in this study is the increasing literacy rate. This is implicated in World Bank (2011) that the net primary school enrollment rate in Ethiopia increased to 87.9% in 2010 from 68.5% in 2005.

Low wages characterize the Ethiopian urban labor market although it differs among the type of employers, sector and worker characteristics. Even though females are relatively less skilled yet, the literacy rate and their participation in the labor force is increasing. There is labor market segmentation with a relatively wanted public sector and formal private sector, and a large number of unemployed and a large informal sector with low wages and mostly occupied by women. Women in urban Ethiopia are relatively more affected by unemployment and they are paid lower wages (World Bank, 2007).

As can be noted, many of the studies surveyed so far have concentrated on youth unemployment in urban Ethiopia and not many of them focused on general unemployment.

4. Econometric Framework

In this section, two models will be specified for analyzing the research questions. First, a binary choice model (probit) estimation technique will be used to analyze the determinants of unemployment. To investigate the impact of unemployment on household welfare, a second model, OLS regression technique will be employed.

Model 1:

In this first model, the possible determinants of unemployment will be investigated. The main variable of interest is unemployment, a latent variable, where the individual may be classified as either employed or unemployed. The appropriate econometric technique to deal with micro data of this type is using a latent variable approach which can be specified as:

$$y_i^* = X_i' \beta + u_i \quad (1)$$

Where y_i^* is the probability of being unemployed for individual i and has a linear relationship with the possible factors determining unemployment, X_i' . β is a vector of slope parameters for the determinants and u_i is the stochastic error term which takes care of all the possible factors determining unemployment and which might have not been included in the model.

Unemployment is assumed to be a function of household characteristics like age, gender, education, marital status, parental characteristic like parents' occupation and education, and location. These factors are widely used in most studies that addressed the determinants of unemployment. (Alhawarin and Kreishan, 2010; Bhorat, 2008; Serneels, 2004; Haile, 2003; Kington and Knight, 2001; Noveria, 1997 and Krishnan, 1996)

Unemployment

$$= f(\text{age, gender, education, marital status, parental background, location})$$

The unemployment status of an individual and the possible determinants cannot be observed directly but can be inferred from their responses. We can observe the net benefit of the determinants on the probability of getting employed ($y_i = 0$) or unemployed ($y_i = 1$).

$$\begin{aligned} y_i &= 0 \text{ if } y_i^* < 0 \\ y_i &= 1 \text{ if } y_i^* \geq 0 \end{aligned} \quad (2)$$

The error term, u_i , has a binomial distribution and its variance conditional on X is:

$$Var[u|X] = X\beta(1 - X\beta) \quad (3)$$

Using Equations (1) and (2), the probability of getting unemployed can be modeled as:

$$\begin{aligned} P(y^* > 0|X) &= \\ P(u > -X\beta|X) &= \\ P(u < X\beta|X) &= \\ P(y = 1|X) &= \Psi(y_i^*) \end{aligned} \quad (4)$$

$\Psi(\cdot)$ represents a cumulative distribution function (CDF). Maximum likelihood estimation technique can be used to estimate the parameters of binary choice models. For each individual i , the probability of being unemployed conditional on x , i.e., conditional on the individual's educational level, age, gender, marital status, parents' occupation, parents' education and location can be calculated as:

$$P(y|X) = \{\Psi(X_i\beta)\}^{y_i}\{1 - \Psi(X_i\beta)\}^{1-y_i}, \quad y_i = 0,1 \quad (5)$$

The log likelihood for each individual i can then be set as:

$$\ell_i(\beta) = y_i \log\{\Psi(X_i\beta)\} + (1 - y_i) \log\{1 - \Psi(X_i\beta)\} \quad (6)$$

There are two commonly used estimation techniques for binary choice models: the binomial *probit* and binomial *logit*. For the probit model, the distribution of the cumulative distribution function (CDF), $\Psi(\cdot)$, follows normal distribution and for the logit model, the CDF follows a logistic distribution.

A standard normal distribution has a mean of 0 and a variance of 1 while a standard logistic distribution possesses a mean of 0 and a variance of $\pi^2/3$ (Verbeek, 2008). Else, the CDF of both distributions are similar and both estimation techniques yield similar results in applied work. For analyzing the determinants of unemployment in

urban Ethiopia, I use probit model. This method is widely used in many literatures addressing unemployment (Cattaneo, 2003).

In binary choice models, it is difficult to interpret the estimated parameters directly since they tell only the sign of the change in the dependent variable in response to a change in the explanatory variable. Hence, marginal effects have to be calculated. The effect of a change in each determinant on the probability of being unemployed can be found as:

$$\frac{\partial P(y=1|X)}{\partial x_j} = \frac{\partial P(y=1|X)}{\partial x\beta} \cdot \frac{\partial X\beta}{\partial x_j} = \Psi'(X\beta) \cdot \beta_j = \psi(X\beta) \cdot \beta_j \quad (8)$$

Equation (8) depicts that the effect of a change in a given determinant (x_j) on the probability of being unemployed is the product of the effect of the determinant (x_j) on the latent variable (y^*) and the derivative of the distribution function evaluated at the latent variable (y^*).

Model 2:

Household welfare is assumed to be affected by unemployment situation in urban Ethiopia. The country does not have unemployment benefit system which may imply that most of the unemployed are supported by the employed member in the household. For checking this, a second model will be estimated using ordinary least squares (OLS) estimation technique. The main purpose in here would be to investigate the effect of unemployment on household welfare.

