DEBRE MARKOS UNIVERSITY COLLEGE OF BUSINESS AND ECONOMICS
DEPARTMENT OF ECONOMICS

Determinants of the role of Federal Democratic Republic of Ethiopia Defense Force in Reduction of youth Unemployment: The Case Study of Birsheleko Basic Military Training Center, West Gojjam zone, Amhara Region, Ethiopia

A THESIS SUBMITTED TO COLLGE OF BUSINESS AND ECONOMICS, DEPARTMENT OF ECONOMICS IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE IN DEVELOPMENT ECONOMICS.

MSc. THESIS

BY:

MELESE YOSSEF

JANUARY, 2025

DEBRE MARKOS, ETHIOPIA

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DECLARATION

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As member of the examination Board of the final MSc. Open Defense, we certify that we have read and evaluated the thesis prepared by Melesse Yossef entitled: Determinants of role of federal democratic republic of Ethiopia defense force in reduction of unemployment: The case study of Birsheleko basic military training center west Gojjam zone, Amhara region, Ethiopia and recommend it to be accepted as a partial fulfillment of the requirements for the degree of MSc in Development Economics.

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ACRONYMES

ADBG……. Africa Development Bank Group

FDRE……. Federal democratic republic of Ethiopia

ILO……. International Labor Organization

RBA……..…Reserve Bank of Australia

LDCs…….……Least Developed Countries

OECD……..Organization for Economic Cooperation and Development

CDF…….. Cumulative Distribution Function

MLR…….Multiple Linear Regression

ABSTRACT

Unemployment poses a significant challenge for all nations, necessitating a coordinated effort involving public and private entities alongside governmental initiatives. Among these public entities is the Federal Democratic Republic of Ethiopia's defense force, which actively contributes to reducing unemployment. This study aims to explore the FDRE defense force's role in addressing unemployment and the factors influencing youth recruitment within the FDRE defense force. The data was collected from primary and secondary sources, with primary data gathered from military trainees at the Birsheleko training center and unemployed youth in Finote Selam and its surroundings seeking employment. The total population for this study is 16,788 military trainees with female= 69, total = 16,857, while the non-military population with male = 4,217, female = 3,657 and total = 7874 unemployed job seekers. The sample size was 122. The analysis employed both descriptive and econometric methods. The econometric estimation was conducted using the binary probit regression model. The results indicated that factors such as age, education level, and distance from urban centers negatively impacted individuals' likelihood of joining the DRE defense force. Additionally, females were less inclined to recruit compared to their male counterparts, while a positive perception increased the tendency to join the FDRE defense force. While the FDRE defense force positively contributes to unemployment alleviation, its focus predominantly targets males under 29 years old, differing from other sectors. Cultivating a positive perception of the institution could attract a more diverse pool of recruits, fostering greater participation in addressing unemployment. In summary, individuals with higher educational attainment are less inclined to join the institution, while those over 30 show reluctance, underscoring the need to tailor recruitment strategies to attract this demographic. Efforts should also focus on disseminating information to those residing farther from urban hubs, broadening access to recruitment opportunities.

***Key word**: defense force, unemployment, probit regression, Birsheleko, Ethiopia*

CHAPTER ONE

INTRODUCTION

1.1. Background of the Study

Unemployment is one of the most challenging problem countries faces be it developed or developing countries for the youths ((Victor *et al*., 2020). The government of every country tries to manage economic resources effectively and efficiently to reduce this unemployment problem but unfortunately more than 3 million people will become unemployed worldwide in the next two years, making existing jobs vulnerable and fueling potential social unrest as the global economy slows. The International Labor Organization predicts unemployment will rise by about 2.3 million this year (2019) to 199.4 million, and that 1.1 million will be added to the global count in 2030, taking joblessness to more than 200 million for the first time on record. In Africa, there are 200 million people in Africa between 15 and 24 years of age. This represents about 20% of the population. According to the ((Democratic & Of, 2013), Africa has the fastest growing and most youthful population in the world (Gangji and Plasman, 2007) over 40 percent (40%) of its population is under 15. Africa's high fertility rate is responsible for this population growth. This demographic finding portends challenges and opportunities (Dao and Loungani, 2010).

The challenges are economic and social both are highly connected. As the population expands, jobs must be created. If these jobs are not enough, there will be many young people who will not be employed and even the few that are employed are working in informal firm in poor working condition and worst of all low wage. According to the (International Labor Organization 2011), 3 out of 5 unemployed people in Africa are young people. Africa has the largest "youth bulge" in the world, and the number of youths is expected to grow by 42.5 million between 2010 and 2020, said Ulku and Georgieva (2022). And if the governments don't take effective and efficient strategies to reduce this unemployment issue youths will turn to be more unemployed which may lead to political instability, crime waves (theft, prostitution etc) and high continental immigration, Frumkin (1998).

In Ethiopia 76.4% of youths are under employed and 23.6% of this youths are unemployed *(Griep et al.*, 2016) with a plagued of multiple and complex problems because of unemployment. This statistic increases in rural areas with more than 54% of the population especially youths are unemployed. Many youths are unemployed and this can be attributed to some institutional inadequacies and poor economic resources management. The poor adaptability of vocational training institutions of learning and methodology to the country's socio-economic context hampered youth unemployment. No

Universities in these areas and the few ones around are more concerned with theoretical aspects forgetting practical work which is more important than theory, making the graduates not to have enough skilled labor. The country resources are been centralized only in the capital city bringing in high rate of embezzlement making the country resources belonging to few people promoting unemployment. Due to this high rate of unemployment many youths and families in these areas all over the country have resorted to rural- urban migration creating saturation in cities and unequal development in the economy moreover this could sometimes lead to continental Exodus. Collins, (2009) found immigration to be an unimportant factor in the unemployment rate which itself caries the likelihood of engagement in risky activities and behaviors such as drug abuse or drug use, sexual promiscuity or gang related activity. Thus, creating an unsustainable environment hindering economic progress as a whole

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 (Kassa, 2012). High level of unemployment rates can also contribute to the spread of HIV/AIDS in developing countries (Henry and Nixonf, 2000). 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 (Alemu, 2020), 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 18.9% in Ethiopia, 32.1% in South Africa, 5.58% in China, 2.6% in Japan, and 9.5% in Brazil. 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 & Loungani, 2010) there were about 200 million unemployed people in the world in 2010, 75% of which came from the less developed economies and the rest from advanced economies, and the number has increased substantially since 2007.

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. However, after these periods, the GDP growth rate has showed decreasing trend and by the year 2022 the GDP growth rate was 5.32% (The economist, 2023). Despite such downfalls of the GDP, unemployment is high and is one of the socio-economic problems in the country. The general unemployment rate was 18.9% in 2022. It was higher for females at 28.6% compared to males which stood at 10.8 (Unemployment (%).Pdf, n.d.).

The rural population of Ethiopia makes about 77.34% of the total population however the urban population makes only about 22.66% of the total population (CSA, 2013). 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 unemployment might be more serious 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 22% and rural poverty at 16% in 2021 (World Bank, 2022). 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. (Berhanu et al., 2015) 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 youth unemployment and a few focused on general unemployment. This paper therefore adds to the discussion by focusing on the determinants of the role of federal democratic republic of Ethiopia's defense force unemployment reduction in the study area. Specifically, what determines the likelihood of being employed in the federal defense force of Ethiopia?

1.2. Statement of the Problem

Unemployment is a pressing global issue affecting people worldwide, including Ethiopia. Despite various government initiatives to combat unemployment, the problem persists due to several reasons. These include the government and private sector's failure to create enough job opportunities, illiteracy, resource scarcity, job market imbalances, and stringent recruitment criteria. The FDRE Defense Force's primary training division aims to educate military personnel through various colleges, such as the Basic Military Training Center in Birsheleko, West Gojjam. This center provides fundamental military training to candidates from diverse backgrounds, who subsequently serve the nation by safeguarding its sovereignty upon completing their training. While the Defense Force visibly protects the country from internal and external threats, its role in reducing unemployment remains unclear. Many perceive military service solely as combat-oriented, dissuading potential recruits and contributing to youth unemployment.

Numerous studies such as Dao and Loungani (2010), have previously explored youth unemployment in specific regions, examining various factors and rates. However, no research has yet delved into each organization's role in alleviating unemployment in Ethiopia. This paper aims to highlight the Ethiopian Defense Force's contribution to reducing unemployment. This study identifies a significant gap in the existing literature regarding the Federal Democratic Republic of Ethiopia's role in addressing unemployment. This paper seeks to bridge the gap in research by exploring the FDRE institution's role

in reducing unemployment and factors that affect joining the institution although it plays crucial role unemployment reduction, a topic largely unexplored in previous studies.

