A COMPARATIVE ANALYSIS OF POVERTY AND INCOME INEQUALITY BETWEEN BOLE AND KIRKOS SUB-CITIES IN ADDIS ABABA, ETHIOPIA

WONDOSEN TSEGAW

ADDIS ABABA, ETHIOPIA

JUNE, 2024

ADDIS ABABA UNIVERSITY

SCHOOL OF GRADUATE STUDIES

DEPARTMENT OF ECONOMICS

A RESEARCH SUBMITTED TO SCHOOL OF BUSINESS AND ECONOMICS IN PARTIAL FULFILLMENT OF REQUIREMENTS FOR THE DEGREE OF MASTERS OF SCIENCE IN ECONOMICS (DEVELOPMENT ECONOMICS)

WONDOSEN TSEGAW

ADVISOR: SISAY DEBEBE (Ph.D)

ADDIS ABABA, ETHIOPIA

JUNE, 2024

DECLARATION

The work presented in this thesis, is to the best of my knowledge and belief, original except as acknowledged in the text. I declare that I have not submitted this material, either in full or in part, for a degree in this or any other institution. No part of this work should be copied, either in part or full, without my permission and that of Addis Ababa University.

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Wondosen Tsegaw

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Department of Economics

It is to show that the study paper prepared by Wondosen Tsegaw, entitled: a comparative analysis of poverty and income inequality between bole and kirkos sub-cities in addis ababa, ethiopia & succumbed in partial fulfillment of the requirement for the degree of Master of Science in Development Economics according to the regulations of University and meets the standards with the respect to novelty and high quality.

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ACKNOWLEDGEMENTS

First, I would like to thank the Almighty God for the gift of life and good health that I do not take for granted. Secondly, my deep and earnest expression of gratitude goes to my advisor: Dr. Sisay Debebe (PhD) of the School of Business and Economics, Department Economics, Addis Ababa University for providing me with valuable guidance and giving me important insights to improve the quality of this research which could have not been realized without his support and guidance. I would also like to express my gratitude to the Bole and Kirkos sub-city administrations for their support and assistance in facilitating the data collection process, as well as the residents who generously provided their information for this research.

Finally, I am deeply grateful to my family and friends for their unwavering support, encouragement, and understanding throughout this journey. Their emotional and moral support has been a constant source of motivation and inspiration. To all those who have contributed to the completion of this thesis, I offer my heartfelt thanks. Your invaluable assistance has been instrumental in shaping this work, and I am truly grateful for your support.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ACRONYMS AND ABBREVIATION

BSW	Bole sub city's woreda
CSA	Central Statistical agency
EPRDF	Ethiopian People's Revolutionary Democratic Front
FAO	Food and Agricultural Organization
GDP	Gross domestic product
GNI	Gross national income
GNP	Gross national product
HH	House Hold
KSW	Kirkos sub city's woreda
MDGs	Millennium development goal
MOA	Ministry of Agriculture
MoFED	Ministry of Finance and Economic Development
MPI	Multidimensional poverty index
NGO	Nongovernmental organization
USAID	US Agency for International Development
WFP	United Nations World Food Program

ABSTRACT

Poverty and income inequality are significant global challenges with wide-ranging implications. These challenges are particularly prevalent in urban areas of Ethiopia. While Ethiopia has made progress in reducing national poverty rates, urban poverty and inequality remain persistent issues in the country, especially in Addis Ababa. These urban challenges are exacerbated by factors like rapid urbanization, limited job opportunities, and the recent conflict. So, making a comparative analysis of poverty and income inequality between sub-cities helps to identify the nature and extent of these issues. This study therefore investigates the comparative analysis of poverty and income inequality between Bole and Kirkos sub-cities. The study's objectives include measure and compare the poverty status and income inequality levels in these two sub-cities, as well as identify the key factors driving these economic disparities and poverty. The study employed a structured questionnaire to gather primary data. A multistage random sampling strategy was used to select the research sites, with the Bole and Kirkos sub-cities of Addis Ababa being chosen. Within these two sub-cities, 280 household heads were randomly sampled to participate in the survey. This study used both descriptive and econometric analyses. The descriptive analysis revealed stark contrasts in multidimensional poverty and income inequality between the Bole and Kirkos sub-cities. Kirkos exhibited significantly higher poverty, with 66.5% of individuals classified as poor compared to 32.8% in Bole. The poverty incidence (H) was 0.66 in Kirkos versus 0.32 in Bole, and the Multidimensional Poverty Index (MPI) was more than double in Kirkos at 0.39 versus 0.15 in Bole. Income inequality was also more pronounced in Kirkos, with a Gini coefficient of 0.371 compared to 0.345 in Bole. The ordered logistic regression model identifies several key determinants of multidimensional poverty. The education level of the household head is a significant factor, where a 1-year increase in education reduces the probability of higher multidimensional poverty by 65%. Other variables, such as marial status, dependency, saving, and equb edir membership also significantly affect poverty. The quantile regression analysis also identifies key drivers of household income inequality, including education, occupation, family size, and savings behavior. Higher education and private sector jobs are linked to greater incomes, especially at lower and middle quantiles. Larger families and dependency are significantly negatively related to income levels, particularly at the upper end of the distribution. Based on the results, it is recommended the government should target interventions to alleviate the significantly higher multidimensional poverty in Kirkos sub-city. Expanding access to inclusive financial services, like savings and credit, could help build household resilience, as lack of savings is linked to higher poverty. Addressing key drivers of income inequality, such as home ownership, through affordable housing and financing programs, could also reduce inequality.

Keywords: *multidimensional poverty, income inequality, ordered logistic regression model, quantile regression model, Bole sub city, Kirkos sub citiy, Addis Ababa.*

CHAPTER ONE

1 INTRODUCTION

1.1 Background of the study

Poverty and income inequality are prevalent global challenges with wide-ranging implications for individuals, societies, and economies. Recent data from the World Bank indicates that approximately 9.2% of the global population lived in extreme poverty, defined as surviving on less than $1.90 per day (World Bank, 2022). This figure represents a decline from 10% in 2015, reflecting progress in poverty reduction efforts. However, income inequality remains a significant concern, with the richest 1% of the global population owning more than twice the wealth of the bottom 50% (Oxfam, 2022).

Income inequality is a broader concept than poverty, encompassing the entire population rather than just those below a specific poverty line. Currently, global income inequality is likely at its highest point in human history. The top 10% of the world's population receives 52% of global income, while the bottom 50% receives only 8.5% (WIR, 2022). This disparity is largely a result of a large proportion of the global population residing in the poorest countries, particularly in regions such as Latin America, Asia, and Africa. Income inequality is particularly pronounced in Africa due to the low rate of economic distribution in many African countries. According to the UNDP's Multidimensional Poverty Index report (2023), five out of six poor people live in sub-Saharan Africa (47.8%) and South Asia (34.9%). Ethiopia, as one of the countries in sub-Saharan Africa, has experienced both low initial income levels and high inequality in recent years.

Over the past fifteen years, Ethiopia has made significant progress in reducing poverty rates. According to a study by the United Nations Development Programme (UNDP) in 2018, the headcount poverty rate in Ethiopia decreased from 45.5% in 2000 to 23.5% in 2016. This remarkable decline reflects the country's commitment to poverty reduction and the implementation of effective policies and initiatives. Measures such as the poverty gap index and poverty severity indices also showed declines, indicating positive trends in poverty reduction efforts. However, poverty remains slightly higher in rural areas (39.3%) compared to urban areas (35.1%). The poverty gap index in 2004/05 was 8.3%, with rural areas experiencing a slightly higher index (8.5%) compared to urban areas (7.7%).

More recently, urban poverty in Addis Ababa has seen a significant increase. According to a UNDP report in 2022, the headcount poverty ratio for Addis Ababa reached 24% in 2022, compared to 17.8% in 2016. This rise in urban poverty underscores the challenges faced by urban populations and the importance of addressing the unique dynamics of poverty in urban settings. Factors such as rapid urbanization, inadequate urban planning, limited job opportunities, and rising living costs contribute to this increase. Efforts to understand and address the root causes of urban poverty in Addis Ababa are vital to ensure inclusive growth and improve the living conditions of its residents.

Income inequality also the significant issues especially in the urban areas. According to PDC (2018), the Ethiopia income inequality increase from 0.29 in 2011 to 0.33 in 2016. The recent war in Ethiopia, which began in November 2020 in Tigray region, has further exasperated the poverty and income inequality situations. War and armed conflicts have a profound impact on poverty and income inequality. According to United Nations development program (UNDP), countries experiencing conflict have poverty rates that are approximately 20 percentage points higher than non-conflict countries UNDP (2022).

Additionally, war often leads to a concentration of wealth in the hands of a few, further widening income inequality. The poor who lives in the urban areas are significantly affected by the consciences of conflicts, and this study has focused on two prominent sub cities of Addis Ababa which are bole and kirkos. These sub cities exhibit distinct socio-economic characteristics and are home to diverse populations. Understanding the dynamics of poverty and income inequality in these areas is crucial for policy makers and stakeholders to design effective strategies for poverty alleviation and equitable economic growth.

Bole and kirkos sub cities are of particular interest due to their contrasting socio-economic profile. Bole is known for its commercial and business activates, hosting numerous upscale residential areas, shopping malls, and international hotels, it attracts a significant number of investors and tourists contributing to its economic growth. However, beneath this façade of prosperity, there are pockets of poverty and marginalize communities that often go unnoticed. Understanding the extent and nature of poverty in bole is crucial to ensure that development efforts are inclusive and reach all segments of the population.

On the other hand kirkos sub-cities present a different socio-economic landscape. It is characterized by a mix of formal and informal settlements, with a large informal economy that plays a vital role in the livelihoods of many residents. However, the informal sector is often associated with low wage, lack of social protections, and limited access to basic service contributing to income inequality. Exploring the factors that perpetuate income disparities in bole and kirkos sub cities is essential for devising strategies to uplift vulnerable communities and reduce inequality.