The literature says that income and consumption are the two alternative measures of welfare. According to Deaton (1997), in developing countries income is underreported and difficult to remember. So, consumption is used to measure household welfare here and it is modeled as a function of unemployment (the number of unemployed member in the household) and household characteristics.

$$\text{Consumption} = f(\text{age, gender, education, occupation, household size, dependency ratio, location, number of unemployed members})$$

The OLS regression model in a matrix form can be specified as:

$$y = X\beta + U \quad (9)$$

Where X is a matrix of determinant variables for consumption expenditure (y) and U is the disturbance term with a zero conditional mean (Baum, 2006). β is the coefficient of the explanatory variables. Equation (9) is also assumed to fulfill all the other classical linear regression assumptions: linearity, absence of multicollinearity among explanatory variables, the disturbances are uncorrelated and possess equal variance, and absence of correlation between regressors and disturbances. To make the distribution of consumption expenditure more normal *logconsumption* will be used as the dependent variable. With the absence of unemployment benefit system in Ethiopia, unemployment is expected to have a negative impact on consumption expenditure and hence on household welfare.

4. Data and Descriptive Statistics

4.1. The Data

The data used in this paper is from the 2004 wave of the Ethiopian Urban Socio-Economic Survey (EUSS) collected by Addis Ababa University, Department of Economics, in cooperation with the University of Gothenburg. The data covers 1,500 households from four major cities in Ethiopia-Addis Ababa, Hawassa, Mekelle and Dessie. These cities are believed to represent the socioeconomic characteristics of households in urban Ethiopia (Alem and Söderbom, 2011, and Haile, 2003). The data used for analyzing the determinants of unemployment is individual level and the one for investigating the impact of unemployment on welfare is household level. Summary statistics for unemployment and consumption will be discussed first which will then be followed by the empirical findings. The following table shows the descriptive statistics for the individual level data.

4.2 Descriptive statistics

Summary statistics for determinant variables for unemployment and welfare variables are presented in Tables 1 and 2 respectively.

From Table 1, we can see that there is a fairly equal representation of gender in the sample with men making up 51.7% and females 48.3%. Looking at the age category, the teen age group of the labor force (15-19) constitutes 8%. The age groups 20-24, 25-29 and 30-65 constitute 24.3%, 12.5% and 44.5% of the labor force respectively. 24.7% are married. Looking at the education category, 7.1% of the respondents (heads) are

illiterate, 17.9% completed primary school, 21.4% completed junior secondary and 37% have secondary education. Those who completed tertiary education including college diploma, bachelor and Post graduate degree make up 11.4%.

Table1: Descriptive statistics for the labor force of ages between 15 and 65

Variable (%)	Share (%) (2004)	Standard Deviation
Male	51.7	.499
Female*	48.3	.499
Age:15-19	8	.272
Age:20-24	24.3	.429
Age:25-29	12.5	.331
Age:30-65*	44.7	.497
Married	24.7	.432
Others(single, separated, divorced, widowed, too young)*	75.3	
Illiterate*	7.1	.257
Primary school completed	17.9	.384
Junior secondary school completed	21.4	.411
Secondary school completed	37.4	.484
Tertiary school completed	11.4	.318
Mother primary school completed	11	.312
Mother less than primary school completed*	89	.312
Father secondary school completed	11.8	.323
Father less than second. school completed*	88.2	.323
Father working in the private sector	3.8	.191
Father working in the public sector	19	.392
Father working other*	77.2	
Living in Addis	83	.375
Living in Hawassa	7.1	.257
Living in Dessie	5.5	.228
Living in Mekelle*	4.3	.203
Unemployed	30.9	.462
Employed*	69.1	.462
Tot. obs.	2510	

* denote reference group

Another variable worth looking at is mother's education. The proportion of those whose mothers have an education level of less than primary education is high at 89%. This is not surprising as women in the past were disadvantaged and had relatively less

education level in Ethiopia. Father's education is no exception. 88% of the fathers have less than secondary education and probably that is why only 3.8% of them work in the public sector. As most of the fathers have less than secondary school education, they might not be able to make it to the public sector and to the formal private sector and hence most of them (77.2%) work "other" jobs. The sample consists of more respondents from the capital Addis Ababa (83%). 7.1%, 5.5% and 4.3% of the respondents come from Hawassa, Dessie and Mekelle respectively.

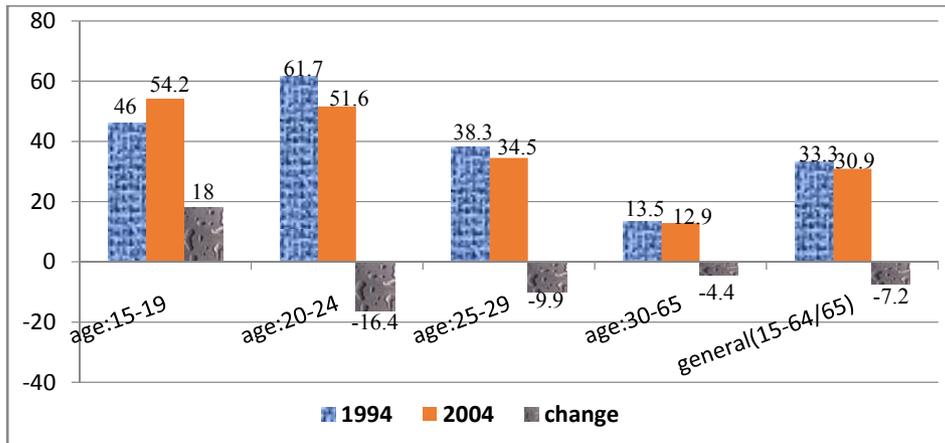
A study by Haile (2003) indicates that the urban unemployment rate in Ethiopia stood at 33.3% and 32% respectively in 1994 and 2000. In 2004, which this paper is trying to address, unemployment rate stands at 30.9%. The marginal decline may be due to the rapidly growing labor supply driven by population growth and education expansion against the lower absorptive capacity of the labor market, among other possible reasons. The fact that it is declining looks somehow good news but its slow pace is discouraging and urges intervention.