By shedding light on the institution's role in addressing unemployment, this study aims to not only benefit the FDRE but also encourage similar organizations to revise their recruitment criteria to enhance job creation opportunities. Ultimately, the citizens of Ethiopia stand to gain from increased employment prospects as a result of these efforts. One crucial aspect this paper delves into is how the FDRE Defense Force training division distinguishes itself from other organizations in reducing unemployment through unique recruitment criteria. By providing fresh insights into the institution's contributions to employment, this research aims to enlighten both the institution itself and the general populace on job opportunities within the military sector.

1.3. **Research questions**

The research questionsaddressed by the research study was:

i. What is the role of the FDRE defense force in reduction of unemployment in the study area?

ii. What are the determinant factors that influence joining the FDRE defense force taking as an opportunity for employment?

1.4. **Objectives of the Sstudy**

General objective

The general objective of the study is to analyze the determinants of role of Federal Democratic Republic of Ethiopia Defense Force in reduction of unemployment: The case of Birsheleko military Center, West Gojam zone, Amhara region, Ethiopia.

Specific objectives

The specific objectives of the research were:

- To assess the extent of contribution of the Birsheleko military institution to unemployment reduction in the study area.
- To identify factors that determine joining the FDRE defense force for employment in the study area

1.5. **Significance of the Study**

The outcomes of this paper or the findings of this research will first and foremost benefit the institution itself by amplifying its endeavors in reducing unemployment and sustaining them. The next group to

benefit will be the youth of the country. They will broaden their perspective regarding the role of a soldier, understanding that it is not solely about conducting warfare but also represents a viable job opportunity. The third group of beneficiaries will be sister institutions that, by adjusting their recruitment criteria, can significantly contribute to alleviating unemployment in the nation. Finally, it will serve as source of reference for related studies.

1.6. Scope and Limitation of the Study

Conceptually, it identifies factors affecting likelihood of youth unemployment in Birshekeko military institution. Spatially, the scope of the study will be limited to the role of Birsheleko basic military training center in unemployment reduction due to time and budget constraints. The institution admits the trainees that come from all Ethiopian regions and nations to give 4 to 6 months training and enable them to join military members to give 7 years of contract service. Methodologically, it employed both descriptive and inferential method of data analysis.

1.7. Organization of the Study

The thesis is organized by five chapters. Chapter one presents back ground of the study statement of the problem, research questions, objectives of the study, significance of the study, scope of the study, and organization of the study. Chapter two presented related literature review. In these chapter theoretical reviews, empirical reviews, research gaps and conceptual framework are presented. Chapter three presents research methodology which encompasses research design, research approaches, and population of the study, sample size, sampling techniques, and types of data, data collection techniques, data analysis techniques and reliability and validity. Chapter four presents results and discussion. Chapter five draws conclusion and recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.1. Theoretical literature review

2.1.1. Definition of concepts

The formal definition of unemployment originates from the U.S. Bureau of Labor Statistics, which specifies that individuals are considered unemployed if they are jobless, have actively sought employment in the past four weeks, and are currently ready to work. Unemployment serves as an economic indicator as it reflects the capacity (or incapacity) of individuals to secure meaningful employment and contribute to the economic output of a nation ((2024). The term unemployment refers to a situation where a person actively searches for employment but is unable to find work. Unemployment is considered to be a key measure of the health of the economy (Adam haves, 2023).

2.1.2. Theory of unemployment

A. Classical school theory of the unemployment

The core tenet of this theory is that shifts in real wages prompt responses from the supply and demand forces in the labor market. Consequently, unemployment arises when real wages remain too high, impeding the functioning of the labor market. Government wage regulations and influential trade unions are identified as significant contributing factors. Thus, within the classical system, unemployment hinges on the absence of viable markets. The policy recommendations stemming from the classical analysis of unemployment suggest that to alleviate unemployment, there is a need to reduce government regulations, diminish the power of trade unions, and foster a more flexible labor market ((Schaf, 2018). Within Classical economic theory, unemployment signifies a disruption in the smooth operation of the labor market. This perspective assumes that markets adhere to the principles outlined in the idealized supply-and-demand model: viewing the labor market as a single, static entity characterized by perfect competition, immediate transactions, and mechanisms for bid-based exchanges ((Beranek and Kamerschen, 2011).

According to the classical theory, as scrutinized by (KLAUSINGER, 1995), the labor market comprises both labor demand and supply. Labor demand is considered a derived demand, determined by the diminishing marginal product of labor ((LAHMAR, 2019). Full employment, in this context, does not imply the absence of unemployment. Frictional unemployment persists at the prevailing real wage rate. For instance, if a worker perceives that the disutility of work outweighs the benefits or the

utility derived from the real wage, they may opt not to work. This category of unemployment is known as voluntary unemployment. Frictional unemployment emerges due to the dynamic nature of labor markets, information availability, job search activities, and unpredictable fluctuations in labor demand, such as plant closures and openings. The duration of frictional unemployment is influenced by factors like unemployment insurance benefits and the speed of information dissemination (Mouhammed H, 2011).

B. Keynesian school theory of unemployment

Keynes contended that by lowering taxes, national income could be increased, subsequently boosting employment. The objective of this tax reduction was to encourage spending on consumption and investment, fostering higher income levels and increased employment opportunities (Mankiw, 2002). The implementation of this tax policy was accompanied by an economic upsurge, resulting in a decline in the unemployment rate (Avenue & Mankiw, 2000).

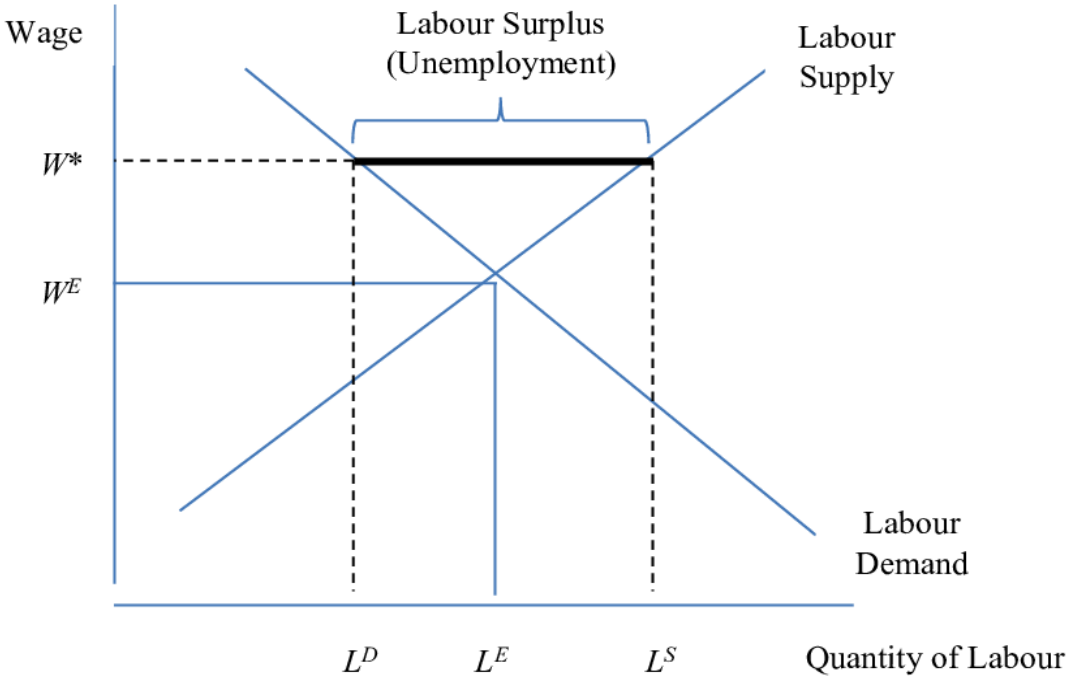

Figure 2.1: The relationship between wage and labour demand

In the exploration of Unemployment Theories and their relevance to Ethiopia: An Overview, the Classical theory of unemployment conceptualizes the labor market as a unified, unchanging entity marked by perfect competition, immediate transactions, and mechanisms for dual-auction bidding.

Within this framework, individuals supply labor while employers seek it. The volume of labor supplied can be gauged by metrics such as the count of workers engaged in full-day work over a specific duration. Conversely, the remuneration for labor is denoted by the real daily wage (Damane and Sekantsi, 2018).

C. New KEYNESIAN ECONOMICS

The school of thought in contemporary macroeconomics that stems from the concepts of John Maynard Keynes, particularly outlined in his work "The General Theory of Employment, Interest, and Money" during the 1930s, witnessed a surge in influence among scholars and policymakers up to the 1960s. However, in the 1970s, a group of new classical economists including ROBERT LUCAS, Thomas J. Sargent, and Robert Barro began to challenge many fundamental tenets of the Keynesian revolution.

The primary disparity between the new classical and new Keynesian economists lies in their divergent views on the speed of wage and price adjustments. New classical economists construct their macroeconomic models on the premise of flexible wages and prices, asserting that prices regulate markets by swiftly balancing supply and demand. On the other hand, new Keynesian economists argue that market-clearing models fail to elucidate short-term economic fluctuations, advocating instead for models featuring "sticky" wages and prices. New Keynesian theories hinge on the notion of wage and price stickiness to elucidate the existence of involuntary unemployment and the significant impact of monetary policy on economic activity (Avenue and Mankiw, 2000).