1.2 Statement of the Problem

Ethiopia has witnessed remarkable economic growth over the past two decades, driven by the implementation of comprehensive national plans and economic policies. As highlighted by Feiruz et al. (2020), the country's total and per capita real GDP experienced an average annual growth rate of 9.0% and 6.6% respectively during the period of 2001/02 to 2018/19. This sustained economic growth has contributed to improving the overall economic conditions in Ethiopia. Furthermore, efforts to address poverty have also yielded positive results. Between 2010/11 and 2015/16, there was a considerable decline in poverty incidence, with the headcount index decreasing by 21%. Additionally, the poverty gap, which measures the average shortfall of individuals below the poverty line, decreased by 14% during the same period (PDC, 2018). These figures indicate a sustained reduction in poverty over five years. However, it is important to note that the severity of poverty increased by 14.4%, suggesting that the benefits of growth have not adequately reached the most vulnerable and impoverished segments of the population.

Unfortunately, recent data from UNDP (2022) reveals a concerning trend of increasing income poverty rates across all regions in Ethiopia, especially in major cities like Addis Ababa and Dire Dawa. The headcount ratios reached 24% and 23% respectively, indicating a rise in the number of individuals living below the poverty line compared to the previous period of 2015/16.

The rapid urbanization in Addis Ababa city has raised significant concerns regarding the increasing prevalence of urban poverty and its implications for social and economic development. Despite efforts to alleviate poverty, the persistent rates of urban poverty underscore the necessity for a comprehensive examination of the factors contributing to urban poverty, its impact on vulnerable populations, and a comparative analysis of sub-cities. By understanding the dynamics of urban poverty through such an examination, stakeholders can

develop evidence-based strategies to effectively reduce poverty and enhance the well-being of urban residents.

On the other hand, the issue of income inequality is commonly recognized as a challenge related to the distribution of personal income. There is a growing concern that income inequality has been on the rise in Ethiopia. According to PDC (2018), the Gini coefficient, a measure of inequality, increased from 0.29 in 2011 to 0.33 in 2016. Inequality was notably higher in urban areas across all regions, reaching 0.357 in Addis Ababa. Consequently, while there has been economic growth in urban areas, the increase in income inequality has offset the poverty-reducing effects. The sustained rise in the Gini coefficient for urban areas, coupled with the unchanged levels in rural areas, indicates an overall escalation in income inequality (Tassew, 2009). Despite the Ethiopian government's objective of reducing income inequality, the gap between the rich and poor has unfortunately continued to widen.

Several studies have been conducted on poverty and income inequality in Ethiopia, focusing on different regions. Descriptive analyses have been used to examine poverty and income inequality separately, as shown in studies by M.K. Jayamohan & Amenu (2014), Mohammed (2017), and Tegodie et al. (2020). While some studies have explored both poverty and income inequality in various regions of Ethiopia, such as Dereje & Haymanot (2018) and Sisay & Efta (2020), there is a lack of recent studies specifically focused on Addis Ababa. Consequently, this study aims to investigate poverty and income inequality using a combination of descriptive and econometric models, including order logit and Quintile regression models, to provide a more comprehensive analysis.

Despite ongoing efforts to reduce poverty and promote equitable development in Addis Ababa, there is limited understanding of the variations in poverty rates and income inequality at the sub-city level. Bole and Kirkos sub-cities, two prominent areas within Addis Ababa, have witnessed rapid urbanization and economic growth. However, there is a lack of comprehensive studies comparing the levels of poverty and income inequality between these sub-cities. This knowledge gap hampers the development of targeted policies and interventions to address the specific challenges faced by Bole and Kirkos sub-cities.

Furthermore, existing studies on poverty in Ethiopia have primarily focused on unidimensional measures, such as consumption and expenditure-based poverty measures (Mohammed, 2017;

Meseret & Zelalem, 2019). However, poverty is a multidimensional phenomenon that encompasses various aspects of well-being. To capture the complexity of poverty within the sub-cities of Addis Ababa, this study employs a multidimensional poverty measure that incorporates a range of indicators.

Therefore, there is a pressing need for a comprehensive study that compares the poverty rates and income inequality between Bole and Kirkos sub-cities. Such a study is crucial for informing local administrator about further reducing poverty and guiding public spending priorities. Additionally, this research addresses existing literature gaps by providing a comparative analysis between these two sub-cities. It offers valuable insights into why certain sub-cities fare better in poverty reduction efforts while others face challenges. Furthermore, the study examines the factors contributing to these disparities and offers evidence-based policy recommendations to effectively reduce poverty and promote more equitable development in Bole and Kirkos sub-cities. By filling this knowledge gap, this study contributes to a better understanding of the dynamics of poverty and income inequality in urban areas, specifically within Bole and Kirkos sub-cities.

1.3 Objective of the study

1.3.1 General objective

The general objective of the study is to measure the level of poverty and income inequality of households in bole and kirkos sub-cities of Addis Ababa.

1.3.2 Specific objectives

The specific objectives of the study are;

- **i.** To compare the poverty and income inequality rate between bole and kirkos sub-cities of Addis Ababa.
- **ii.** To evaluate poverty status and income inequality level in bole and kirkos sub-cities of Addis Ababa.
- **iii.** To identify determinants of poverty and income inequality in the two sub-cities of Addis Ababa.

1.4 Research Question

The specific research questions that the study was trying to answer were;

i. What are the levels of poverty in bole and kirkos sub-cities?
ii. How does income inequality vary between bole and kirkos sub-cities?
iii. What are the factors contributing to the poverty and income inequality in these sub-cities?
iv. How do poverty rates and income inequality compare between bole and kirkos sub- cites?
v. What policy recommendations can be made to address poverty and income inequality in these sub-cities?

1.5 Significance of the Study

As poverty and income inequality are the main problems which exist in every corner of the world, this study holds significant importance for understanding the socio-economic landscape of these specific areas in Addis Ababa. By examining poverty and income inequality at the household level, the study aims to shed light on the living conditions, economic disparities, and social challenges faces by residents in bole and kirkos sub-cities. This study will be crucial for local authorities, and development practitioners as it provides valuable insight in to the extent of poverty and inequality in these sub-cities. The finding of this study can inform targeted interventions, policy formulation, and resource allocation to address the identified issues effectively. Additionally, the research can contribute to the broader academic literature on poverty and income inequality, provide a localized perspective that can be compared with other studies in Ethiopia and beyond. Ultimately, this study will have potential to contribute to the overall efforts towards poverty reduction, equitable development, and improve living standards in bole and kirkos sub-cities.

1.6 Scope & Limitation of the Study

The study focused on the specific geographical areas of Bole and Kirkos sub-cities in Addis Ababa. Its primary objective was to examine poverty levels and income inequality among households within these sub-cities. The research involved collecting and analyzing data from a sample of household heads, utilizing various indicators and methodologies to assess poverty and

income inequality. Additionally, the study explored the factors contributing to poverty and income disparities within Bole and Kirkos sub-cities.

It is important to note that the findings and conclusions of this study are limited to Bole and Kirkos sub-cities and may not be directly applicable to other regions or cities in Ethiopia or beyond. Furthermore, there were budget constraints that influenced the study design. As a result, a sample of three woredas (districts) was selected from each sub-city. It is also worth mentioning that the study may encounter limitations regarding respondents' willingness to provide certain survey information, such as details about their credit, savings, and income levels as household heads.

1.7 Organization of the study

The research structured in to five chapters the first chapter contains the introductory part which includes the background of the study, statements of the problem, objective, Research questions, Scope & limitation of the study and also Significance of the study. The second chapter includes all about the related review literature. Chapter three explore the research methods adopted by the study; Chapter four presented study findings and their subsequent interpretations. Finally, a chapter five summarized the entire study, makes conclusions for each objective and derive policy recommendations from the study findings as well as areas for future research.

CHAPTER TWO

2 LITERATURE REVIEW

2.1 Theoretical Literature Review

2.1.1 Concepts of poverty

Poverty is a state in which an individual or community lacks the financial resources and means to meets their basic needs for food, shelter, clothing and healthcare. It is characterized by a lack of access to education, employment opportunity and social support systems, leading to a diminished quality of life and limited opportunity for upward mobility. Poverty can be absolute meaning a person does not have enough income to meet their basic needs, or relative meaning a person income is significantly lower than average in a particular society or community.

According to the world Bank Development report (2001) a household is regarded as poor when it is deprived of basic livelihood resources-assets for meeting basic needs (food, clothing, health and shelter) by engaging in viable activities pertinent to a situation when it has no capacity to withstand the shocks, no power to make decisions and have no say on government action (Tegodie et al., 2020). The World Bank updated the global poverty lines in September 2022. The decision, announced in May, follows the release in 2020 of new purchasing power parities (PPPs)—the main data used to convert different currencies into a common, comparable unit and account for price differences across countries. The new extreme poverty line of $2.15 per person per day, which replaces the $1.90 poverty line, is based on 2017 PPPs (World Bank, 2022).

Generally, poverty is a complex and multifaceted issues that encompasses more than just the lack of financial resource. It can also include inadequate access to education, healthcare, and other essential services as well as limited opportunity for social and economic mobility. The meaning of poverty extends beyond simple measure of income and encompasses the broader impact of deprivation on individuals and society as the whole. The concept of poverty is deeply intertwined with social and economic inequality and addressing it requires a comprehensive and multidimensional approach, due to this I use multidimensional poverty measure to understand the complex nature of urban poverty in general and bole & kirkos sub cities in particular.

2.1.2 Concepts of income inequality

Income inequality is a broader concept than poverty in that it is defied over the entire population, and not just over the population below the poverty line Todaro (2015). The Economics dictionary defined income as “The wealth measured in terms of money which has been at the disposal of an individual per year or other unit of time”. It may be considered as flow of purchasing power which may be expected at once on goods and services or retained for the purpose of capital accumulation. Income is the flow of money which acts as a reward for the services of factors of production: wages and salaries as a reward to labor and described as earned income, unearned income includes rent, interest, and profit (WIR, 2022).