4.2.1 Urban unemployment by age, gender and location: 1994 V 2004

For better understanding of the unemployment situation, this section discusses unemployment disaggregated by age, gender and location. I will also compare the situation in 2004 with 1994 and discuss the changes. The 1994 figures are taken from Haile (2003) and they cover ages of 15 to 64 while for the 2004 analysis age ranges from 15 to 65.

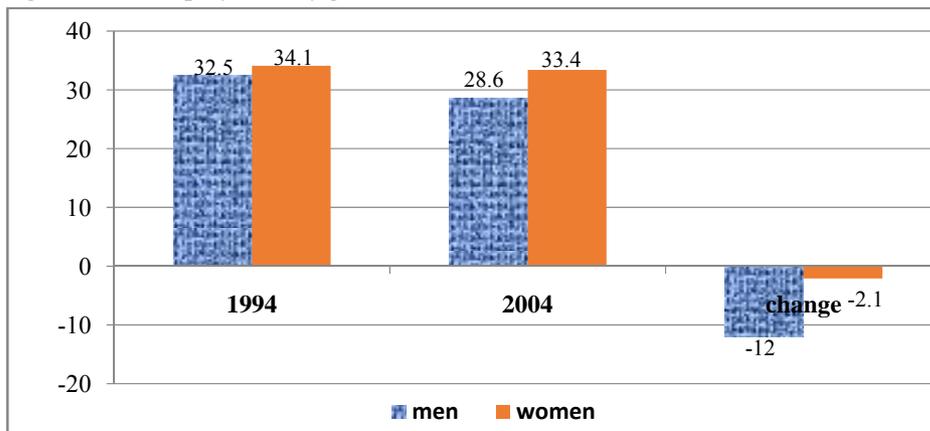
As can be seen from Figure 1 below, unemployment rate declined from 33.3% to 30.9% in 2004. On average youth unemployment remains high during both periods. Average unemployment declined in 2004 except for the age group 15-19 which increased by 18 percentage point and the age group 30-65 has lower unemployment rate on average. The rate goes down as one advance to the higher age group. This might be due to the fact that as age increases, people get more education, trainings and experience and hence better employment opportunities.

Figure 1: Unemployment rates by age group (1994 and 2004)



How does unemployment differ between men and women? Figure 2 below shows that both in 1994 and 2004 on average female unemployment were higher than male unemployment. The unemployment rate for men has reduced by 12% in 2004 compared to its level in 1994 and by 2.1% for the female category.

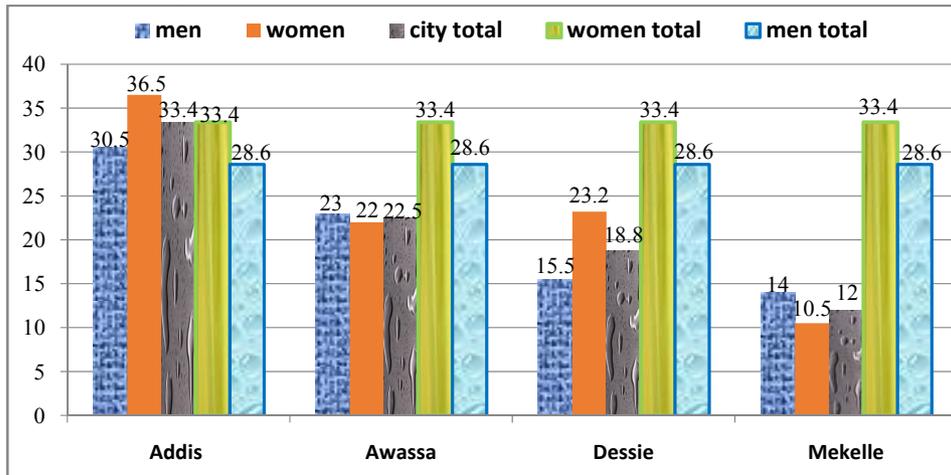
Figure 2: Unemployment by gender (1994 and 2004)



Let us now look at city differences in male and female unemployment. It can be read from Figure 3 that on average, both male and female unemployment is higher in Addis compared to the other cities. However, this may be a result of the possible difference in the education composition of the respondents among others. Female unemployment in Addis is even higher than the average unemployment for the whole sample. On

average, there is relatively higher unemployment rate in the capital Addis Ababa (33.4%) and lower unemployment rate in Mekelle (12%).

Figure 3: Unemployment by gender and location (2004)



Summary statistics for welfare variables is presented in Table 2. As can be read from the table, 54% of the households are male headed and 46% are female headed. The average household has 6 members among which one member is unemployed. The dependency ratio stands rather high at 53% which is a burden to the productive labor force in particular and the country in general and hence requires intervention. The larger number of respondents is again from Addis Ababa with 74% coming from the capital and a fairly equal sample is represented from the other cities-8.6% from Hawassa, 8.7% from Dessie and 8.4% from Mekelle. The mean per capita real consumption expenditure expressed in 1994 prices, the main variable of interest in this section, is 165 Ethiopian Birr per month although there is a large variation ranging from 11 to as high as 1,754 (also reflected in the high standard deviation of 164.6).