Furthermore, the new Keynesians contend that markets often do not reach equilibrium even when individuals act in their self-interest. Information asymmetry and the costs associated with altering prices result in certain price rigidities, paving the way for employment fluctuations (Avenue & Mankiw, 2000).

D. New classical school theory of unemployment

The new classical economists assert their position on the premise of market clearing. They contend that there exists no rationale for firms or workers not to modify wages or prices if doing so would enhance their welfare. Consequently, prices and wages adapt to equalize supply and demand, effectively clearing the market. In pursuit of retaining a larger portion of their income, individuals are inclined to offer significantly more labor (Avenue & Mankiw, 2000).

2.1.3. 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 (Hussmanns, 2022). The demand side on the other hand consists of jobs (filled posts) and job vacancies (unfilled posts). According to (Nganwa et al., 2015), 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.

2.1.3.1. 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 (Avenue and Mankiw, 2000), 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 (Llaudes, 2021). 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 insider's 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 (n.d.), 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 Bernal-Verdugo (et al., 2012) 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 Lev-, (2002), unemployment in developing countries like those in East Africa is a result of rural to urban migration motivated by the high wage differential. (Of *et al*., 2021), 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 The World Bank(2021) 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 and Astatike 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. (O'Nwachukwu & Chinedu, 2016) 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) 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 Sudarta(2022) on long term unemployment in Jordan indicates that age, gender, marital status, region, work experience and education are the major determinants.

2.1.3.2. Costs of Unemployment

Unemployment comes up with costs. According to Masera, (2018), 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, 1999).

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 (Livelihood, 2022). 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 (World Bank, 2014), 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.

2.1.3.3. Current unemployment status around the world

The UN's International Labor Organization (ILO) has estimated that both the unemployment rate and the jobs gap have declined below pre-pandemic levels. In 2023, the global unemployment rate was 5.1%, a 0.2% improvement over 2022. The global jobs gap—the number of individuals who want employment, regardless of whether they are currently available or searching—narrowed in 2023 to 435 million, down from close to 500 million in 2020, 476 million in 2021 and over 440 million in 2022. However, progress was uneven. The labor force participation rate increased in high-income countries (+0.3%) and lower-middle-income countries (+1.5%), but in low-income and upper-middle-income countries the labor force participation rate fell (by 0.1% and 0.3%, respectively). Even within affluent G20 countries, high inflation rates and rising housing costs significantly eroded much of the recent nominal wage gains. Furthermore, rates of informal work are also expected to remain static in 2024, accounting for approximately 58% of the global workforce while youth unemployment rates are 3.5 times higher than those of adults and global labor force participation rates of women lag those of men by 25%.

The 2023 global unemployment rate stood at 5.1%, a modest improvement from 2022 when it stood at 5.3 per cent. The global jobs gap and labor market participation rates also improved in 2023 (ILO 2024). Africa's unemployment rate, at 7.9%, is above the global rate of 5.6% (ADBG 2021). Unemployment is high and remains to be one of the socio-economic problems in the country (Tolesa & Zeleke, 2024).

2.1.3.4. Basic factors of unemployment

Economic literature provides many explanations for the unemployment problem. Some causes blame the economic systems, and others blame the unemployed workers. Still, other theories shift the problem to external sources and shocks, or unpredictable events, and others argue that technology and labor market institutions are the causes of the unemployment problem. Other theories think the deficiency in aggregate spending and innovations are the essential factors for explaining the problem(Mouhammed, 2011).

2.1.4. Unemployment in Ethiopia and the 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.

(Kassa, 2012) 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 & Astatike 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.

(Nganwa et al., 2015) 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.

(Berhanu et al., 2015) 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 (Fares & Tiongson, 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 (Ulku & Georgieva, 2022) 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.

2.2. Empirical literature review

A literature review is foundational to any research study in education or science. In education, a well-conceptualized and well-executed review provides a summary of the research that has already been done on a specific topic and identifies questions that remain to be answered, thus illustrating the current research project's potential contribution to the field and the reasoning behind the methodological approach selected for the study (Maxwell, 2012). When we try to see the History of Unemployment, the U.S. government began tracking unemployment in the 1940s, the highest rate of unemployment to date occurred during the Great Depression, when unemployment rose to 24.9% in 1933 (Das et al., 2023).

Between 1931 and 1940, the unemployment rate remained above 14% but subsequently dropped down to the single digits. It remained there until 1982 when it climbed above 10%.

In 2009, during the Great Recession, unemployment again rose to 10%. In April 2020, amid the Corona virus pandemic, unemployment hit 14.8%. As of June 2023, the unemployment rate was 3.6%, a slight increase from the previous month. As /WARD WILLIYAM/S explanation, the world's five highest unemployment rates at the end of 2023 (latest information) were in Africa and occupied Palestine. Eswatini: 37.6%, South Africa: 28%, Djibouti: 26.3%, West Bank and Gaza: 24.4%, and Botswana: 23.4%.

Africa has the world's youngest population, with a median age of 19.7 years. Such a large youthful population might ordinarily symbolize an ample and energetic workforce, a boon for the development prospects of any region. But the dire employment situation for young people across Africa continues to snuff out their potential. According to the African Development Bank, in 2015, one-third of Africa's then 420 million young people between 15 and 35 years old were unemployed, another third were vulnerably employed, and only 1 in 6 was in wage employment (Paun et al., 2021).

The African Development bank reports that while 10 million to 12 million youth enter the workforce in Africa each year, only 3 million formal jobs are created annually. African youth have no choice but to work, because most countries on the continent have little or no social protection. According to the African Development Bank, it is therefore common to see humanities and social sciences graduates driving taxis in Algiers and Cameroonian engineers ferrying passengers on commercial motorcycles in Douala (Audrey Elom Donk, 2021**).**

In India, the rate of unemployment has been increasing over the past few years in both rural and urban areas. This has led to a slow rate of growth in the economy and hinders economic development. The main reasons for unemployment in the country was higher population, poverty and illiteracy, inflation, agricultural workers, casual and informal labour (Shruti Nair, 2018)

2.3. Conceptual framework of the Study

Unemployment can be influenced by various factors, including the availability of natural resources in an economy. When there is a scarcity or surplus of natural resources, it can impact employment in different ways:

Scarcity of Natural Resources: The unbalance between the availability of resources and the demand for those resources is a fundamental reason for rising unemployment in a country. Decreased production resulting from a scarcity of key natural resources required for a specific industry can lead to job losses in that sector and related fields. Moreover, a shift in employment patterns may also contribute to unemployment, as workers in industries heavily reliant on scarce resources may face job insecurity and may need to seek opportunities in less affected sectors.

Surplus of Natural Resources: Conversely, a surplus of natural resources can also contribute to unemployment. Reduced demand stemming from an excess of natural resources can lead to decreased demand for certain products or services, resulting in lower production levels and potential layoffs in industries heavily dependent on these resources.

Structural Unemployment: Additionally, structural unemployment may occur when workers in industries with surplus natural resources struggle to find employment opportunities in other sectors. This long-term unemployment can persist if workers lack the skills needed in alternative industries.

In all scenarios, government interventions, educational initiatives, and efforts to diversify industries can help alleviate the impact of natural resource scarcity or surplus on unemployment. Encouraging innovation and sustainable resource management practices can also create new job prospects and foster economic growth, even in the face of resource challenges.

In addition to that, creating more job opportunities by government and non-governmental organization is the essential thing. Setting eligible recruitment criteria for candidate job finders is the other solution for reduction of unemployment. This study tries to examine what factors that determine the role of FDRE defense force in reduction of unemployment in the case of Birsheleko main training center by copping those recruitment criteria for job seekers.