Actually, it is the level of enjoyment of individuals through exercising their rights what one would be interested in measuring and comparing. Fisher (1930) uses the concept of real income to clarify this. Real income includes all those events such as the use of food, wearing clothes, going to the cinema, etc, which contribute to our enjoyments.

Income inequality refers to the unequal distribution of income among individuals or households in a society (WIR, 2022). It is typically measured by comparing the distribution of income across different groups, such as low-income, middle-income, and high-income earners. Income inequality can be influenced by various factors, including differences in education, employment opportunities, social and economic policies, and systemic discrimination. According to Sorin et al. (2023), a high level of income inequality leads to social and economic disparities, reduces social mobility, and can contribute to social and political instability.

2.1.3 Theories of Income Distribution

Income distribution is the disparity in access to income among individuals, households and different groups in a given country or across different countries. The distribution of national wealth and income can best be analyzing under the theory of Personal distribution and the theory of functional distribution. In a given country, individuals earn income according to their ability and according to their ownership of factors of production. Personal income distribution refers to the size of income earned by an individual irrespective of how it is earned and its sources (Todaro, 1989).

The term "income distribution" is usually coined to "picture" who receives how much income within a specific society. There are two principal concepts of income distribution encountered in

the literature: the functional and the personal or size distribution of income. On the other hand, the size distribution of income shows how many individuals (or households) receive how much income. This is how total income, from all sources, is distributed among individuals or households. Other concepts of income distribution sometimes used in analysis of income inequality are those, which make a distinction between urban and rural areas as well as interregional or interstate differentials. However, the theoretical debate about income inequality has been focused on the concepts of functional and size distribution of income.

2.1.3.1 Theories of Functional Income Distribution

If some agreement arises from all the debates about distribution of income along the history of economic thought this is that there is no agreement among economists about which are the determinants of income distribution. The main reason is that the distribution of income is the final result of the entire economic process Bigston (1983), and it is well known that there is a lack of unanimity of views even on general economic issues of that process, which makes it logical to expect no agreement on a topic that has been the source of ideological wars and political revolutions

"A theory of income distribution needs a theory that explains prices at a point in time and the subsistence (or institutional) wage, and attributes the remaining residual in total output value to landlord rent." Cline (1972). The functional distribution of income divides national income between factors of production and classifies the population into social classes, distributing income according to these classes. The functional distribution of income was the dominant school of thought up until the nineteenth century.

2.1.3.2 Theories of Size Income Distribution

The foregoing theories are aimed at explaining the functional distribution of income rather than the size distribution of income. Therefore, they are of limited value in analyzing the governmental action. According to Bigston (1983), because most of the wage earners belong to the middle-income groups is the reason why policies affecting the distribution between wages and profits mainly concern the upper end of the size distribution. Although, the neoclassical theory makes some contribution in understanding the determinants of the size distribution of incomes, differences in factor endowments seem not to be enough to explain the large inequalities in developing countries, particularly in Latin America. It would be necessary to explain also how these differences in endowments were created.

The theory presented by Milton Friedman is referred to as the individual choice theory in which stochastic influences are combined with optimizing behavior on behalf of the individuals Bigsten (1983). According to Friedman, being risk taker is what explains that a small group in society can receive a large proportion of total income since, as in the lottery, the amount of money that many can lose is small in comparison with the position in the labor queue" (Cline 1972, p. 367).

As a consequence, people with identical levels of education may be paid different wages. This theory disregards that how rapid workers can learn skills on the job might depend in some degree on the level of education previously achieved, which in turn depends on several other factors such as family background.

The theories previously discussed are concerned mainly with the distribution of earnings. They neglect an important source of income which is property. sahota (1978) points out that property income are more unequally distributed than earnings and that inheritance is the major source of property class perpetuation. Hence, a theory of distribution that neglects property incomes will tell only part of the story.

This brief survey shows that the ideal theory able to explain simultaneously the determinants of factor prices, functional shares and the size distribution of income does not exist. Dininger and sequire (1997) refer to six developing countries in which inequality in the distribution of land is greater than that in the distribution of incomes. Ahluwalia et al. (1983) associate the variations in income at the lower levels with the lack of human skills, physical capital and access to them. Attanasio and Szekely (1999) document that income inequality in Latin America is, to a large extent, a reflection of a very skewed distribution of income generating assets. Therefore, asset distribution cannot be disregarded when assessing the effects of economic growth on income inequality.

2.1.4 Measurement of income Inequality

The Gini coefficient is widely regarded as the most commonly used measure of income inequality, and it is also the selected inequality measure in this thesis. The Gini coefficient quantifies income inequality on a scale from zero to one, where zero represents perfect equality and one represents perfect inequality. Essentially, it captures the disparity between the actual income distribution and an ideal scenario of complete equality. However, it is important to note that the Gini coefficient provides a simplified perspective and offers only a snapshot of the

overall level of inequality within a population. It does not account for the specific income distribution functions or the underlying movements between income groups.

For descriptive analysis in this study, various statistical tools were employed, including tables, mean ratios, and graphs. The Kuznets ratio was initially calculated, and the Lorenz curve was plotted to illustrate the extent of income inequality. Furthermore, the Gini coefficient was computed using the data presented in the tables, mean ratios, and Lorenz curve (Gastwirth, 1972).

I. Deciles ratio

The Deciles ratio readily interpretable, by expressing the income of the top 10% (the "rich") as a multiple of that of those in the poorest decile (the "poor").However, it ignores information about incomes in the middle of the income distribution, and does not even use information about the distribution of income within the top and bottom deciles.

II. Gini coefficient

The most widely used single measure of inequality is the Gini coefficient. It based on the Lorenz curve, a cumulative frequency curve that compares the distribution of a specific variable (e.g. income) with the uniform distribution that represents equality.

Gini coefficient is the most common and widely used measures of in equality. It ranges between 0 and 1, where 0 corresponds with perfect equality (Everyone has the same income) and 1 corresponds with perfect inequality (one person has all the income and everyone has 0 income)

III. Kuznets ratio

The Kuznets ratio is a measurement of the ratio of income going to the highest-earning households (usually defined by the upper 20%) and the income going to the lowest-earning households, which is commonly measured by either the lowest 20% or lowest 40% of income. Kuznets ratio is high if the richest 20% receive a large share of income and/or the poorest 40% receive a small share of total income.

IV. Lorenz curve

Lorenz curve is a diagrammatic way of depicting the distributions of income in the society. The curve displays the cumulative proportions of the population on the horizontal axis and the cumulative proportions of expenditure (or income) on vertical axis (WB, 2005).The entire is

figure enclosed in a square box with a 45^0 reference line drawn from the origin to the upper right of the box.

2.1.5 Measurement of poverty

Measuring poverty is both crucial and challenging, and the process of defining poverty is equally significant. To effectively address poverty, it is essential to identify who the poor are and where they reside, as this enables the targeted allocation of resources to address their specific needs (Getu, 2019). Various approaches have been developed to measure poverty, with one commonly used method being the consumption expenditure approach developed by FGT (Mohammed, 2017; Dereje & Haymanot, 2018; Tamirat & S.SIVAKUMAR, 2020). Poverty can be measured in relative, absolute, and subjective terms.

Relative poverty measures the income of a household or individual in relation to a certain average income, such as the mean or median income. Absolute poverty, on the other hand, measures individuals or households' incomes in relation to a specific income threshold known as the poverty line. The subjective approach defines poverty based on an individual's subjective judgment of what constitutes a socially acceptable minimum standard of living within their society. This approach recognizes that people value their poverty status using various dimensions and indicators.

The multidimensional approach to measuring poverty provides more comprehensive information compared to traditional income-based measurements. It acknowledges that poverty is a complex phenomenon that cannot be adequately captured by a single indicator alone. By considering multiple dimensions, such as education, health, housing, and access to basic services, the multidimensional approach offers a more nuanced understanding of poverty and its various aspects.

2.1.5.1 Multidimensional poverty

There has been a shift in focus from considering poverty as a single dimension to recognizing the importance of multiple dimensions in understanding human well-being. In addition to monetary income or consumption expenditure, various aspects of people's lives are impacted by different dimensions. The concept of multidimensional poverty measurement takes into account diverse factors such as health, education, standards of living, and social exclusion. By incorporating

these dimensions, a more comprehensive understanding of poverty can be achieved, enabling a thorough assessment of individuals' well-being.

The recognition of poverty as a multidimensional phenomenon was introduced by the Human Development Reports, while the Millennium Declaration and MDGs have emphasized the significance of multiple dimensions in addressing poverty since 2000 (UNDP, 2018). Among the commonly used multidimensional poverty measures is the Multidimensional Poverty Index (MPI), developed by the Oxford Poverty and Human Development Initiative. The MPI evaluates overlapping deprivations using a set of ten indicators across three dimensions: health, education, and living standards. Individuals are identified as experiencing multidimensional poverty if they fall below the relevant poverty cut-offs in more than three of the ten indicators (Alkire et al., 2013).

This approach to measuring poverty not only captures the monetary aspect but also recognizes the intricate interplay of various dimensions that contribute to individuals' well-being. By considering health, education, and living standards, policymakers and researchers gain a more holistic understanding of poverty, enabling targeted interventions and policies to alleviate poverty and improve overall human development.

2.2 Empirical Literature Review

2.2.1 Poverty and income inequality in Ethiopia

Ethiopia's economy underwent a significant transformation towards a more market-oriented approach following economic reforms and the opening up of foreign investment in the 1990s. This shift not only stimulated economic growth but also contributed to poverty reduction within the country. Remarkably, based on the national poverty line, the poverty rate decreased from 46 percent in 1996 to 24 percent in 2016, showcasing substantial progress nationwide (WB, 2020).