The sample consists of a few skilled labor force with 31% of the respondents recorded as illiterate and another relatively big number, 27%, having only primary education. When we see the job distribution, 21% work own activity, about 13% work as civil servants, 4.4% for the public sector, 10% in the private sector and 9% as casual workers. Since the sample covers major cities, it is not surprising that fairly many respondents work in the urban formal sector.

Table2: Descriptive statistics for welfare variables

Variable	Mean	Std. Dev.
Real consumption per adult equivalent unit (rconsaeu)	160.1	164.58
Age	51.0	14.11
Household size	6.0	2.69
Dependency ratio (%)	53.3	.59
Number of unemployed members	1.0	1.08
Male (%)	53.9	.49
Female (%) *	46.1	
Illiterate (%) *	31.2	
Primary school completed (%)	27.0	.45
Junior secondary school completed (%)	14.8	.36
Secondary school completed (%)	17.5	.38
Tertiary school completed (%)	9.0	.29
Employer (%)	1.0	.11
Own activity (%)	21.4	.41
Civil servant (%)	12.6	.33
Public sector employee (%)	4.4	.21
Private sector employee (%)	9.8	.30
Casual worker (%)	9.4	.29
Out of the labor force (%)	41.0	
Living in Addis (%)	74.2	.44
Living in Hawassa (%)	8.6	.28
Living in Dessie (%)	8.7	.28
Living in Mekelle (%) *	8.5	.28
No. of Observations	1118	

*denote reference group

5. Econometric Results

This section discusses empirical findings. Section 5.1 deals with unemployment where its determinants are discussed and the second part takes care of consumption where the impact of unemployment on welfare is investigated.

5.1 Determinants of Unemployment

In this section, a probit model is estimated for the probability of being unemployed. The dependent variable is unemployment and the explanatory variables are age, gender, marital status, education, mother's and father's education, father's occupation

and location (city). All or most of these variables are used in literatures that addressed unemployment (Alhawarin and Kreishan, 2010; Bhorat, 2008; Serneels, 2004; Haile, 2003; Kington and Knight, 2001; Noveria, 1997 and Krishnan, 1996).

The unemployed are defined as those looking for work but unable to find any. Serneels (2004) includes those individuals in the labor force but not looking for work as unemployed with the thinking that in a high unemployment environment people will not sit and wait but they actively look for a job. In this study, however, those "not at paid work and not looking for work" are excluded from the labor force since the strictly unemployed, according to the International Labor Organization (ILO) definition, are those looking for a job and be able to work but unable to find any (Bhorat, 2008). The other obvious categories excluded include students, the disabled, housewives, children and pensioners.

Post estimation link test is a model specification test which checks for the call for additional variables in a model and is done by carrying out a new regression by taking the observed Y as the dependent variable and the predicted \hat{Y} ($X\beta$) and \hat{Y} -squared as independent variables. With the null hypothesis being "no specification error", we fail to reject if $-\hat{Y}$ -squared is not significant (Reyna). Accordingly, it is found for unemployment that the \hat{Y} is significant and the \hat{Y} squared is not (Table 3; standard errors in brackets) and, therefore, the model is correctly specified and no omitted variable exists. The model does not have multicollinearity problem either. (Table A7 in the appendix)

Table 3: Link Test

unemployment	Coefficient
\hat{Y}	1.085*** (0.931)
\hat{Y} squared	.0783 (0.722)

Average marginal effects for each of the explanatory variables are calculated and reported in 4 below.

Table4: Determinants of unemployment-Probit regression results.

Variable	Coefficient	Marginal Effects
Gender, male	-0.087 (0.058)	-0.0255 (0.0170)
Age: 15_19	0.845*** (0.103)	0.2478 (0.0286)
Age: 20_24	0.773*** (0.069)***	0.2268 (0.0190)
Age: 25_29	0.350*** (0.087)	0.1028 (0.0258)
Married	-0.483*** (0.081)	-0.1418 (0.0234)
Primary school completed	0.015 (0.117)	0.0043 (0.0358)
Junior secondary school completed	0.424*** (0.110)	0.1244 (0.0335)
Secondary school completed	0.624*** (0.104)	0.1832 (0.0312)
Tertiary school completed	-0.289** (0.140)	-0.0847 (0.0430)
Mother, primary school completed	-0.049 (0.093)	-0.0143 (0.0279)
Father, secondary school completed	-0.023 (0.097)	-0.0067 (0.0290)
Father, working in the private sector	-0.174 (0.150)	-0.0512 (0.0458)
Father, working in the public sector	0.047 (0.076)	0.0137 (0.0226)
Living in Addis	0.486*** (0.176)	0.1426 (0.0500)
Living in Hawassa	0.164 (0.208)	0.0480 (0.0582)
Living in Dessie	0.128 (0.218)	0.0375 (0.0652)
Log-likelihood	-1302.81	-1302.81
Pseudo R ²	0.1607	0.1607

Note: ** significant at 5%; *** significant at 1%; standard errors in brackets

Reading from Table 4, compared to the age group 30-65 all the other age groups are positively associated with unemployment. For the teen age group for instance, heads who are one year older than the mean age have a 24.8% more likelihood of being unemployed. The same situation results in an increase in the probability of getting unemployed by 22.7% and 10.3% for the age groups of 20-25 and 25-29 respectively. This is consistent with the finding by Serneels (2004) for the youth.