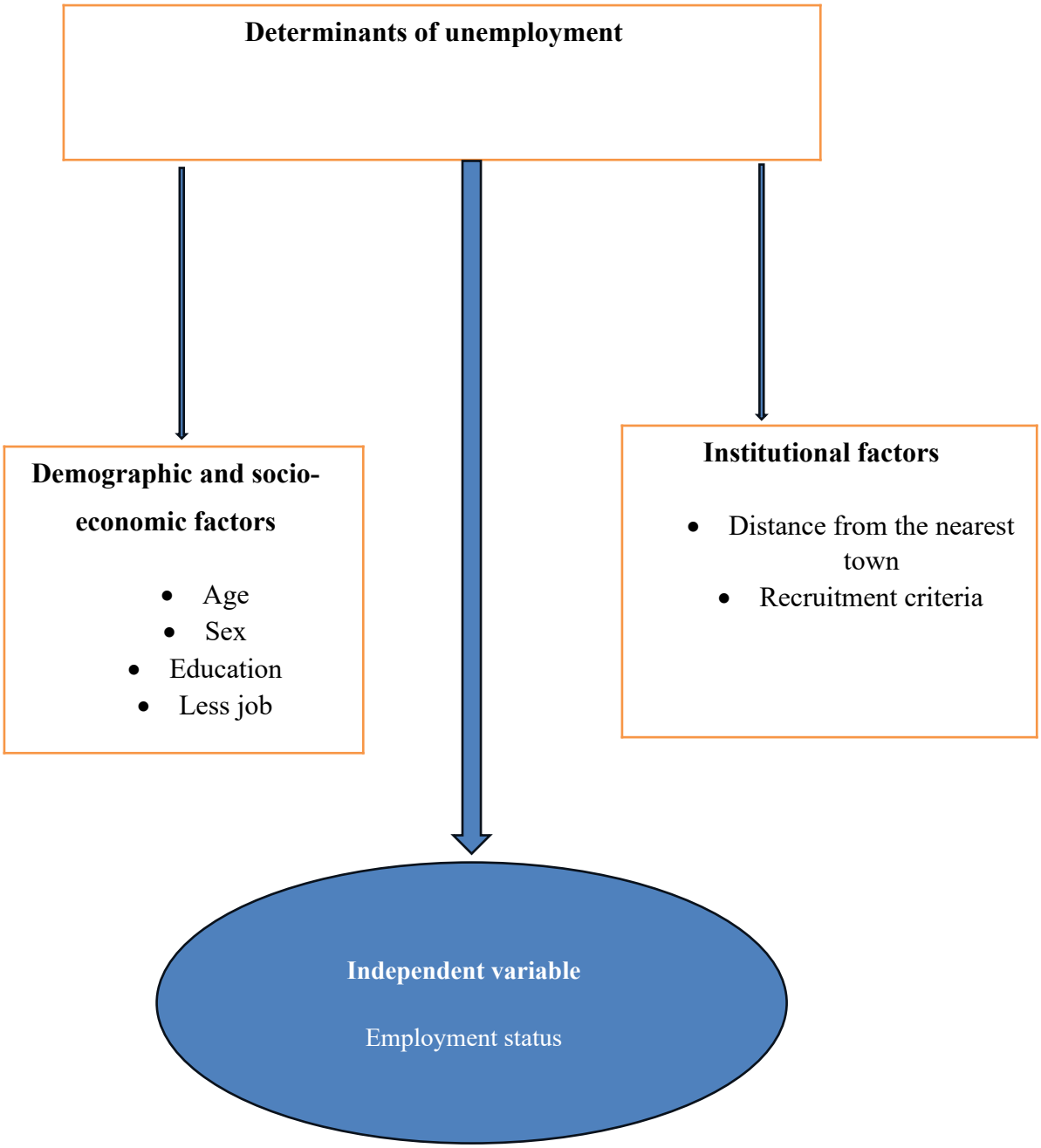

Figure 2: conceptual Frame work of unemployment and its determinants

CHAPTER THREE
RESEARCH METHODOLOGY

3.1. Description of the Study Area

The research is focused on FDRE military training main division of Birsheleko. The institution has money training centers. But this study tried to focus specially on basic military training center which is found in Amhara region, w/Gojam zone, Jabitehnan woreda, Birsheleko basic military training center. Birsheleko basic military training center is located in Amhara region, w/Gojam zone, Jabitehnan woreda. The center is Misiones to give basic military training for those candidates come from all Ethiopian nation and nationalities that fulfills the recruitment criteria of the institution. The center borders in west Dembecha woreda, in south bure woreda, and Jabitehnan woreda. The training center envisions to being best military training academy in Africa and produce qualitative military personnel with different additional profession and who can accomplish any challenging missions in the country as well as in the worldwide mission by participating peacekeeping and peace regulating order.

3.2. Research design

The preferable research design for this study was both descriptive and explanatory research method in descriptive research, the study was solely interested in describing the situation or case under the study whereas in explanatory research it analyzed the relationship between variables to make an inference. It is a theory-based design method created by gathering, analyzing, and presenting collected data. This allows the study to provide insights into the'' of research. It helps others better understand the need for the research. Moreover, qualitative research approach was employed in addition to quantitative research since it is concerned with subjective phenomena that can't be numerically measured, like how different people experience grief. Quantitative research was employed to quantify the problem by way of generating numerical data or data transformed into usable statistics.

3.3. Type and Source of Data

The data type and source of this research was both primary and secondary. Primary data for this paper was gathered from trainees and their counter parts which are not members of the military service using questionnaires and interviews who were selected sample of trainees and their counter parts which are not members of the military service. A population of this study is the 40th round basic military trainee who found in Birsheleko basic military training center. Birsheleko basic military training center is

located in Amhara region, w/Gojam zone, Jabitehnan woreda. The center's mission is to give basic military training for those candidates come from all Ethiopian nation and nationalities. There are trainers, civil servants and other families of trainers in the compound. The center gives basic military training for basic military trainees 2-3 times a year with age range of 18 – 29 years. The number of the trainees is varying time to time as the interest of the institution to higher. But this paper focus on 40th round trainees in the center which is estimates male= 16,788, female= 69, total = 16,857 in number. Moreover, the non-military population data is taken from the list of job seekers registered by Finoteselam technic and enterprise office. The total population found in the office was male = 4,217, female = 3,657 and total = 7874 unemployed job seekers. Secondary data was also collected from document materials, literatures and published journals.

3.3. Sample size determination

The sample size was determined using the appropriate sample size determination method. There are two methods for determining the size of the sample (Kothari, 2004). The first is specifying the precision of estimation method which is frequently used and appropriate one and the second is using Bayesian statistics to weight the cost of additional information against the expected value of the additional information. This method is not commonly used because of difficulty in measuring the value of information. Accordingly, this study employed the first method to determine the sample size.

Since the population from which the sample drawn is finite, the following formula is applied to calculate the sample size (Kothari, 2004).

$$n = \frac{Z^2 . p . q . N}{e^2 * (N-1) + Z^2 * p * q}$$

Where: N = Size of population from which sample is drawn

n = Sample size

e = Acceptable error (the precision)

p = proportion of the population with major interest estimated either based on

Personal judgment from experience or on the result of pilot study.

q = 1-p

Z = the standard variant at a given confidence level and can be obtained from the table showing area Under the normal curve (at 95% confidence level that give Z value is 1.96)

However, there is no clear and uniform evidence about the value of 'e' and 'p' in literatures and studies. Different studies assumed 'e' value and 'p' differently. Hence, to this study the value of 'e' is assumed as 5% and the value of 'p' as 50% using estimation of the population with major interest and own personal judgment. Based on this the size of the sample became:

$$\frac{(1.96)^2 * 0.5 * 0.5 * 24731}{(0.05)^2 ¿ 24731 + (1.96)^2 * 0.5 * 0.95} = 112$$

3.4. Sampling technique

The study used simple random sampling technique after stratifying the employees which are member of the military trainees and nonmembers from the Finote-Selam town administration. Simple random sampling was employed to randomly select a subset of participants from a population. This sampling method was employed due to homogeneous population of the study and to give each member of the population an equal chance of being selected.

3.5. Method of Data Analysis

3.5.1. Descriptive analysis

Descriptive statistics such as argumentative discussions and simple statistical computations (mean, standard deviation, minimum and maximum value) are employed for the purpose of describing the Determinants of the role of Federal Democratic Republic of Ethiopia Defense Force in Reduction of youth Unemployment: The Case Study of Birsheleko Basic Military Training Center, West Gojjam zone, Amhara Region, Ethiopia. The study was carefully described and discuss how the socioeconomic and institutional, factors have an effect on the role of Federal Democratic Republic of Ethiopian Defense force for the reduction of unemployment and the determinant factors are discussed deeply. The descriptive analysis is substantiated by appropriate econometric models to identify causation among variables. Thus, the following econometric models are employed after undertaking all the required specification tests to verify their validity to address the predefined objectives.

3.5.2. Econometric Model specification

In this section, the model is be specified for analyzing the research questions. First, a binary choice model (probit) estimation technique was used to analyze the determinants of unemployment.

In this model, the possible determinants of unemployment are 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:

$$Y_i^* = X_i B_i = u_i \quad (1)$$

Where Y_i^* is the probability of being unemployed for individual i and has a linear relationship with the possible factors determining unemployment, B 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(age, gender, marital status, parental background, education status, easiness of the recruitment criteria)

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 (Yi = 1) or unemployed (Yi = 0).