Moreover, it is noteworthy that poverty reduction was observed across all regions, with particularly notable improvements occurring after 2005 when the country experienced more robust economic growth. This significant reduction in poverty rates demonstrates the positive impact of Ethiopia's economic reforms on the well-being of its citizens.

While it is encouraging to witness a decrease in regional disparities, it is important to note that regional poverty rates initially converged until 2011 but began diverging again in 2016. This divergence highlights the need for continued efforts to address poverty and ensure that the benefits of economic growth are equitably distributed across all regions of the country.

These findings from the World Bank's report in 2020 shed light on the complex dynamics of poverty reduction in Ethiopia, emphasizing the importance of sustained economic reforms, targeted interventions, and inclusive policies to further accelerate poverty eradication and promote shared prosperity.

However, in recent years, Ethiopia has been grappling with a high poverty rate and income inequality. According to Sisay and Efta (2020), research conducted in southern Ethiopia revealed that "the poverty and income inequality result is quite larger than the national average of the country, and 34% of households are living below the poverty line with a poverty gap index of 11% and a severity index of 5.6%." A study conducted by Tegodie et al. (2020) in the major cities of Ethiopia (Addis Ababa, Dire Dawa, Hawassa, Bahir Dar, and Mekelle) showed a dramatic increase in the headcount index of poverty, except in Mekelle. Results based on logistic regression indicated that household size was the only significant factor for households being poor in all cities.

According to the study by Birhanu and Abebe (2019), the poverty rate in urban areas, including Addis Ababa where Bole and Kirkos sub-cities are located, has been increasing due to rapid urbanization and limited job opportunities. A study conducted by Meskerem and Zelalem (2019), using the national poverty line (5220 birr) as a benchmark, indicated that 62 percent of the sample households are poor. The headcount ratio, poverty gap, and severity indices of the surveyed households were 0.62, 0.14, and 0.30, respectively.

On the other hand, using panel data, Fekadu (2014) analyzed data collected from 18 rural villages in six rounds. The results of the study showed that the poverty level in Ethiopia was high, and the level of poverty fluctuated between 32.5% and 54.6% over the five rounds in the years 1994, 1995, 1997, 1999, and 2004. Even though most of the research conducted applied a unidimensional or expenditure approach, it showed a higher poverty rate in Ethiopia. Moreover, the current conflict exacerbates the poverty rate at the country level. Therefore, additional studies are needed to understand the exact depth and severity of poverty in Ethiopia.

2.2.2 Determinants of poverty and income inequality in urban area

Urban poverty and income inequality in Addis Ababa have been the subject of analysis in several studies. According to the World Bank (2020), the poverty rate in Addis Ababa decreased from 28 percent to 17 percent. In 2016, the poverty rate in Addis Ababa was significantly lower than the national poverty rate. However, after the year 2018, the global impact of COVID-19 and internal conflicts devastated the country, resulting in an increased level of poverty across all regions of Ethiopia. Furthermore, according to a report by UNDP (2022), the headcount ratio for Addis Ababa in 2022 reached 24%, compared to 17.8% in 2016.

Understanding the determinants of poverty in urban areas is crucial for implementing targeted interventions. A study by Tadesse (2019) identified education, employment status, and access to credit as significant factors contributing to urban poverty in Ethiopia. Similarly, a study by Gebre-Mariam (2018) emphasized the importance of addressing gender disparities and promoting women's empowerment to reduce urban poverty. Additionally, a study by Assefa (2022) examined the long-run and short-run relationship between income inequality and its determinants using the ARDL model. The results revealed that real GDP per capita and the unemployment rate are the main determinants of income inequality in Ethiopia.

In general, poverty and income inequality in urban areas of Ethiopia are influenced by a range of interconnected factors. Limited access to quality education, inadequate employment and job opportunities, rapid urbanization, and migration all play significant roles. These factors interact in complex ways and contribute to the concentration of poverty and income inequality in specific areas.

2.2.3 Factor influencing income inequality

Various factors contribute to income inequality in urban areas. Meseret and Zelalem (2019) conducted a study in Debre Berhan town, sampling three kebeles. The results showed that most of the poor are concentrated around the poverty line. Additionally, the age square of the head of the household and the dependency ratio alone were found to have a positive and significant effect on poverty.

Another study by Adugna et al. (2013) highlighted the role of social protection programs and progressive taxation policies in reducing income inequality in urban areas. Economic policies, such as minimum wage laws or social welfare programs, can also influence income inequality.

According to Dagim et al. (2021), who conducted research on the determinants of urban poverty in the North Shewa zone, the logistic regression results revealed that household gender, marital status, age, household family size, education, employment status, house ownership, access to health services, and access to electricity are significant determinants of household poverty.

Income inequality in Ethiopia is influenced by a combination of factors, including disparities in education, unequal job opportunities, the urban-rural divide, concentration of wealth, limited access to infrastructure and services, and government policies. These factors interact and reinforce each other, leading to income disparities among different segments of the population.

2.3 Conceptual Framework of the Study

The conceptual framework for this study is grounded in the theoretical perspectives on urban development, spatial inequality, and multidimensional poverty measurement (Kanbur & Venables, 2005; Alkire & Foster, 2011). It posits that the stark contrasts in poverty levels and income distribution between the Bole and Kirkos sub-cities are shaped by the interplay of both internal, household-level factors and external, structural determinants.

At the household level, the framework identifies key internal factors such as personal characteristics (age, sex, marital status, education) and economic attributes (income, asset ownership, access to credit) as crucial in shaping the socioeconomic outcomes of individuals and families (Filmer & Pritchett, 1999; Moser, 1998). These internal factors determine households' access to resources, livelihood opportunities, and ability to cope with economic shocks, thereby influencing their vulnerability to poverty and income inequality.

Complementing the internal factors, the conceptual framework also highlights the role of external, structural forces in driving the divergent development trajectories of the two sub-cities (Kanbur & Venables, 2005). These external factors include the broader legal, policy, and institutional environment, as well as the prevailing social norms and cultural practices that create the structural context within which households operate. The interplay of these internal and external factors is hypothesized to be the key determinant of the observed poverty and income inequality patterns in Bole and Kirkos.

By adopting this multidimensional conceptual framework, the study aims to provide a comprehensive understanding of the complex web of determinants underlying the socioeconomic

disparities between the two neighboring sub-cities. This approach will enable the researchers to unpack the relative contributions of individual, household, and structural factors in shaping the divergent development outcomes, thereby informing evidence-based interventions to promote more inclusive and equitable growth in Addis Ababa.