For the education variable, the result reveals that up to the education level of secondary school, one is likely to be unemployed as the level of education increases, consistent with Serneels (2004) for the urban youth. Contrary to Serneel's finding, however, tertiary education is significantly and negatively associated with the likelihood of being unemployed. This is also consistent with the finding by Bhorat (2008) for South Africa. Those with tertiary education are 9% less likely to be unemployed compared to the illiterate. This is because people with tertiary level of education have better job opportunities since they are more skilled. Primary education is insignificant and this may be due to the fact that in urban areas, there is relatively lower demand for unskilled labor force.

Contrary to the finding by Krishnan (1996) and Serneels (2004), parent's education and occupation are insignificant in determining unemployment. As mentioned in the descriptive statistics earlier, 89% of the mothers have education level of less than primary school and that may be why mother's education could not play a role in defining unemployment. The same logic applies to father's education among which 88% have less than secondary education.

Location is another variable that determines unemployment. Contrary to the finding by Serneels (2004) for the youth but consistent with Bhorat (2008) for South Africa, living in the capital Addis Ababa is associated with high probability of being unemployed. On average people living in Addis have a relatively 14.3% higher probability of being unemployed compared to those in Mekelle. This could be due to congestion caused by the absolute size of people living in the metropolitan looking for better opportunities.

There is a negative association between getting married and being unemployed. This is consistent with the finding by Krishnan (1996). Looking at the marginal effect, married people have a 14.7% less probability of being unemployed. It may not be the case that when people get married, they have better likelihood of getting employed. Instead, it may be that they strive to find a job before getting married as marriage is believed to come up with responsibilities and most people get married after securing some source of income for future life or looking for one after getting married.

In sum, unemployment in urban Ethiopia in 2004 is found to be determined by age, marital status, education above primary school and living in the capital Addis. As for the other variables, gender, parental characteristics like mother's and father's education and occupation are insignificant in determining unemployment, all things remaining the

same. However, even though insignificant, the signs of their estimated coefficients meet expectation. The probability of unemployment: decreases for a male, decreases for those whose mothers have at least primary education and whose fathers' completed secondary school and for those whose fathers work in the private sector. In the following sections, the impact of unemployment on household welfare will be investigated.

5.2 Unemployment and Household Welfare

In this section, OLS regression model is estimated for consumption with the main objective of investigating the impact of unemployment on consumption expenditure and hence on household welfare. To account for the size of the household and its composition, household consumption expenditure per adult equivalent rather than aggregate consumption is used and transformed into log form (Alem and Söderborm, 2011). The independent variables used are age, age squared divided by 1000 (to make the number manageable), household size, number of unemployed members in the household (which captures unemployment), dependency ratio (the ratio of the labor force to those out of the labor force), gender, education and location.

Some or all of these variables are used in studies that addressed consumption (Alem and Söderborm, 2011, and Bigsten and Shimeles, 2005). Table 7 presents the results from OLS for log real consumption per adult equivalent unit. In a single log-model like this one, the estimated coefficients are semi elasticities measuring the percentage change in the dependent variable as a result of a unit change in the predictor variable, keeping all others constant. Robust standard errors are used to take care of heteroskedasticity.

Ramsey RESET test is performed on each of the predictors to check for any omitted variables bias. The result below shows that the null hypothesis of no misspecification can be accepted at 5% significance level (since $P(F) > 5\%$) and it can be concluded that the model is fitted well and there are no omitted variables.

Table 5: Ramsey RESET Test

<i>Ramsey RESET test using powers of the fitted values of log real consumption per capita</i>
Ho: model has no omitted variables
F(3, 1094) = 1.68
Prob > F = 0.1686

Multicollinearity may inflate standard errors. However, as long as there is no perfect multicollinearity (which the stata software detects automatically) the regression estimates will not be biased.

To check whether perfect multicollinearity is a problem, variance inflated factors (VIF) are calculated and presented in Table 6. If the highest variance inflation factor is greater than 10, there is evidence of collinearity. However, near collinearity that doesn't influence the main variable of interest in a model may not be a big problem and can be ignored (Baum, 2006). As can be noted from Table 6, age and age squared have a VIF of greater than 10 and since they are not the main concern here and since the exclusion of one of them do not influence the result, I ignore their high VIF. Because the VIF of all other explanatory variables is less than 10, it can be concluded that multicollinearity is not a problem in the data.

Table 6: Variance Inflation Factor(VIF)

Variable	VIF	1/VIF
Age	35.84	0.027899
Agesq	35.09	0.028497
Hhs	9.28	0.107712
Hhssq	8.57	0.116650
Addis	2.75	0.363709
Awassa	1.95	0.513036
Dessie	1.89	0.527900
Secondary	1.84	0.542948
Junsec	1.64	0.610689
Tertiary	1.61	0.619901
Primary	1.56	0.641548
Civil	1.54	0.648250
Male	1.43	0.697707
Unempmb	1.38	0.725883
Casual	1.37	0.727481
Ownacct	1.36	0.735782
Private	1.33	0.752856
Public	1.19	0.837146
Depratio	1.16	0.860047
Employer	1.06	0.942790
Mean VIF	5.69	

Table7: Determinants of log real per capita consumption- OLS regression results

Variable	Coefficient	Robust Std. Err.
Age	.008	.009
Age squared/1000	.001	.988
Household size	-.192***	.022
Household size squared	.008***	.001
Dependency ratio	-.084**	.036
Gender, male	.015	.046
Primary school completed	.152***	.056
Junior secondary school completed	.413***	.068
Secondary school completed	.612***	.070
Tertiary school completed	.873***	.086
Employer	.379*	.218
Own activity	.007	.056
Civil servant	-.103	.067
Public sector employee	.053	.109
Private sector employee	-.055	.075
Casual worker	-.269***	.069
Living in Addis	-.079	.075
Living in Awassa	.081	.095
Living in Dessie	-.368***	.092
Number of unemployed member	-.046**	.021
Intercept	5.022***	.230

Note: * significant at 10%; ** significant at 5%; *** significant at 1%

Consistent with the finding by Alem and Söderborm (2011), the result in Table 7 indicates that the larger the household size, the less the real consumption expenditure per adult equivalent will be, keeping all other variables constant. One more household member results in a 19% decline in the real per capita consumption expenditure available to the household.