$Yi = 0$ if $Y_i > 0$

$Yi = 1$ if $Y_i^* \leq$ [1] (2)

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

$Var[U/X] = X\beta\ (1 - X\beta)$ (3)

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

$P\ Y^* > 0\ X =$

$P\ U > -X\beta\ X =$

$P\ U < X\ \beta\ X =$

$P\ Y = 1\ X = \psi\ (Y_i^*)$ (4)

$\Psi\ (\ )$ 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 the individual on X, i.e., on individual's educational level, age, gender, marital status, parents 'occupation, parents 'education and location can be calculated as:

$P\ Y/X = \psi\ X_i \beta^{yi} 1 - \psi\ X_i \beta^{1-yi}, yi = 0, 1$ (5)

[1]

The log likelihood or individual i can then be set as:

$\lambda i\beta = yi \log \psi Xi\beta + 1 - yi \log 1 - \psi Xi\beta$ (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), ψ, 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 ℿ*/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. The researcher used probit model. Though ordered logit and probit models may give the same result, for this study probit model was selected because it represents a close approximation to the cumulative normal distribution and several researchers have used the probit model (Duncan et al., 1998).

It is obvious that the difference between logit and probit models is only in their distribution functions. The logistic distribution has slightly flatter tails than the probit, the conditional probability Pi approaches zero or one at a slower rate in logit than in probit. The probit model provides accurate estimation of the impact of various explanatory variables.

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:

$$¿ \frac{\partial p\, y=1/x}{\partial xj} = \frac{\partial p\, y=1/x}{\partial x\beta} \cdot \frac{\partial x\beta}{\partial xj} = \psi' \, Xi\beta \cdot \beta j = \psi \, X\beta \cdot \beta j \quad (7)$$

Equation (7) depicts that the effect of a change in a given determinant (Xj) on the probability of being unemployed is the product of the effect of the determinant (Xj) on the latent variable (Y*) and the derivative of the distribution function evaluated at the latent variable (Y*).

3.5.3. Diagnostic tests

Normality test

Shapiro-Wilk's W: This test is a formal test of normality test for a given variable, W should not be significant if the variable's distribution is not significantly different from normal. W may be thought of as the correlation between given data and their corresponding normal scores, with W = 1 when the

given data are perfectly normal in distribution. When W is significantly smaller than 1, the assumption of normality is not met. Shapiro Wilk's W is recommended for small and medium samples up to n = 2000 (Garson, 2012). This test of this study is found to be W= 0.98 which is close to one indicating the presence of normality. Besides normality test checked using Skewness/Kurtosis test and showed as there is no normality problem (see annex 3.1).

Multi-collinearity

Prior to running the logistic regression, both continuous and discrete explanatory variables were checked for the existence of multi-collinearity problem. This is because when there is an existence of linear relationship among some or all explanatory variables there can be occurrence of large variances and covariances, making precise estimation difficult. In this case the confidence intervals tend to be much wider, leading to the acceptance of the "null hypothesis" more readily and the *t*- ratio of one or more coefficients tends to be statistically insignificant (Gujarati, 2004)

There are two measures often suggested to test the presence of multi-collinearity. These are: Variance Inflation Factor (VIF) for association among the continuous explanatory variables and contingency coefficients for dummy variables. The technique of variance inflation factor (VIF) was employed to detect the problem of multi-collinearity among the continuous variables. According to Gujarati (2004), VIF can be defined as:

$$\text{VIF}(\beta_i) = \frac{1}{\left(1 - R_i^2\right)}$$

Where, R_i^2 is the square of multiple correlation coefficients that results when one explanatory variable (Xi) is regressed against all other explanatory variables. β_i is the coefficient of the explanatory variable (Xi) larger the value of VIF which exceeds 10 by a rule of thumb, indicates the presence of a multi-collinearity problem. Hence, it shows that there is no problem of multi-collinearity (see annex 3.4).

Heteroscedasticity

Heteroscedasticity problem is an increase or decrease variance of the error term with dependent and independent variable faced under a certain situation. This also will lead to an invalid test of significance. Breusch-Pagan-Godfrey test is the most powerful sample test of this problem. The squared residuals are standardized by dividing by the mean squared residual (regression sum of squares (RSS) divided by N), giving the generalized residuals. The generalized residuals are then regressed on all independent variables (m variables) suspected of causing heteroscedasticity. The error sum of squares (ESS) divided by 2, for this regression, follows a chi-square distribution with (m - 1) degrees of freedom. If the finding is significance, then the null hypothesis is rejected and heteroscedasticity can

be assumed (Garson, 2012). Breusch-Pagan-Godfrey test result for this study revealed p = 0.2963 which indicates there is no heteroscedasticity problem (see annex 3.3).

Model goodness-of-fit

According to Garson (2012), Model goodness-of-fit (GOF) tests help to decide whether our model is correctly specified. In this test if we produce a *p*-value which is low (say, below .05), we reject the model. If it's high, then our model passes the test. If the (model chi-square test statistic) is ≤ 0.05 then we should reject the null hypothesis. The result of GOF, p = 0.999 indicates the model is correctly specified. Moreover, another measure of goodness- of-fit is count R^2 which is defined as the number of correct predictions divided by total number of observations (Gujarati, 2004 pp. 605-6). The model result shows that the correctly predicted percent of sample household is 91 percent which is greater than 0.50 (see annex 3.6).

Link test

Link test checks whether we need more variables in our model or not. By running a new regression with observed Y against Y-hat (predicted) and Y-hat squared as independent variables, we can undertake link test. The null hypothesis in this test is there is no specification error. If the p-value of Y-hat squared is not significant, then we failed to reject the null hypothesis and conclude that the model is correctly specified. The link test to this study p- value of Y-hat squared = 0.675 shows that there was no model specification error (see annex 3.5.).

3.5.3. Definition of study variables and hypothesis

Table 3.1: Summary of Definition of Explanatory Variables

Variable	Description	Indicator	Measurement	hypothesized sign
Sex	Sex of the respondent	male 1 and; 0 otherwise	Nominal: Male/ Female	+ve/male
Age	Age of the respondent	Age in years	Scale: in Years	-ve
depend	Dependency ratio	Proportion of unproductive to total productive labor force in the respondent's household members	Scale: ratio	-ve/+ve
education	Education status of the respondent	Years of schooling	Scale: in years	-ve
PERC	Perceived positive	Positive 1; 0 otherwise	Nominal:	+ve

	perception towards the institution (FDRE defense force)		yes/no	
DisTown	Distance of the respondent's residence from town	Distance in kilometers	Scale: kilometer	-ve
martial	Marital status of the respondent	married 1 and; 0 otherwise	Nominal: married/ not	-ve
		Dependent variable		
Employment status	Employment status of the respondent	1 if member of the FDRE Defense force; 0 otherwise (searching for job)	Binary outcome	-ve/+ve

3.5. Data validity and reliability

Data validation is undertaken indifferent forms. However, for this study Statistical Validation and visualization were undertaken. The Use of statistical techniques to validate data, such as calculating summary statistics, distributions, correlations, and conducting hypothesis tests to check for data integrity. Moreover, Visualize the data using plots, charts, and graphs to identify patterns, trends, anomalies, or errors that may require validation. Finally, documenting the validation process, including any issues found, corrections made, and decisions taken. This documentation is essential for transparency and reproducibility.

3.6. Ethical consideration

Ethics are the moral principles that direct the actions of an individual or a group of people. From the beginning up to the end of our work, the authors of this manuscript have strived for academic honesty and overcame the tendency to discount data that did not match our requirements. We respected the activities, the norms, and morals of all the research units as well as others. In addition, potential conflicts of interest, proper authorship credit, and ethical study data management and disclosure were all considered by the authors of this manuscript. The research participants were duly informed about the objectives and advantages of the study, and their consent was required voluntarily. Generally, participants in the study were treated equally regardless of their gender, age or race, and did not incur any unwarranted risks. Participants were provided with all necessary information to make their own decision on whether or not to

participate in the study. So, the authors believed that the ethical principles that we followed in this manuscript guaranteed that the rights and welfare of individuals were protected.

CHAPTER FOUR

RESULTS AND DISCUSSIONS

In this study one-way ANOVA was used to determine whether there were differences among groups with different employment status concerning the average of the continuous dependent variable. A chi-square test was conducted to test the association between categorical variables and employment status. Finally, probit regression was used to show the effect of independent variables on the dependent variable because the dependent variable, employment, has two categories that fit the MLR. These results are presented as follows.

4.1. Descriptive statistics

4.1.1. Descriptive result of continuous variables

As Table 4.1. Below shows the descriptive statistics provided valuable insights into the continuous variables of the study participants, including age, years of education, and distance from town. To further analyze these variables and explore potential differences between employed and non-employed respondents, a t-test was conducted. The average age of the respondents is approximately 23.40 years, with a standard deviation of 2.78, indicating that most ages are relatively close to the mean. The youngest participant is 18 years old, while the eldest is 29, encompassing the entire age spectrum of the participants. Moving to education, the average years of schooling stand at about 10.43 years, with a standard deviation of 3.28, showcasing variability in educational levels. The educational range spans from a minimum of 4 years to a maximum of 17 years, reflecting a diverse educational background among respondents. Regarding distance from the town, the average distance from participants' residences to the nearest town is around 5.17 kilometers, with a standard deviation of 0.95, denoting consistent distances from town. The range extends from 3 to 7 kilometers, illustrating the spatial distribution of participants in relation to urban centers. These statistics collectively paint a comprehensive picture of the demographic characteristics and spatial arrangements of the study participants, providing valuable insights for further analysis and interpretation within the research context.