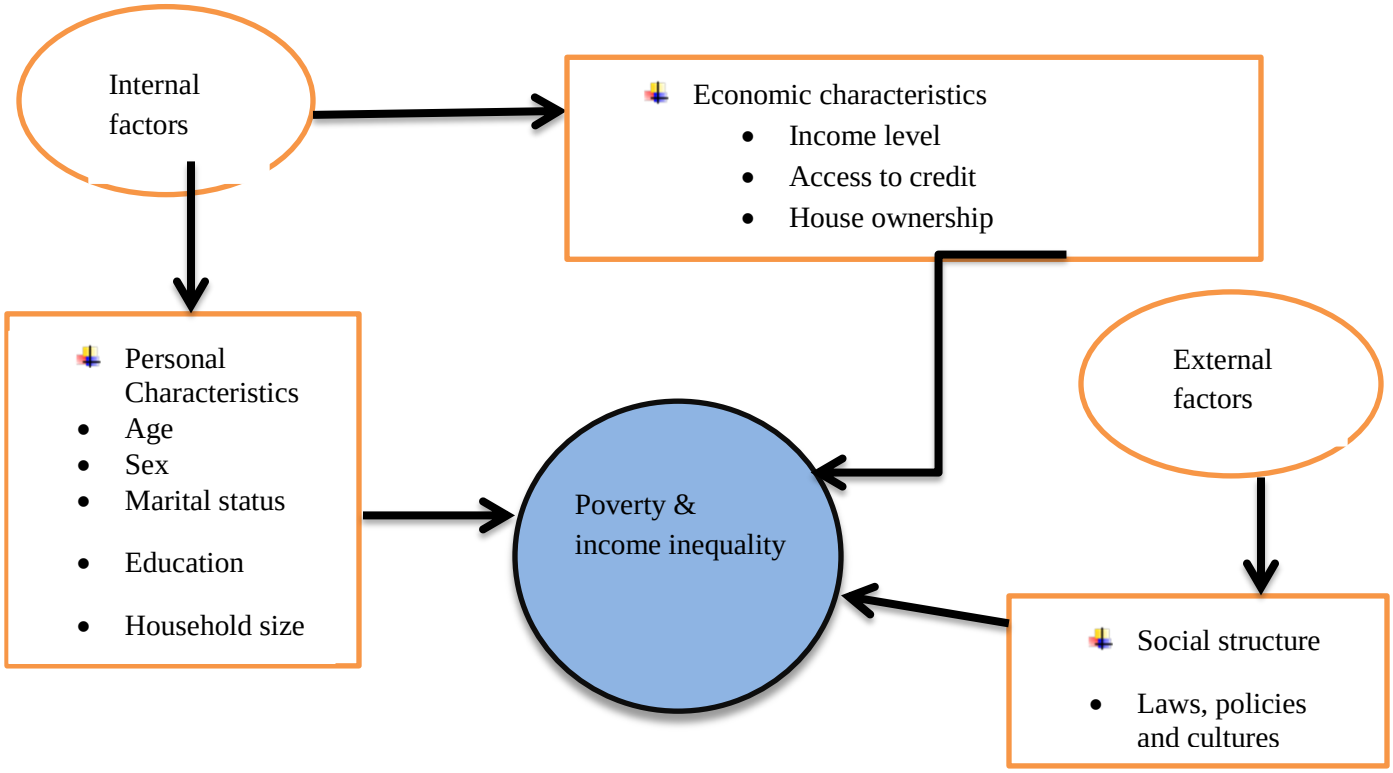


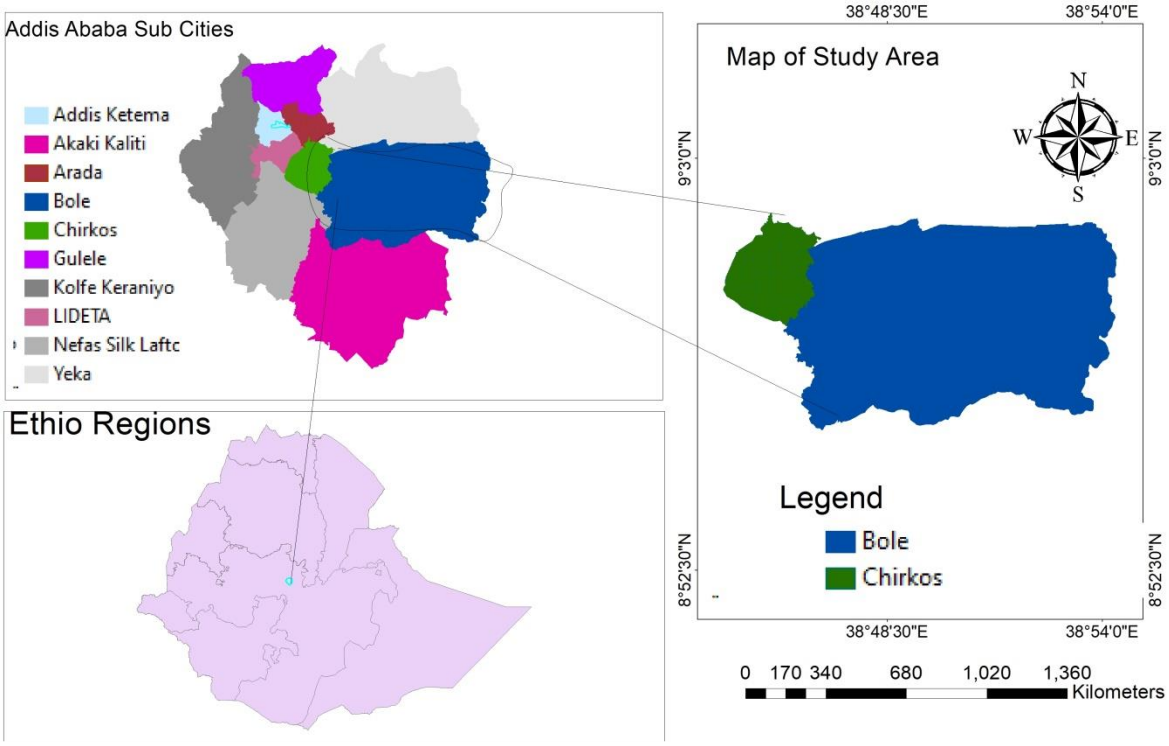
Figure 2.1 Conceptual framework of poverty & income inequality

CHAPTER THREE

3 RESEARCH METHODOLOGY

3.1 Description of Study Area

Bole and kirkos sub cities are found in the eastern and central parts of the capital respectively, and are home around 747,186 people (i.e., 19.36 percent of the capital population), they together account 24.04 percent of the capital's total physical area. According to CSA (2022), the population size of bole and kirkos sub cities are 435,421 and 311,765 respectively. The area coverage of bole is 527 sq.KM and kirkos sub city cover 14.62 sq.KM from capital's total area, this shows kirkos sub city is higher population density with 21,325/KM^2 to compare 3,567/ KM^2 of bole sub city.



Source: Addis Ababa city administration

Figure 3.1 Administrative map of Bole and Kirkos sub cities of Addis Ababa.

3.2 Research design and approach

This study employed a mixed-methods research design, combining both quantitative and qualitative approaches to investigate the multidimensional poverty and income inequality dynamics in the Bole and Kirkos sub-cities of Addis Ababa. The research followed a cross-sectional design, collecting data at a single point in time. The quantitative component involved a structured household survey, while the qualitative component consisted of in-depth interviews with key informants. This mixed-methods approach allowed the researchers to leverage the strengths of both quantitative and qualitative methods to develop a comprehensive understanding of the research problem.

3.3 Data type and method of data collection

The study utilized both primary and secondary data sources. The primary quantitative data was collected through a structured household survey, which gathered information on household demographics, income, asset ownership, access to services, and other multidimensional poverty indicators. A structured questionnaire was administered to a randomly selected sample of household heads across the two sub-cities. The primary qualitative data was gathered through one-on-one interviews with key informants, including local government officials and community leaders. Additionally, the researchers collected secondary data from relevant government offices, such as the Addis Ababa City Administration, the Central Statistical Agency (CSA), and the Ministry of Finance and Economic Development (MoFED), to complement the primary data sources.

3.4 Sampling design

The sampling unit was the head of the household, as they could provide detailed information about the socio-economic condition of the household compared to other members. For the purpose of sample selection, a multistage random sampling technique was employed.

In the first stage, the selection of Bole and Kirkos sub-cities was done purposively due to their diverse population and economic activities. Bole has a cosmopolitan and business-oriented character, while Kirkos is a mixed area with condensed residents and administrative functions. In the second stage, three woredas were randomly selected from each sub-city, ensuring proportional representation. This formed the second stage of the sampling process.

The final stage involved the random selection of 280 household respondents from each of the selected woredas, proportionate to the total number of households. The sample size for the study was determined using Cochran's formula (1977). $n = \frac{Z^2PQ}{\varepsilon 2}$ … …… ….. …… … … …. …… 1

Where, Z = standard error associated with the chosen level of confidence (typically 1.96)

P = probability of being poor in Addis Ababa = 0.24 (UNDP, 2022).

Q = probability of non-poor in Addis Ababa = 0.76

ε = marginal error between sample and population value of the poverty = 0.05

$$n = \frac{Z^2PQ}{\varepsilon 2} = \frac{(1.96)^2(0.76*0.24)}{(0.05)^2} = 280$$ … …… ….. ..... …… … … …. ……..... ….. …… 2

The optimal random sample size was 280 households. Therefore, the sampling procedure involved random sampling with a sample size of 280 respondents.

Table 3.1 Distribution of populations, Households and sample Respondent

NO	Name of sampled woredas	Total Number of population and Households of Sampled woredas		Sampled Respondents	% of total sample size
		Total number of population from sampled woredas	Total number of households from sampled woredas		
1	BSW2	42,345	5328	48	17
2	BSW5	46,434	6349	57	20
3	BSW8	43,542	5256	47	17
4	KSW3	38,765	3123	29	11
5	KSW7	45,834	5874	54	19
6	KSW9	41,534	5020	45	16
total		258,454	30,950	280	100

Source: central statistics agency, 2022

3.5 Method of Data Analysis

3.5.1 Descriptive data analysis

In order to demonstrate the demographic and socio-economic variables of the households in the two sub-cities, I utilized specific methods of data analysis such as frequency, percentage, mean, and standard deviation. To gain a comprehensive understanding of the depth, persistence, and complexity of poverty, I employed the Multidimensional Poverty Index, which measures the percentage of people who are poor (headcount ratio) and the average percentage of dimensions in which poor people are deprived (intensity). Additionally, the Gini coefficient was used to assess the overall livelihood of the population in these sub-cities. These analyses were conducted once the raw data were obtained from the respondents. The main objective was to construct a model that illustrates the impacts of potential explanatory variables on poverty and income inequality in the two sub-cities.

3.5.2 Econometrics analysis

After the appropriate data collection and processing, I conducted regression analysis to examine the relationships between the dependent variable and explanatory variables, utilizing the specified model. Since my dependent variable was binary or categorical, I employed logistic regression. Additionally, decile ratio analysis provided valuable insights into the analysis of poverty and income inequality.

3.5.2.1 Ordered logistic regression

Ordered logistic regression is a statistical modeling technique used when the dependent variable is ordinal in nature, meaning it has a natural ordering or ranking among its possible values. This technique is particularly useful when the outcome variable represents a series of ordered categories, such as levels of multidimensional poverty (non poor, vulnerable, poor, sever) or levels of satisfaction (e.g., very dissatisfied, dissatisfied, neutral, satisfied, very satisfied).

The Ordered Logit Model: The ordered logistic regression model is based on the concept of the latent variable, which is an unobservable variable that represents the underlying propensity or tendency towards the outcome. The model assumes that the observed ordinal outcome variable is a manifestation of this latent variable, which is typically modeled as a linear function of the independent variables.

The ordered logit model can be mathematically represented as follows (Agresti, 2010).

Latent variable equation:

$y^* = \beta_1 x_1 + \beta_2 x_2 + ... + \beta_k x_k + \varepsilon$

where: - y^* is the unobserved latent variable

- $\beta_1, \beta_2, ..., \beta_k$ are the regression coefficients

- $x_1, x_2, ..., x_k$ are the independent variables

- ε is the error term, which is assumed to follow a logistic distribution

Observed ordinal outcome:

$y = 1$ if $y^* \leq \mu_1$

$y = 2$ if $\mu_1 < y^* \leq \mu_2$

$y = 3$ if $\mu_2 < y^* \leq \mu_3 \ldots y = J$ if $y^* > \mu_{J-1}$

where:

- y is the observed ordinal outcome variable with J categories

- $\mu_1, \mu_2, ..., \mu_{J-1}$ are the unknown threshold parameters (or cut-points) that define the boundaries between the ordinal categories

Interpretation of Coefficients:

In the ordered logit model, the regression coefficients (β's) represent the change in the log-odds of being in a higher category of the dependent variable for a one-unit increase in the corresponding independent variable, holding all other variables constant. However, the interpretation is not as straightforward as in the linear regression model, as the effect of the independent variables on the ordinal outcome is not constant across the different categories.