The dependency ratio, since it is the ratio of people out of the labor force to those in the labor force, simple logic tells us that the higher the dependency ratio, the less per capita consumption in a household. The results confirm this. A one unit increase in the dependency ratio decreases the real consumption per adult equivalent by about 8%. Education is observed to strongly increase real per capita consumption expenditure, consistent with Alem and Söderborm (2011). Keeping all other variables constant, those households with the head having tertiary education have 8.6% higher real consumption expenditure per adult equivalent compared to the ones with no education. This may be due mainly to the income effect of education. Better education is likely to increase income which in turn increases consumption.

Occupation of the head is also one of the factors affecting consumption expenditure. Being an employer, for instance, means a relatively better income and hence better consumption expenditure. The result indicates that families with heads working as employers have 37.9% higher real consumption expenditure per adult equivalent. The result on the head working as casual worker confirms the finding by Alem and Söderborm (2011) that relatively speaking, households with heads working as casual workers have less consumption expenditure. These households have 27% less real per capita consumption expenditure compared to those working other jobs. There is no evidence that location matters for consumption except that those living in Dessie have 36.8% less real consumption per capita expenditure compared to the ones in Mekelle.

Since there is no unemployment benefit system in Ethiopia, it is highly likely that the burden of the unemployed member rests on the shoulder of the household. This in turn affects consumption expenditure and hence household welfare. Accordingly, one more unemployed member in the household results in a 5% decline in the real consumption expenditure per adult equivalent. This goes with the expectation in the beginning of this paper that unemployment has a negative impact on consumption and hence on welfare.

Age of head, age of head squared/1000, gender, working own activity, working as civil servant, public, private employment, Addis and Awassa city dummy variables are not significant in determining real consumption expenditure per adult equivalent.

6. Conclusion

In this study the determinants of unemployment in urban Ethiopia and its impact on household welfare is investigated using data from the 2004 wave of the Ethiopian Urban Socio Economic Survey on four major cities-Addis Ababa, Awassa, Dessie and Mekelle. Comparison of the unemployment situation by age, gender and location has also been made for the periods 1994 and 2004.

30.9% of the Ethiopian urban labor force was unemployed in the year 2004. The rate slightly decreased from its level of 33.3% a decade ago. Both 1994 and 2004 data have witnessed high female unemployment rates on average although the rates have declined in 2004. Teen age unemployment is high at 54.2% and increased by 18 percentage point in 10 years. Given the relatively larger sample size, Addis is characterized by higher average unemployment for almost every age group and gender compared to the other cities.

Probit model estimation technique is employed for the purpose of understanding the determinants of unemployment. The evidence indicates that the factors determining urban unemployment in Ethiopia are age, marital status, education above primary school and living in Addis. The likelihood of unemployment increases with age, taking ages of 30 to 65 as reference. Heads with education levels up to secondary school have relatively higher probability of being unemployed and those with tertiary education have 8.7% less probability of getting unemployed.

Living in the capital Addis Ababa is associated with high probability of being unemployed which may be due to the relatively larger sample size used. Another possible explanation could be the increased pressure on the labor force caused by the rising population size in the capital. The result also shows that married people are 14.7% less likely to be unemployed.

A second model, OLS regression, is estimated for log real household consumption expenditure per adult equivalent. The result shows that the factors determining consumption expenditure in urban Ethiopia are household size (negatively), dependency ratio (negative), education (positive), being an employer (positive), casual work (negative) and the number of unemployed members in the household which captures unemployment. With the absence of unemployment benefits in Ethiopia, the evidence indicates that unemployment has a negative impact on household consumption expenditure and hence on household welfare. One more unemployed household member decreases household consumption expenditure by 5%.

Since unemployment adversely affects household welfare via its impact on consumption, every effort to reduce unemployment will be translated into welfare. If the problem of unemployment can be reduced, welfare will improve in a way. The following recommendations therefore intend both to reduce unemployment and improve welfare. Efforts being exerted for alleviating poverty in the country will come up with short term and long term employment opportunities. If such policies and strategies are implemented successfully, welfare will improve. Improving urban infrastructure will also create short term and long term employment opportunities and thereby improve welfare, all other things remaining the same. It is observed that household size reduces welfare and hence family planning awareness may help in reducing household size and thereby increase welfare. Since tertiary education decreases unemployment, there should be enhanced effort on skill and employment creation for the skilled labor force.

Serneels (2004) in his study on unemployment based on the 1994 socioeconomic survey finds no association between ethnicity and unemployment. If data be available, it is worth investigating whether this trend is the case at present. Local language and affiliation (political and/or personal) could also be one of the determining factors for unemployment in urban Ethiopia which also requires further research.