Table 4.1: Descriptive result of continuous variables

Variable	Mean	Std. Dev.	Minimum	Maximum
Age	23.40164	2.783243	18	29
Education	10.42623	3.275045	4	17
DisTown	5.172131	.9529651	3	7

Source: Own survey, 2024

4.1.2. Employment status of the respondents in the study area

Employment status refers to the current state of a person's relationship with work. It indicates whether an individual is employed, unemployed, self-employed, or not in the labor force. In their day-to-day struggles, individuals pursue a number of strategies to attain their livelihood goals. Understanding the local context of individuals' employment status is crucial to pinpoint appropriate development intervention strategies and assess their potential for replication in other contexts. In the study area of this study, 46.72% of the respondents were not employed while 53.28% were employed in FDRE defense force .

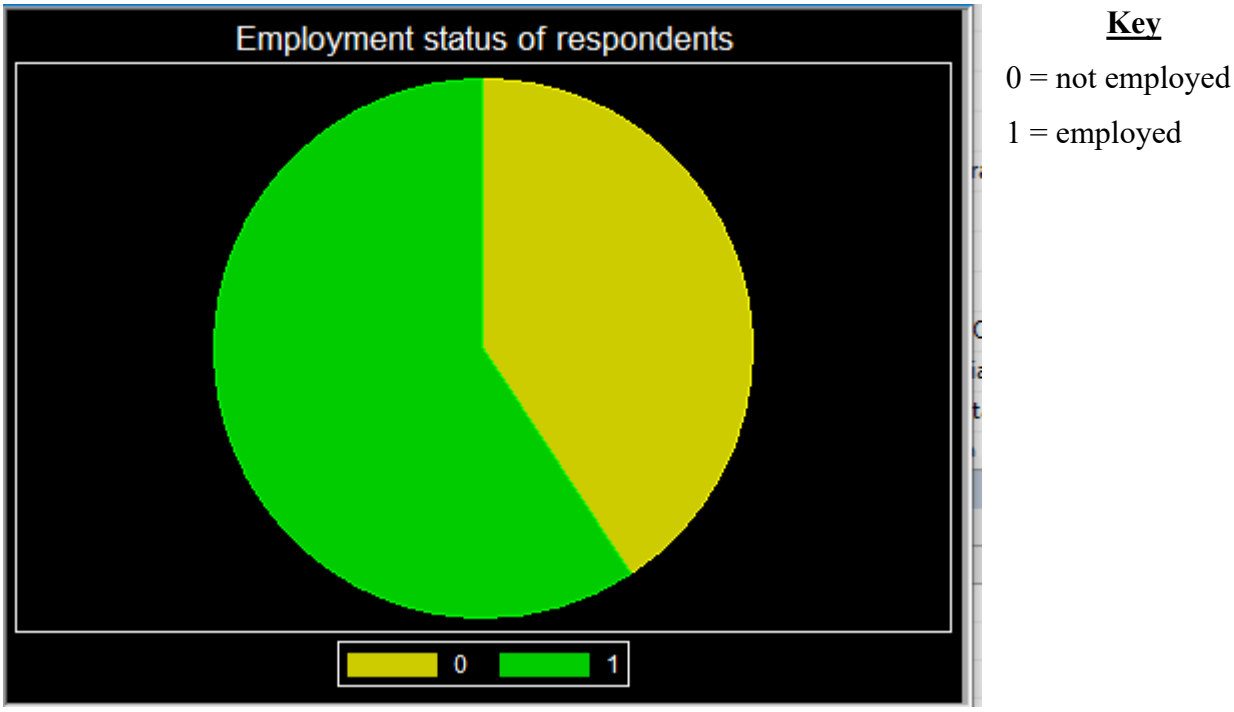

Figure 4.1: Employment status of the respondents

Source: Own survey, 2024

4.1.3. Analysis of employment status using t-test

A t-test analysis was conducted to scrutinize whether there are significant differences in the mean scores of continuous explanatory variables across the employment status groups and chi-square test was employed to test the existence of significant differences in the two groups for the dummy variables. The compared *t*-test results showed the existence of a statistically significant mean difference

between employment status of respondents in terms of age, education status and distance of the respondent's home from the town at less than 1% significance level (Table 4.2).

It was found that the mean age of the respondents for employed and unemployed respondents was 21.63 and 25.42 respectively. As can be seen in Table 4.2, those respondents who were pursuing a member of the federal democratic republic of Ethiopia's defense force had relatively smaller age status than their counterparts. The t-test value between the two groups is 10.22 with mean value of 3.79 which is statistically significant at 99% confidence level. Moreover, the level of education of the respondents between the employed and unemployed respondents have mean value of 5.19 and the t-test value is 14.32 with p-value of 0.000 depicting that there is statistically significant differences between the two groups of education status where those who joined the federal democratic republic of Ethiopia defense force has lower education status compared to their counterparts. Finally, the mean distance of the respondent's residence from the nearest town has mean difference of 0.69 kilometres and the test value is 4.19 and p = 0.000. This implies that there is statistically significant difference between the mean values of the distance between their residence and the closest town.

Table 4.2: summary statistics of continuous variables by employment status

variable	Mean			SD. (difference)	t-value	Decision to Ho:
	employed	Non-employed	difference			
Age	21.63	25.42	3.79	2.78	10.22***	Reject
Education status	10.42	13.19	5.19	3.27	14.32***	Reject
Distance from the town	4.84	5.54	0.69	0.16	4.32***	Reject

Source: Own survey data, 2024.

4.1.4. Analysis of employment status using chi-square test

A chi-square test was conducted to examine whether there was an association between discrete variables and employment status of the sample respondents. As indicated in Table 4.3 , the chi-square test results showed the existence of significant differences in the employment status in terms of dummy

variables such as sex, marital status and positive perception towards FDRE defense force at less than 1%. (Table 4.3)

Table 4.3 Descriptive results for dummy explanatory variables by employment status.

Variable	Employment status				
	Response	employed	Non-employed	total	χ^2 -value
sex	Male	61	42	103	9.389***
	Female	4	15	19	
Perception	Yes	56	39	95	5.54***
	No	9	18	27	
Marital status	Yes	5	18	23	11.32***
	No	39	60	99	

Source: Own survey data, 2024.

4.2. Econometric Estimation of Determinants of Employment Status

A binary probit regression was performed to model the relationship between predictors and the employment status of respondents in the study area. Accordingly, this section presents the results obtained from binary probit model indicating the significant factors that determine the employment status of respondents. The result of probit model indicates that among the hypothesized variables, age of the respondents (Age), Distance to the nearest town (DisTown), sex of the respondents (SEX), and positive perception towards the FDRE defense force (PERCEP) were the major determinants of livelihood diversification strategies (Table 4.4).

The model used respondents who are members of the EFDR defense force (in this context they are called employed) as a reference category to analyze the influence of age on their probability of being unemployed. The results of the model revealed a statistically significant negative relationship between age and the likelihood of being unemployed among these respondents, with a significance level of less than 1%. Specifically, the marginal effect analysis showed that as individuals' age (Age) increases by one year, the probability of unemployed respondents securing employment in the FDRE defense force decreases by approximately 0.188%. This negative relationship suggests that as respondents grow older; their chances of obtaining employment within the Federal Democratic Republic of Ethiopian defense force diminish. One possible explanation for this trend could be linked to the policies of the defense force, which may restrict individuals who are married or have established families from joining the institution. As people get older and progress through life stages such as forming families, they may encounter barriers to entry into organizations like the Ethiopian defense force due to specific eligibility criteria that preclude married individuals. Therefore, the model's findings suggest that older

respondents face reduced prospects of joining and being employed by the FDRE defense force, potentially due to restrictions related to marital status and family obligations imposed by the institution's regulations. This insight underscores the importance of considering age-related factors in understanding employment dynamics within the context of the Ethiopian defense force.

This study conducted an analysis to examine the effect of education status on employment within the context of the respondents surveyed. The findings revealed a significant negative correlation between the education status of the respondents and their employment status, where the relationship is statistically significant at a confidence level of less than 1%. The marginal effect in this variable indicates that for each additional year of education relative to a reference category, the probability of a respondent being employed in the FDRE defense force decreases by 0.39% keeping other variables constant. The rationale behind this decreasing probability is attributed to the observation that individuals with higher levels of education are less inclined to pursue employment in the FDRE defense force. This reluctance to join could probably stem from various factors, such as better job opportunities in other sectors for individuals with higher education levels, differing career aspirations, or a mismatch between the skill sets of highly educated individuals and the requirements of the FDRE defense force. To further substantiate this conclusion, the study referenced descriptive statistics that provide additional context. Specifically, the mean education status of individuals employed in the FDRE defense force was found to be lower compared to their counterparts who were not part of the force. This observation reinforces the idea that individuals with lower education levels are more likely to be represented in the FDRE defense force, aligning with the marginal effect calculated in the model.