Assumptions of Ordered Logistic Regression:

The ordered logistic regression model relies on several key assumptions, including:

1. Ordinal nature of the dependent variable

2. Linearity of the relationship between the independent variables and the latent variable

3. Proportional odds assumption (also known as the parallel regression assumption): The effect of the independent variables on the odds of being in a higher category versus a lower category is the same across all possible comparisons of the ordinal categories.

3.5.2.2 Quintile regression model

The quintile regression model is a statistical model used to analyze the relationship between predictor variables and difference quantiles of the response variable. Unlike traditional regression models that focus on estimating the conditional mean of the response variable, quintile regression provides insights into how the predictors affect different parts of the response distribution.

The quintile regression model estimates the conditional quantiles of the response variable based on the predictor variables. It allows for a more comprehensive understanding of the relationship between the predictor and different parts of the response distribution, such as the lower and upper quantiles.

Based on Koenker & Bassett (1978), the quintiles regression model can be represented as follows;

$$Q(\frac{P}{X}) = \beta 0(P) + \beta 1(P)X1 + \beta 2(P)X2 + \cdots + \beta N(P)Xn \ldots \ldots\ldots \ldots.. ..... \ldots\ldots \ldots 8$$

In this equation, $Q(\frac{P}{X})$ represents the P-th quantile of the response variable given the predictor variables X1, X2,… .Xn. $\beta 0(P), \beta 1(P), \beta 2(P), \ldots, \beta n(P)$ are the coefficients associated with each predictor variable for the P-th quantile regression model, the method of minimizing the weighted absolute deviations is commonly used. The objective is to minimize the sum of the absolute differences between the observed quantiles and the predicted quantiles. The quintile regression model involves minimizing the weighted absolute deviations. The weighted absolute deviations are defined as;

$$WAD(P) = \sum W\_i * \tau\_i(p) * |Yi - Q(P|Xi)| \ldots \ldots\ldots \ldots.. ..... \ldots\ldots \ldots \ldots \ldots. \ldots\ldots\ldots 9$$

In this equation, W_i represents the weights assigned to each observation, τ_i(P) represents the indicator function that takes the value of 1 if Yi is less than or equal to Q(P|Xi), and 0 otherwise. Yi represents the observed response variables, and Xi represents the predictor variables for each observation. By minimizing the weighted absolute deviations with respect to each coefficient can be obtained. This can be done using optimization algorithms such as the iteratively reweighted least squares (IRLS) method. Once the coefficients are estimated, they can be used to predict the P-th quantile of the response variable for new observations by plugging in the predictor variables in to the quintile regression equation. Quintile regression provides a more comprehensive understanding of the relationship between predictors and different parts of the response distribution, allowing for a more nuance analysis of the data.

3.6 Model specification

To measure income inequality between households i and h, it can be calculate as:

$$INEQ_{i,h} = \left\{\frac{Yi}{Yi+Yh} - \frac{Yh}{Yi+Yh}\right\} \ldots \quad 3$$

Where Yi = income of household i and Yh= income of household h. Y expresses income per individual. INEQ is a relative measure of inequality and ranges between 0 (if the incomes of i and h are equal) and 1 (maximum inequality). INEQ is built to attend to the magnitude of the gap between the two households in terms of income, ignoring therefore which of them is the richest. For this reason, I assumed the absolute value of the difference between the relative weights of each household in the total income of the two households under consideration.

The hypothesized equation for income inequality among household as a function of its determinant is as follow;

$$INEQ_{i,h}=\beta_0+\beta_1 Hsex+\beta_2 Hage+\beta_3 Hfamsize+\beta_4 Hedu+\beta_5 Hoccu+\beta_6 Hsav+\beta_7 Hcred+\beta_8 Hmar+\beta_9 Hinc +\beta_{10} Hhome+ \beta_{11} Hsr +\beta_{12} Hdr +\beta_{13} Hremi +\beta_{14} Hhs + Ui \ldots \quad 4$$

To analysis the determinant of poverty it is common to use the dichotomous variable. Hence, logistic regression model is used to predict the dichotomous outcome. So, in this model, the log-odds were a linear function of the explanatory variables. Specifically, the working model is specified as the following;

$$ln\left[\frac{P}{1-P}\right] = \beta_0+\beta_1 Hsex+\beta_2 Hage+\beta_3 Hfamsize+\beta_4 Hedu+\beta_5 Hoccu+\beta_6 Hsav+\beta_7 Hcred+\beta_8 Hmar+$$

β_9Hinc+β_{10}Hhome+ β_{11} Hsr +β_{12} Hdr +β_{13} Hremi +β_{14} Hhs +Ui … …… ….. ..... …… … … 5

The ratio of P to 1-P is termed the ratio of the probability that a household is likely to be poor to the probability that it will be non-poor.

3.7 Definition of Variable, Measurement and Hypothesis

Age of household head (Hage**):**

It is a continues variable measured by number of years. As age of household head increases, there is greater tendency to be engaged in multidimensional livelihood strategies. A study by Meseret & Zelalem (2019) reviled the age of a household head was negatively and significantly affected poverty status of households this is also agreed with the human capital theory which says income increases with age but at a decreasing rate. Thus, it is hypothesized that age and poverty are negatively correlated.

Sex of household head (Hsex_**):**

Household head is a person who economically supports or manages a household. It is a dummy variable taking a value of 0 if male and 1 female. Households headed by female are often disproportionally affected by poverty due to factors such as unequal access to resource. Gender norms and discrimination can limit women's economic empowerment and contribute to their increase vulnerability to poverty. M.K. Jayamohan & Amenu (2014) conducted a research on Gender and poverty analysis of urban poverty in Ethiopia, the result showed gender poverty difference significantly highest in Addis Ababa to compare with other cities, FHHs are poorer than MHHs with 31.6% and 26.6%, respectively. Hence, It is hypothesized that male headed households are less likely to be poor than female headed ones.

Family size of the household (Hfamsiz**):**

It represents the total family size adjusted to the proportionate increase in income per adult necessary to maintain a certain level of household living standard or adult equivalent. As family size increases, obviously the probability of having economically non active members or children and doddering ages is higher. According to Mohammed (2017), As family size increases by one member, the probability of households falling into poverty increases by 0.80 percent. Hence, it is hypothesized that family size and poverty are positively related.

Education level of household head (Hedu)**:**

The education level of a household can have a significant impact on poverty and income inequality. Research showed that higher levels of education are generally a pathway out of poverty. It provide knowledge, skills and opportunities that can increase earning potential (Meseret & Zelalem, 2019; Sisay & Efta, 2020 and Mohammed, 2017). by accruing Education, anyone can secure better-paying jobs, which helps lift them out of poverty. Therefore, it is hypothesized that education and poverty are negatively related.

Marital status of Household head (Hmar_)**:**

Marital status of the household head has economic implication on household's income level. There is different perspective between marital status and poverty in developed and developing countries, Large families in developed countries mean large labor force which in turn reduces the incidence of poverty but in developing country larger households are associated with high incidence of poverty because many of the labor force are unemployed (Tamirat & S.SIVAKUMAR, 2020). And also Mohammed (2017) found that, if the household head is single, the probability of this household falling in to poverty reduces by 3.46 percent compared to married. Thus, it is hypothesized that marital status and poverty are negatively correlated.

Occupation of Household head (occuHH_binary)**:**

Occupation status refers to the type of work or employment that the head of the household is engaged in. Many studies categorize household employment status differently, such as skilled labor, unskilled labor, self-employment, government employee, unemployed, and others. One study by M.K. Jayamohan and Amenu (2014) categorizes employment as formal and informal. According to their research, the probability of being poor is lower for household members whose head is in formal employment, compared to those whose head is informally employed.

In this study, occupation status is a dummy variable, taking a value of 0 for government employees and 1 for others, such as those running their own businesses, working in private firms, or employed by NGOs.

Health status of Household head (Hhs_):

Households with members that frequently get sick are hypothetically exposed to poverty. Lack of proper health services will make people to become weak and unproductive. Households with frequent patient members take a value of 1, and 0 healthy.

Dependence ratio of Household (Hdr)**:**

As a continuous variable, it is the ratio between economically inactive (age less than 15 and above 65) with active labor force (age between 15 and 65) with in a household. When a large family size corresponds with the availability of adequate adult labor, it can have a positive effect. A household with high economically non active members shows high dependency ratio and it is more likely to be poor, the probability of being poor increases by 3.78% as dependent adult equivalent increases by one (Meseret & Zelalem, 2019). Therefore, it is hypothesized that dependency ratio and poverty are positively associated.

Saving Habit of Household head (Hsav_**):**

Households with practice of saving and credit utilization have better chance to escape from poverty because they have good ground to invest on profitable businesses and coping short term market shocks. According to Mohammed (2017), the household head who are save portion of their income reduces the probability of falling in to poverty by 9.30 percent compared to non-savers keeping other factors constant.

Access to credit of Household head (Hcred_**):**

Access to credit is a dummy variable with a value 0 if the households received credit, either from formal or informal sources and 0, not received. Those households who received the credit wanted to have better possibility to spend on activities they want. They can improve production and productivity by adopting different business activities. Access to credit is expected to have a positive influence as it enables to solve short term liquidity constraints (Dereje & Haymanot, 2018). It is therefore hypothesized that households with credit access will have less chance of being poor than their counter parts.

Remittances (Hremi_**):**

Which refers to money transfers from individuals working abroad to their home countries, can have significant impacts on poverty levels and income distribution. Remittance is done as part of their indigenous culture of helping each other. A study by Dereje & Haymanot (2018), found the probability of households in being poor decreases by a factor of 0.998 as households obtain one more unit of income from remittance. The probability of the household falling in to poverty reduces by 8.3% compared to remittance non receiver households (Meseret & Zelalem, 2019). Thus, it is hypothesized that remittances and poverty are negatively correlated.