References

- Alem, Y. and Söderborm, M. (2011). Household-Level Consumption in Urban Ethiopia: The Effects of a Large Food Price Shock. *World Development*.
- Alhawarin, I. M. and Kreishan, F. M. (2010). An Analysis of Long-Term Unemployment (LTU) in Jordan's Labor Market. *European Journal of Social Sciences*, 15(1), 56-65
- Bassanini, A. and Duval, R. (2006). The Determinants of Unemployment Across OECD Countries: Reassessing the Role of Policies and Institutions. *OECD Economic Studies*, (42)
- Baum, F. C. (2006). *An Introduction to Modern Econometrics Using Stata*. A Stata Press Publication: Stata Corp LP, College Station, Texas. PP 69-72; 247-255.
- Behr, T. and Aaltola, M. (2011). The Arab Uprising. Causes, Prospects and Implications. FIIA Briefing Paper 76.
- Bhorat, H. (2008). Unemployment in South Africa: Descriptors and Determinants. Paper presented to the Commission on Growth and Development, World Bank, Washington DC.
- Bigsten, A. and Shimeles, A. (2005). Poverty and Income Distribution in Ethiopia: 1994-2004. Department of Economics, Göteborg University.
- Cattaneo, C. (2003). The Determinants of Actual Migration and the Role of Wages and Unemployment in Albania: an Empirical Analysis. Università degli studi di Milano
- Central Intelligence Agency, The World Fact book.
<https://www.cia.gov/library/publications/the-world-factbook/geos/et.html>. Accessed 2011-06-04
- Deaton, A. (1997). *The Analysis of Household Surveys: A Microeconomic Approach to Development Policy*. Baltimore: Johns Hopkins University Press.
- Dendir, S. (2006). Unemployment Duration in Poor Developing Economies: Evidence from Urban Ethiopia. *The Journal of Developing Areas*, R23, J64, O55.
- Denu, B., Tekeste A., and Deijl V.D.H. (2005/07). Characteristics and determinants of youth unemployment, underemployment and inadequate employment in Ethiopia. *Employment Strategy Papers*.
- Eita, J. H. and Ashipala, J. M. (2010). Determinants of Unemployment in Namibia. *International Journal of Business and Management*, 5(10), 92-104.
- Feldstein, M. S. (1997). The Private and Social Costs of Unemployment. Paper presented at the American Economic Association Meeting. Working Paper 223. New York.
- Haile, G. A. (2003). The incidence of youth unemployment in urban Ethiopia. Paper Presented at the 2nd EAF International Symposium on Contemporary Development Issues in Ethiopia, Addis Ababa, Ethiopia, 11-13 July, 2003.
- Haile, G. A. (2008). Determinants of self employment in urban Ethiopia: Panel data based evidence. *Policy Studies Institute Discussion Papers*, (906).
- Henry, V., Penalba, C., Beguinot, I. and Deschamps, F. (1999). Relationships between work and HIV/AIDS status L. *Occup. Med.*49(2), 115-116.
- Husmanns, R. (1989). Measurement of employment, unemployment and underemployment- Current international standards and issues in their application. *Bulletin of Labour Statistics*, ILO, Geneva, 1989-1

- Echebiri, N. (2005). Characteristics and determinants of urban youth unemployment in Umuhia, Nigeria. Paper presented at World Bank Conference on Share growth in Africa. Accra, Ghana.
- Kingdon, G. G. and Knight, J. (2004). Unemployment in South Africa: The Nature of the Beast.
- Krishnan, P. (1996). Family Background, Education and Employment in Urban Ethiopia. *Oxford Bulletin of Economics and Statistics*, 58(1), 167-182.
- Krugman, P. (1994). Past and Prospective Causes of High Unemployment. Federal Reserve Bank of Kansas City.
- Mankiw, N. G. (2002). *Macroeconomics*, 5th Edition. New York, NY: Worth, 2002.
- Norris, E. D. (2000). A Game Theoretic Analysis of Corruption in Bureaucracies. IMF Working Paper, Fiscal Affairs Department
- Noveria, M. (1997). Unemployment in Less Developed Countries: Patterns, Causes and Its Relationship to the Problems of Poverty. *Bulletin Pengkajian Masalah Kependudukan dan Pembangunan*, VIII (2 &3) 1997.
- Olsson, O. (2009). *Essentials of Advanced Macroeconomic Theory*.
- Rafik, M., Ahmad, I., Ullah, A. and Khan, Z. (2010). Determinants of Unemployment: A Case Study of Pakistan Economy (1998-2008). *Abasyn Journal of Social Sciences*, 3(1)
- Reyna, O. Linear Regression (Ver. 6.0). Data and Statistical Services. Princeton University.
- Romer, D. (2005). *Advanced Macroeconomics*, 3rd Edition. Boston: McGraw-Hill, 2005.
- Serneels, P. (2004). The Nature of Unemployment in Ethiopia. CSAE WPS/2004-01.
- Stiglitz, J. (1974). Alternative Theories of Wage Determination and Unemployment in LDC's: The Labor Turnover Model. *The Quarterly Journal of Economics*, Oxford University Press, 88(2), 194-227. The Economist Online, (2011). Africa's Impressive Growth.
- USAID. (2007). President's International Education Initiative Expanded Education for the World's Poorest Children Ethiopia Fact Sheet.
http://www.usaid.gov/press/factsheets/2007/fs070924_5.html (Accessed June 05, 2011)
- Verbeek, M. (2008). *A Guide to Modern Econometrics*, 3rd Edition. Hoboken, N.J.; Chichester: Wiley, 2008.
- World Bank. (2011). Ethiopia: Country Brief.
<http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/AFRICAEXT/ETHIOPIAEXTN/0,,menuPK:295939~pagePK:141132~piPK:141107~theSitePK:295930,00.html> (Accessed April 18, 2011)
- _____. (2011). Ethiopia Protection of Basic Services Phase 2 Project.
<http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/AFRICAEXT/ETHIOPIAEXTN/0,,contentMDK:22886509~menuPK:50003484~pagePK:2865066~piPK:2865079~theSitePK:295930,00.html> (Accessed April 26, 2011)
- _____. (2011). World Development Indicators:
<http://data.worldbank.org/indicator/SL.UEM.TOTL.ZS> (Accessed April 18, 2011)
- _____. (2007). Ethiopia: Urban Labour Markets in Ethiopian: Challenges and Prospects. Synthesis Report. Vol I & II.
- _____. (2003). Higher Education Development for Ethiopia. A World Bank Sector Study