The distance of a respondent’s residence from the nearest town (DisTown) has been found to have a significant negative impact on the employment status of respondents, with statistical significance at less than the 5% level. This negative relationship suggests that as the distance from the town increases, the likelihood of individuals joining and being employed in the FDRE defense force decreases. According to the analysis, for every one-kilometer increase in distance from the town, the probability of joining the FDRE defense force and being employed decreases by 0.3%, all else being equal. This indicates that proximity to the town plays a crucial role in accessing employment opportunities within the defense force. One possible explanation for this observation is that individuals residing far from the town may have limited access to information about employment opportunities, including those within the defense force. Lack of information or challenges in communication could hinder their ability to explore and secure such employment opportunities effectively.

The sex of the respondent (SEX) has been identified as a significant factor influencing the employment status of respondents, with the analysis revealing a negative and statistically significant relationship ($p < 0.05$) between gender and employment status. Specifically, the results indicate that female respondents are less likely to join the FDRE defense force compared to their male counterparts. The estimated marginal effect value suggests that being female decreases the probability of joining the FDRE defense force by 0.11%, holding all other factors constant. This finding aligns with the prior expectation that females may face challenges or barriers that make them less likely to pursue employment within the defense force. One possible explanation for this disparity is that the nature of the job within the FDRE defense force may require physical strength and other biological attributes that could be perceived as more commonly associated with males. This perception or actual physical requirements may present obstacles for female candidates seeking to join the institution, even though there might not be explicit prohibitions against female recruitment within the FDRE defense force.

The positive perception that respondents hold towards the FDRE defense force (PERCEP) has been identified as a significant factor influencing the employment status of respondents. The analysis indicates that a favorable view of the defense force has a positive and statistically significant impact on the likelihood of individuals joining the institution and being employed. According to the estimated marginal effect of the model output, being holding positive perception towards the FDRE defense force increases the probability of joining the institution and being employed by 0.199%, all else being equal. This finding aligns with prior expectations, suggesting that positive attitudes towards the defense force correlate with an increased willingness to pursue employment opportunities within the institution. The rationale behind this relationship lies in the perception of the defense force as a viable employment option for the youth and a source of income. When individuals view the FDRE defense force positively, they are more inclined to consider it as a potential avenue for employment and economic stability. This positive perception can stem from various factors, including the institution's reputation, perceived job security, benefits offered, and the sense of service and purpose associated with working in the defense sector. By viewing the defense force in a favorable light, individuals may see it as a promising career path that aligns with their aspirations and provides opportunities for personal and professional growth. This positive attitude can motivate individuals to actively seek employment within the defense force, contributing to a workforce that is not only skilled but also enthusiastic and committed to the institution's mission.

Table 4.4: The probit model output depicting the marginal effect of the explanatory variables

variable	**Coefficient**	**Std.Err.**	**z**	**p**	**Marginal effect**
SEX	-0.415	0.182	-2.28	0.023	-0.054**
Dependratio	-0.051	0.274	-0.19	0.850	0.141
Percep	4.68	2.177	2.15	0.031	1.460**
DisTown	-0.760	0.357	-2.13	0.033	-0.251**
Education	-1.003	0.379	-2.64	0.008	-0.885***
Marital	1.275	0.855	1.49	0.136	0.196
Age	-0.474	0.159	-2.98	0.003	-0.036***
Constant	25.04	6.919	3.62	0.000	

, **, ** significant at 10%, 5% and 1%, respectively.

Source: Own survey data, 2024.

CHAPTER FIVE
CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

The analysis conducted through a binary probit regression of this study sheds light on the significant factors that influence the employment status of respondents within the context of the FDRE defense force. The results from the model emphasize several key determinants that play a crucial role in shaping individuals' likelihood of being employed in the defense force.

First, age emerges as a major determinant, with a statistically significant negative relationship observed between age and the probability of being unemployed among respondents who are members of the FDRE defense force. As individuals grow older, their chances of securing employment within the defense force diminish, potentially influenced by institutional policies that may restrict married individuals or those with families from joining. Furthermore, education status is highlighted as another influential factor, showing a significant negative correlation between higher levels of education and employment within the defense force. Individuals with higher education levels are less inclined to pursue opportunities within the FDRE defense force, possibly due to better prospects in other sectors, differing career aspirations, or mismatches in skill requirements. Moreover, the distance of a respondent's residence from the nearest town has a notable impact on employment status, indicating that proximity to town plays a crucial role in accessing employment opportunities within the defense force. Individuals living farther from town face reduced likelihood of joining and being employed in the defense force, possibly due to limited access to information about opportunities. Gender disparities also come to the forefront, with female respondents being less likely to join the FDRE defense force compared to males. This finding underscore potential barriers that females may encounter, potentially related to perceived physical requirements or societal norms within the institution.

Lastly, a positive perception towards the FDRE defense force emerges as a significant factor influencing employment status. Individuals who hold a promising understanding of the defense force are more likely to consider it as a viable employment option, highlighting the importance of positive attitudes in motivating individuals to pursue opportunities within the institution.

4.3. Recommendations

Understanding and addressing these key determinants can help optimize recruitment processes, promote inclusivity, and ensure a diverse and dedicated workforce within the Ethiopian defense sector. Addressing barriers, fostering positive perceptions, and promoting gender equality are crucial steps towards creating a workforce that is not only skilled but also enthusiastic and committed to the mission of the defense force. Therefore, the study recommends that:

- Improving access to information and communication channels for individuals residing in remote areas could potentially enhance their chances of being aware of and engaging with employment opportunities, such as those within the FDRE defense force.
- Fostering and maintaining a positive perception of the FDRE defense force among the public can thus be instrumental in attracting and retaining talented individuals who are enthusiastic about serving in the defense sector, ultimately contributing to the institution's effectiveness and success in fulfilling its mandate.
- However the institution has different colleges and universities internally to give different additional professions for its military members after they join the institution, Individuals with advanced education levels are less inclined to pursue opportunities within the defense force, possibly due to perceived better prospects in alternative sectors, differing career aspirations, or mismatches in skill requirements. This disparity highlights the importance of considering educational backgrounds in understanding employment dynamics within the defense force with a competitive payment to the better educated people joining the institution.

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APPENDIXES

Annex 1: Data Collection Instrument

Questionnaire for the study on "The role of Federal Democratic Republic of Ethiopia Defense Force in Reduction of Unemployment: Case Study of Birsheleko Basic Military Training Center West Gojjam zone, Amhara Region, Ethiopia"

SECTION I: Prelude

1. Date of data collection _____ (DD/MM/YYYY)
2. Interviewee's name _____
3. District/ city administration _____Kebele _____
4. age in years----------
6. Sex: 1= male; 2= female
7. Marital status; 1= married; 2= not married; 3= divorced; 4= widowed
8. Education status; 1= 1- 4; 2= 5 – 8; 3= 9 – 12; 4= diploma; 5 = degree; 6= MSc and above
9. Does the respondent employed (in this sense recruited to the FDRE defense force) or not?
   1= Yes; 2= No
10. If "yes", since when he/she had been employed? In ----------year
11. If the respondent is employed, how much he/she is earning per month in birr? ----------birr
12. if s/he is not employed what does he/she do for living?
    1 =private business; 2 = family support; 3= remitence; 4 = other (specify)

SECTION II. Work experience related questions

1. Have you ever been employed in any government office before you join to the military?

1 = Yes ; 2 = no, I did not

2. When you were recruited to the defense, were you asked about the work experience in the recruitment announcement?

1 =Yes, I was asked; 2 = no, I was not asked

3. What is your level of knowledge about the employment status of the institution and the employment opportunities available before entering the institution?

I had some knowledge ☐ I well versed ☐ did not know about it ☐

4. Are you aware of any initiatives by the Federal Democratic Republic of Ethiopia Defense Force aimed at reducing unemployment? (Yes/No)

   If "yes", please specify the initiatives you are aware of:----------

   ---

5. Perceptions on the Effectiveness of Defense Force Initiatives:

   In your opinion, how effective do you think the initiatives of the Defense Force are in reducing unemployment in Ethiopia?

   5 = Very Effective, 4 = Effective, 3 =Neutral, 2 = Ineffective, 1 =Very Ineffective

6. What specific aspects of these initiatives do you believe contribute the most to reducing unemployment?

7. Do you think the efforts of the Defense Force have had a noticeable impact on the overall unemployment rate in Ethiopia?

   1=Yes; 0=/No

   11. If yes to question 10, please describe the impact as you perceive it:----------

   ---

SECTION III. Compressional information questions

1. How would you describe the level of participation of defense recruitment criteria compared to other governmental and non-governmental institutions?