House tenure (Hhome**):**

Homeownership is often associated with greater wealthy accumulation and financial stability. Obviously, the household who owns their house can easily escape from poverty. According to Sisay & Efta (2020), the house owners have a higher level of income than non-owners. And also the household who do have their own house are 0.292times less likely be poor than non-house owner (Tamirat & S.SIVAKUMAR, 2020).

Membership in Social Relation (Hequb_**):**

This is an aspect of social capital a household access by being a member of various community organizations like networks, social relations, and associations. It is a dummy variable which is proxied by 'Equb' and assigned value 0 for households who participates in 'Equb'; and 1 otherwise.

Household Head Income Level (Hinc**):**

The amount of household income at any one time shows the extent of poverty; or household's economic status. Economic theory tells that a household with a relatively better income will lead a decent life; and hence, reduces the incidence of poverty and increase income inequality.

Table 3.2 Description of explanatory variables for poverty & income inequality

No	variables	Variable code	Variable type	Variable description	Level of measurement	Expected sign	
						poverty	Income inequality
1	sex	Hsex	Dummy	Sex of household head,0=male and 1= Female	Nominal scale	-	-
2	age	Hage	Continuous	Age of the household head in years	Ratio scale	-	±
3	Family size	Hfamsiz	Continuous	Total family members in the household	Ratio scale	+	-
4	Education	Hedu	Continuous	Level of higher education attainment in years	Ratio scale	-	+
5	occupation	Hoccu	Dummy	Occupation status of the household head 0= gov't employs 1 = otherwise	Nominal scale	±	±
6	saving	Hsav	Dummy	House hold head saving status 0 = yes,1 = no	Nominal scale	-	+
7	Credit	Hcred	Dummy	Household head access to credit 0 = yes, 1 = otherwise	Nominal scale	-	+
8	Remittance	Hremi	Dummy	Households has access to constant remittances (0=Yes, 1=No)	Nominal scale	-	+
9	Heath status	Hhs	Dummy	Health status of household head (1 = ill, 0 = non-ill)	Nominal scale	+	-
10	Dependence ratio	Hdr	Continuous	Dependent household members measured in number	Ratio scale	+	-
11	Membership in Social Relation	Hequb	Dummy	Households membership in social organization like edir and equib, dummy variable (0 if yes; 1, otherwise)	Nominal scale	-	±
12	Marital status	Hmar	Dummy	Marital status of the household head 0 = married 1= otherwise	Nominal scale	+	±
13	Income level	Hinc	continuous	Average household head income per month (Birr),	Ratio scale	-	+
14	House tenure	Hhome	dummy	0=own house, 1=otherwise	Nominal scale	-	+

3.8 Ethical Consideration

The researcher asks questions genuinely and collects the data that is used in this research paper from the Bole and Kirkos sub-cities of Addis Ababa by using structured questionnaires. Accordingly, all conclusions and recommendations are made honestly based on the analysis. Moreover, the data collection is only for the intended purpose and the researcher keeps the confidentiality.

CHAPTER FOUR

4 RESULTS AND DISCUSSIONS

This part of the study deals with the results of descriptive analysis and Econometrics analysis of ordered logistic regression and Quintile regression outcomes of the factors of household's income inequality and poverty. The scrutiny was carried out in accordance with the objectives of the study. Section 4.1 of the paper explained descriptive analysis while section 4.2 provided the results of the econometric analysis.

4.1 Descriptive Analysis Results

4.1.1 Respondents Characteristics

The data provided in the Table 4.1 offers insights into various household characteristics in two sub-cities: Bole sub-city and Kirkos sub-city. When comparing the sub-cities, it becomes evident that the majority of household heads in both areas are male, although Kirkos sub-city has a slightly higher proportion of male household heads (82.03% in Kirkos compared to 76.97% in Bole). Additionally, a significant portion of household heads in both sub-cities are married, with a slightly higher percentage in Kirkos sub-city (82.81% in Kirkos compared to 81.58% in Bole).

In terms of family size, both sub-cities show a similar distribution, with the majority of households having a family size ranging from 4 to 7 members (71.05% in Bole compared to 71.88% in Kirkos). This suggests that larger families are common in these areas. Education levels among household heads reveal that a first degree is the most prevalent in bole sub city which is 38.82% but in kirkos the completion of secondary school or preparatory education has a highest share with 39.06%. This indicates a relatively higher level of formal education in Bole sub-city.

Regarding occupations, self-employment emerges as the dominant category for household heads in both sub-cities, with Kirkos sub-city having a slightly higher percentage of self-employed individuals (37.5% in Kirkos compared to 36.84% in Bole). Other significant categories include private firm employees and government development organizations employees. These findings suggest a mix of entrepreneurial activities and formal employment opportunities in these areas.

In terms of access to remittance, Bole sub-city exhibits a higher percentage of households with access compared to Kirkos sub-city (40.13% in Bole compared to 20.31% in Kirkos). This indicates that a greater number of households in Bole sub-city receive financial support from abroad. When it comes to house ownership, Bole sub-city also surpasses Kirkos sub-city, with a higher proportion of households owning a house (39.47% in Bole compared to 17.97% in Kirkos). This suggests a higher rate of property ownership in Bole sub-city. In terms of health status, both sub-cities have a majority of households with a healthy status, with Bole sub-city having a slightly higher percentage (83.55% in Bole compared to 75% in Kirkos). This indicates a generally favorable health condition among households in both areas.

Regarding financial matters, Bole sub-city also exhibits a higher percentage of households with access to credit compared to Kirkos sub-city (43.42% in Bole compared to 24.22% in Kirkos). This suggests that more households in Bole sub-city have the ability to obtain loans or credit facilities. Additionally, Bole sub-city has a higher proportion of households engaging in saving practices compared to Kirkos sub-city (58.55% in Bole compared to 32.03% in Kirkos). This implies that saving habits are more prevalent among households in Bole sub-city.

In conclusion, the analysis of household characteristics in Bole and Kirkos sub-cities reveals several key findings. While both sub-cities share similarities in terms of gender distribution, marital status, family size, and overall health status, there are notable differences in educational levels, occupations, access to remittance, house ownership, credit access, and saving practices. Bole sub-city exhibits a higher percentage of households with higher educational attainment, such as first degrees, suggesting a relatively higher level of formal education in the area. Self-employment is a prominent occupation category in both sub-cities, indicating a mix of entrepreneurial activities and formal employment opportunities. Access to remittance is more prevalent in Bole sub-city, indicating a greater number of households receiving financial support from abroad.

Moreover, Bole sub-city outperforms Kirkos sub-city in terms of house ownership, credit access, and saving practices. A higher percentage of households in Bole own a house, have access to credit, and engage in saving practices, pointing to a relatively better financial situation in Bole sub-city.

Table 4.1 Summary Statistics of Household characteristics

Household characteristics	Frequency and % of					
	Bole sub city		Kirkos sub city		Both sub cities	
Sex of Household head	**Freq.**	**Percent**	**Freq.**	**Percent**	**Freq.**	**Percent**
Male	117	76.97	105	82.03	222	79.29
Female	35	23.03	23	17.97	58	20.71
Total	**152**	**100**	**128**	**100**	**280**	**100**
Marital Status of household	**Freq.**	**Percent**	**Freq.**	**Percent**	**Freq.**	**Percent**
Married	124	81.58	106	82.81	230	82.14
Unmarried	28	18.42	22	17.19	50	17.86
Total	**152**	**100**	**128**	**100**	**280**	**100**
Family size of households	**Freq.**	**Percent**	**Freq.**	**Percent**	**Freq.**	**Percent**
Family size (1-3)	44	28.94	36	28.12	80	28.56
Family size (4-7)	108	71.05	92	71.88	200	71.42
Total	**152**	**100**	**128**	**100**	**280**	**100**
Years of Schooling	**Freq.**	**Percent**	**Freq.**	**Percent**	**Freq.**	**Percent**
Primary School Completed	21	14.48	34	27.34	57	20.36
Secondary school or preparatory	52	34.21	50	39.06	102	36.43
First Degree	59	38.82	33	25.78	92	32.86
Second Degree	19	12.50	10	7.81	29	10.36
Total	**151**	**100**	**127**	**100**	**280**	**100**
Occupations	**Freq.**	**Percent**	**Freq.**	**Percent**	**Freq.**	**Percent**
Government Civil Employee	15	9.87	20	15.63	35	12.50
Government Development	26	17.11	17	13.28	43	15.36
Private firm employee	30	19.74	33	25.78	63	22.50
NGO‟s employee	25	16.45	10	7.81	35	12.50
Self-employed (doing own)	56	36.84	48	37.50	104	37.14
Total	**152**	**100**	**128**	**100**	**280**	**100**
Remittance Access	**Freq.**	**Percent**	**Freq.**	**Percent**	**Freq.**	**Percent**
Access	61	40.13	26	20.31	87	31.07
Have no Access	91	59.87	102	79.69	193	68.93
Total	**152**	**100**	**128**	**100**	**280**	**100**
House Ownership	**Freq.**	**Percent**	**Freq.**	**Percent**	**Freq.**	**Percent**
Owned	60	39.47	23	17.97	83	29.64
Not Owned	92	60.53	105	82.03	197	70.36
Total	**152**	**100**	**128**	**100**	**280**	**100**
Heath status	**Freq.**	**Percent**	**Freq.**	**Percent**	**Freq.**	**Percent**
health	127	83.55	96	75	223	79.64
unhealthy	25	16.45	32	25	57	20.36
Total	**152**	**100**	**128**	**100**	**280**	**100**
Credit	**Freq.**	**Percent**	**Freq.**	**Percent**	**Freq.**	**Percent**
Access	66	43.42	31	24.22	97	34.64

Have no Access	86	56.58	97	75.78	183	65.36
Total	**152**	**100**	**128**	**100**	**Total**	**100**
Saving	**Freq.**	**Percent**	**Freq.**	**Percent**	**Freq.**	**Percent**
Save	89	58.55	41	32.03	130	46.43
Not save	63	41.45	87	67.97	150	53.57
Total	**152**	**100**	**128**	**100**	280	100

Source: Own Survey, May, 2024

When comparing the data between those sub cities with continues variables as shown in Table 4.2, some notable differences can be observed. In terms of monthly income, households in Bole sub city have a higher average income (19,073.68 birr) per month compared to Kirkos sub city (13,076.7 birr). This indicates a potential disparity in economic conditions between the two sub cities. Similarly, the average education level of household heads in Bole sub city 13.15 years is higher than that of Kirkos sub city 12 years, suggesting a relatively higher level of education in Bole sub city.