Appendix

Note: * taken from Haile (2003); ** and *** for 1994, age covers 15-64 and 16-65 for 2004. The 2004 figures are own calculations.

Table A1: Unemployment rates by age group.

	1994*	2004	Change
Age:15-19	46%	54.2%	18.0%
Age:20-24	61.7%	51.6%	-16.4%
Age:25-29	38.3%	34.5	-9.9%
Age:30-64/65**	13.5%	12.9%	-4.4%
Age:15-64/65***	33.3%	30.9%	-7.2%

Table A2: Unemployment rates for men

Age	1994*	2004	change
15-19	55.7%	58%	4.1%
20-24	61.9%	48.3%	-22.0%
25-29	40.8%	34.7%	-15.0%
30-64/65**	13.8%	13%	-5.8%
15-4/65***	32.5%	28.6%	-12.0%

Table A3: Unemployment rates for women

Age	1994*	2004	change
15-19	40.2%	51.5%	28.1%
20-24	61.5%	54.7%	-11.1%
25-29	35.8%	34.3%	-4.2%
30-64/65**	13%	12.8%	-1.5%
15-64/65***	34.1%	33.4%	-2.1%

Table A4: Unemployment rates by gender and location

	Male		Female		City Total	
	Freq	Percent	Freq	Percent	Freq	Percent
Addis	1092	30.5%	994	36.5%	2086	33.4%
Awassa	87	23%	91	22%	178	22.5%
Dessie	69	15.5%	69	23.2%	138	18.8%
Mekelle	50	14%	57	10.5%	108	12%

Table A5: Unemployment by age group and location

	Age: 15-19		Age: 20-24		Age: 25-29		Age: 30-65	
	Freq	Percent	Freq	Percent	Freq	Percent	Freq	Percent
Addis	171	56.1%	525	53.5%	272	36.4%	891	14.8%
Awassa	13	53.8%	42	42.9%	20	35%	83	1.2%
Dessie	12	25%	27	40.7%	10	20%	83	8.4%
Mekelle	5	60%	16	31.3%	11	-	65	7.7%

TableA6: Unemployment by age group, gender and location

Age		15-19				20-24				25-29				30-65			
Gender		Male		Female		Male		Female		Male		Female		Male		Female	
Obs.		Freq	Percnt	Freq	Perc.	Freq	Perc.	Freq	Perc.	Freq	Perc.	Freq	Perc.	Freq	Perc.	Freq	Perc.
City	Addis	68	57.4%	103	55.3%	250	50%	275	56.7%	147	36.1%	125	36.8%	509	14.9%	382	14.7%
	Awassa	6	66.7%	7	42.9%	19	36.8%	23	47.8%	9	55.6%	11	18.2%	43	2.3%	40	?
	Dessie	4	50%	8	12.5%	15	33.3%	12	50%	5		5	40%	45	6.7%	38	10.5%
	Mekelle	3	66.7%	2	50%	6	50%	10	20%	6		5	?	30	6.7%	34	8.8%

Table A7: Correlation matrix (unemployment)

	unemp04	Male	age15_19	age20_24	age25_29	married	primary	junsec	second~y	tertiary	addis	hawassa	dessie
unemp04	1.0000												
Male	-0.0523	1.0000											
age15_19	0.1488	-0.0674	1.0000										
age20_24	0.2541	-0.0473	-0.1672	1.0000									
age25_29	0.0293	0.0124	-0.1114	-0.2139	1.0000								
Married	-0.2357	0.1549	-0.1556	-0.2366	-0.0990	1.0000							
Primary	-0.1194	-0.0098	0.0266	-0.0735	-0.0349	0.1268	1.0000						
Junsec	0.0770	0.0171	0.0856	0.0753	0.0321	-0.0272	-0.2441	1.0000					
secondary	0.2049	0.0543	-0.0307	0.0750	0.0599	-0.1395	-0.3610	-0.4035	1.0000				
Tertiary	-0.1504	0.0454	-0.0827	-0.0570	0.0165	0.0327	-0.1676	-0.1873	-0.2770	1.0000			
Addis	0.1198	0.0282	0.0155	0.0447	0.0382	-0.1235	-0.0415	0.0541	0.0669	0.0412	1.0000		
Awassa	-0.0505	-0.0157	-0.0072	-0.0046	-0.0103	0.0214	0.0368	-0.0308	-0.0145	-0.0014	-0.6128	1.0000	
Dessie	-0.0630	-0.0083	0.0061	-0.0266	-0.0381	0.0966	-0.0307	-0.0365	-0.0093	-0.0425	-0.5350	-0.0666	1.0000