It has low level ☐ it has middle level ☐ it is very engaging ☐ I do not Have knowledge ☐

2. How do you describe the level of defense as compared to other institutions, employing a large number of people at once?

It has low level ☐ it has medium level ☐ it has high level ☐

I do not have Knowledge ☐

3. How would you describe the institution in terms of creating a wide range of employment opportunities based on existing employment criteria and selection criteria of the institution?

It has low level ☐ it has medium level ☐ it has high level ☐ I do not know ☐

SECTION IV. Clarification questions

1. Do you think that the recruitment and hiring process makes the defense establishment different from other institutions? If your answer is yes, please list some of them that it makes different?

   ……
   ……
   ……
   ……
   ……
   ……
   …….

2. Do you think the institution has a role to play in the reduction of the unemployment rate in the country?

   Yes = 1; No = 0

3. If your answer is yes, to question 2, would you explain those main reasons?

   ……
   ……
   ……
   ……

Annex 2: Model Output Results

```
  LR chi2(7)        =     142.24
                                                Prob > chi2       =     0.0000
Log likelihood = -13.183751                     Pseudo R2         =     0.8436

------------------------------------------------------------------------------
  Employment |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
        SEX* |  -.4159636   .1823808    -2.28   0.023    -.7734234   -.0585039
 Dependratio |  -.0519503    .274634    -0.19   0.850    -.5902232    .4863225
        PERC |   4.686211   2.177402     2.15   0.031     .4185816     8.95384
     DisTown |  -.7609643   .3577715    -2.13   0.033    -1.462184   -.0597451
   education |  -1.003891   .3798781    -2.64   0.008    -1.748439   -.2593437
     martial |   1.275305   .8551294     1.49   0.136    -.4007178    2.951328
         age |  -.4747607   .1594228    -2.98   0.003    -.7872238   -.1622977
       _cons |   25.04665   6.919629     3.62   0.000     11.48443    38.60888
------------------------------------------------------------------------------
```

```
  Marginal effects after probit
        y  = Pr(Employment) (predict)
           =  .24098287
  ------------------------------------------------------------------------------
  variable |      dy/dx    Std. Err.      z    P>|z|  [    95% C.I.   ]      X
  ---------+--------------------------------------------------------------------
       SEX*|  -.0541437     5.37551   -0.01   0.992  -10.5899  10.4817   5.82377
       Age |  -.0362463      .02185   -1.66   0.097  -.079069  .006577   37.5984
  Depend~o |   .1414001      .11882    1.19   0.234  -.091483  .374283   1.07533
      PERC |   1.460063      .86494    1.69   0.091  -.235178   3.1553   1.22131
   DisTown |  -.2512627      .16351   -1.54   0.124  -.571737  .069212   5.17213
  educat~n |  -.8850179      .49606   -1.78   0.074  -1.85728  .087241   10.4262
   martial*|   .1987842      .34515    0.58   0.565  -.477697  .875265   .188525
  ------------------------------------------------------------------------------
```

```
tabulate Employment SEX, chi2

           |          SEX
Employment |         0          1 |     Total
-----------+----------------------+----------
         0 |        15         42 |        57
         1 |         4         61 |        65
-----------+----------------------+----------
     Total |        19        103 |       122

          Pearson chi2(1) =   9.3891   Pr = 0.002
```

.

```
tabulate Employment PERC, chi2

           |         PERC
Employment |         1          2 |     Total
-----------+----------------------+----------
         0 |        39         18 |        57
         1 |        56          9 |        65
-----------+----------------------+----------
     Total |        95         27 |       122

          Pearson chi2(1) =   5.5413   Pr = 0.019
```

```
tabulate Employment maritalsta, chi2

           |      maritalsta.
Employment |         0          1 |     Total
-----------+----------------------+----------
         0 |        39         18 |        57
         1 |        60          5 |        65
-----------+----------------------+----------
     Total |        99         23 |       122

          Pearson chi2(1) =  11.3265   Pr = 0.001
```

```
ttest DisTown, by(Employment)

Two-sample t test with equal variances
------------------------------------------------------------------------------
   Group |     Obs        Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------+--------------------------------------------------------------------
       0 |      57     5.54386     .122807    .9271726    5.297848    5.789872
       1 |      65    4.846154    .1062489    .8566061    4.633897     5.05841
---------+--------------------------------------------------------------------
combined |     122    5.172131    .0862774    .9529651    5.001322     5.34294
---------+--------------------------------------------------------------------
    diff |            .6977058    .1615436                .3778607    1.017551
------------------------------------------------------------------------------
    diff = mean(0) - mean(1)                                      t =   4.3190
Ho: diff = 0                                     degrees of freedom =      120

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 1.0000         Pr(|T| > |t|) = 0.0000          Pr(T > t) = 0.0000
```

```
ttest age, by(Employment)

Two-sample t test with equal variances
------------------------------------------------------------------------------
   Group |     Obs        Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------+--------------------------------------------------------------------
       0 |      57    25.42105    .2961188    2.235648    24.82786    26.01425
       1 |      65    21.63077    .2305608    1.858841    21.17017    22.09137
---------+--------------------------------------------------------------------
combined |     122    23.40164     .251983    2.783243    22.90277    23.90051
---------+--------------------------------------------------------------------
    diff |            3.790283    .3707904                3.056144    4.524423
------------------------------------------------------------------------------
    diff = mean(0) - mean(1)                                      t =  10.2222
Ho: diff = 0                                     degrees of freedom =      120

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 1.0000         Pr(|T| > |t|) = 0.0000          Pr(T > t) = 0.0000
```

.

```
ttest Dependratio, by(Employment)

Two-sample t test with equal variances
------------------------------------------------------------------------------
   Group |     Obs        Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------+--------------------------------------------------------------------
       0 |      57    1.325965    .1325587    1.000796    1.060418    1.591512
       1 |      65    .8555385    .1191194    .9603711    .6175702    1.093507
---------+--------------------------------------------------------------------
combined |     122    1.075328    .0908487    1.003456     .895469    1.255187
---------+--------------------------------------------------------------------
    diff |            .4704265    .1777318                .1185298    .8223231
------------------------------------------------------------------------------
    diff = mean(0) - mean(1)                                      t =   2.6468
Ho: diff = 0                                     degrees of freedom =      120

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 0.9954         Pr(|T| > |t|) = 0.0092          Pr(T > t) = 0.0046
```

.

```
 ttest education, by(Employment)

Two-sample t test with equal variances
------------------------------------------------------------------------------
   Group |     Obs        Mean    Std. Err.   Std. Dev.   [95% Conf. Interval]
---------+--------------------------------------------------------------------
       0 |      57    13.19298    .2880652    2.174845    12.61592    13.77005
       1 |      65           8     .226809    1.828592    7.546897    8.453103
---------+--------------------------------------------------------------------
combined |     122    10.42623    .2965086    3.275045    9.839212    11.01325
---------+--------------------------------------------------------------------
    diff |            5.192982    .3624994                4.475259    5.910706
------------------------------------------------------------------------------
    diff = mean(0) - mean(1)                                      t =  14.3255
Ho: diff = 0                                     degrees of freedom =      120

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
 Pr(T < t) = 1.0000         Pr(|T| > |t|) = 0.0000          Pr(T > t) = 0.0000
```

Annex 3: Econometric model estimation, specification and diagnosis test results.

Table 3.1: Shapiro- Wilk W test for normality

Variable	Obs	W	V	z	Prob>z
e	122	0.98275	1.660	1.135	0.12811

Table 3.2: Skewness/ Kurtosis test for normality**.**

Variable	Obs	Pr(Skewness)	Pr(Kurtosis)	Adj chi2(2)	Prob>chi2
e	122	0.7106	0.0745	3.39	0.1834

Table 3.3: Breusch-Pagan / Cook-Weisberg test for heteroskedasticity

.	Ho: Constant variance
chi2(1)	Prob chi2
1.09	0.2963 0.2963

Table 3.4: Multicollinearity test for continuous explanatory variables

Variable	VIF	1/VIF
Age	4.22	0.237107

Dependency ratio	1.78	0.562344
education	1.50	0.666724
DisTown	1.41	0.709310
Mean VIF	2.42	

Table 3.5: Model specification error tests by using linktest

Employstatus	Coef.	Std. Err.	z	P>z	[95% Conf. Interval]	
_hat	1.025998	.2163166	4.74	0.000	.6020256	1.449971
_hatsq	-.0325239	.0774986	-0.42	0.675	-.1844184	.1193706
_cons	.1296142	.4959064	0.26	0.794	-.8423444	1.101573

Number of obs= 120 LR chi2(2) = 116.56

Log likelihood = -23.22488 Prob > chi2 = 0.0000

Pseudo R2 = 0.7150

Table 3.6: Model goodness- of- fit, Hosmer- Lemeshow test

Number of observations	Number of covariate patterns	Pearson chi2(106)	Prob > chi2
122	122	59.11	0.9999