However, both sub cities share similarities in terms of average age, family size, and dependence ratio. The average age of households is comparable, with Bole sub city at 45.7 years and Kirkos sub city at 45.9 years. The average family size is also similar, with Bole sub city at four and Kirkos sub city also four members in a family. Additionally, the average dependence ratio, which indicates the number of dependents per household, shows no significant difference between the sub cities.

These findings have implications for understanding the socioeconomic dynamics of the two sub cities. Bole sub city appears to have a higher average income and education level, suggesting a potentially more affluent and educated population compared to Kirkos sub city.

Table 4.2 Descriptive statistics of Households' Socioeconomic attributes

	Variables Name	Obs	Mean	Std. Dev.	Min	Max
Bole sub city	Monthly income	152	19073.68	11957.56	5000	55000
	Education of Household Head	152	13.15789	2.914011	0	17
	Age of Households	152	45.73026	6.972007	31	65
	Family size of Households	152	4.032895	1.43936	1	7
	Dependence ratio	152	1.230263	1.025957	0	4
Kirkos sub city	Monthly income	128	13076.7	10181.65	3018	47000
	Education of Household Head	128	12.00781	3.118389	0	17
	Age of Households	128	45.90625	7.187519	28	68
	Family size of Households	128	4.171875	1.50123	1	7
	Dependence ratio	128	1.554688	1.078119	0	6
Both sub cities	Monthly income	280	16332.21	11555.54	3018	55000
	Education of Household Head	280	12.63214	3.058047	0	17
	Age of Households	280	45.81071	7.059138	28	68
	Family size of Households	280	4.096429	1.466956	1	7
	Dependence ratio	280	1.378571	1.060654	0	6

Source: Own Survey, May, 2024

4.1.2 Estimation of Multidimensional Poverty Index

The below Table 4.3 shows that in Bole sub city there were no child deaths within households, indicating a positive outcome in terms of child mortality. Additionally, 11.8% of households had undernourished individuals, highlighting a significant challenge in nutrition. When it comes to education, 21% of households lacked individuals who had completed six years of schooling. These indicators suggest a need for improvement in education access and completion rates. In terms of the standard of living, a high percentage of households (89.4%) used solid fuels for cooking, indicating a reliance on traditional and potentially unhealthy cooking methods. Furthermore, 65.1% of households had unimproved or shared sanitation facilities, and 68.4% had inadequate housing materials.

In Kirkos sub-city, the data reveals that there were 20 households (15.6%) with child deaths, indicating a higher child mortality rate compared to Bole sub-city. Additionally, 44.5% of households had undernourished individuals, reflecting a significant challenge in ensuring proper nutrition. The education indicators show that 50.7% of households lacked individuals who had completed six years of schooling. In terms of the standard of living, a high percentage of households (94.5%) used solid fuels for cooking, indicating a reliance on traditional cooking methods. Similarly to Bole sub-city, a significant proportion of households (82.8%) had unimproved or shared sanitation facilities, and 85.9% had inadequate housing materials.

When comparing the two sub-cities, Kirkos sub-city exhibits higher levels of deprivation in various dimensions. It has a higher child mortality rate, a larger percentage of undernourished households, and a higher proportion of households lacking individuals with six years of schooling. Kirkos sub-city also has a higher percentage of school-aged children not attending school. Moreover, both sub-cities face similar challenges in terms of cooking fuel, sanitation, and housing, with slightly higher percentages observed in Kirkos sub-city.

Table 4.3 Number of deprived households in each indicator

Dimension	Indicators	Deprivation Cutoffs	Weight	No of deprived households & (%)					
				Bole sub city		Kirkos sub city		Both sub cities	
Health	Child mortality	Is there a child under the age of 18 years has died in the family In the five years preceding the survey?	$^1/_6$	**0**	0	20	15.6%	20	7.1%
	Nutrition	Is there any adult or child, for whom there is nutritional information, is undernourished in your household?	**$^1/_6$**	18	11.8%	57	44.5%	75	26.7%
Education	Years of schooling	Is there anyone who does completed six years of schooling in your household?	$^1/_6$	32	21%	65	50.7%	91	34.6%
	School attendance	Is there anyone who has aged 'school entrance age + six' years or older completed six years of schooling in your household?	$^1/_6$	28	18.4%	52	40.6	80	28.5%
Standard of living	Cooking fuel	Does your household cooks with dung, wood or charcoal?	$^1/_{18}$	136	89.4%	121	94.5%	257	91.7%
	Sanitation	Does your household's sanitation facility is either not improved, is shared with other households. or both?	$^1/_{18}$	99	65.1%	106	82.8%	205	73.2%
	Drinking water	Does your household have access to improved drinking water or improved drinking water is more than a 30-minute walk from home round trip?	$^1/_{18}$	0	0	0	0	0	0
	Electricity	Does your household have electricity?	$^1/_{18}$	0	0	0	0	0	0
	Housing	Does your roof, walls and floor of housing material is inadequate or build by rudimentary materials?	$^1/_{18}$	104	68.4%	110	85.9%	214	76.4%
	Assets	Does your household own more than one of these assets: radio, TV, telephone, computer, animal cart, bicycle, motorbike or refrigerator and car or truck?	$^1/_{18}$	52	34.2%	83	64.8%	135	48.2%

Source: Own Survey, May, 2024

4.1.3 Multidimensional poverty status of the Households

To identify multidimensionally poor people, the deprivation scores for each indicator are summed to obtain the household deprivation score. A cutoff of 1/3 is used to distinguish between poor and non poor people. If the deprivation score is 1/3 or higher, that household (and everyone in it) is considered multidimensionally poor. People with a deprivation score of 1/5 or higher but less than 1/3 are considered to be vulnerable to multidimensional poverty. People with a deprivation score of 1/2 or higher are considered to be in severe multidimensional poverty (UNDP, 2022).

Table 4.4 Summary statistics of multidimensional poverty status (dependent variable)

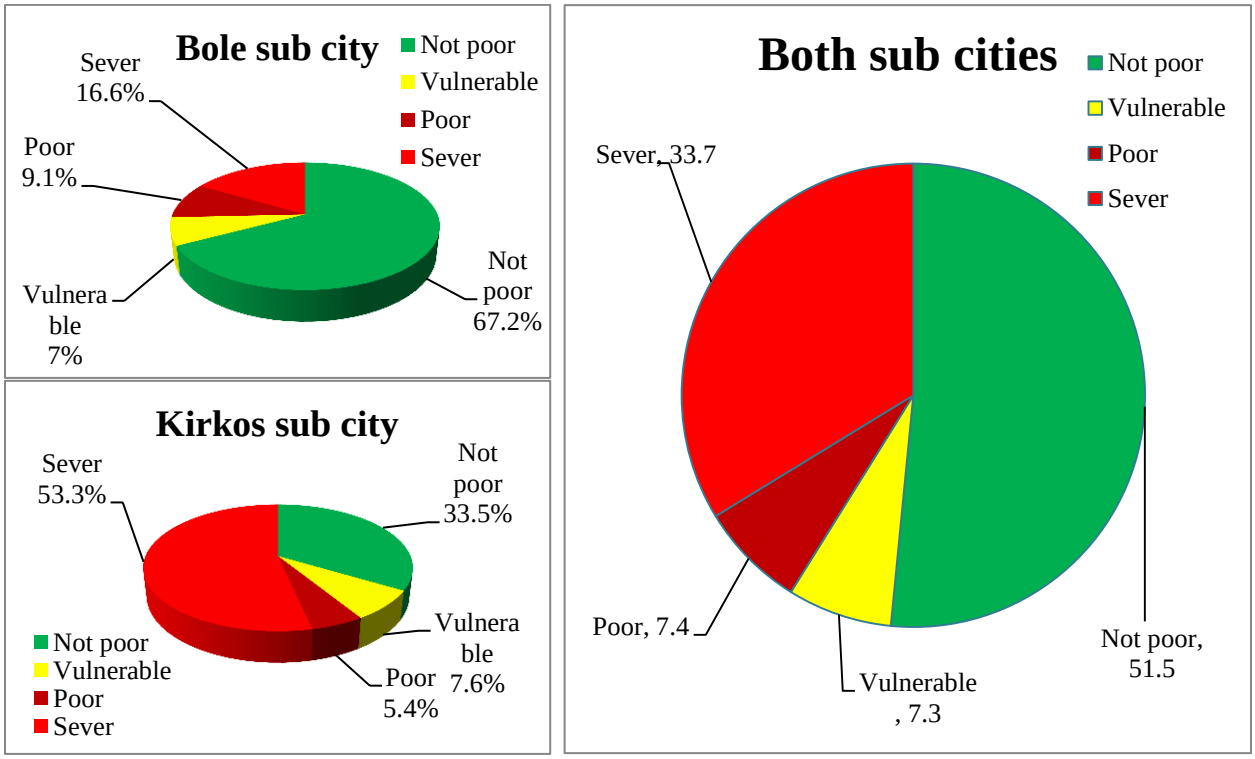
Multidimensional poverty status	**No of people who are deprived & %**					
	Bole sub city		**Kirkos sub city**		**Both sub city**	
Not poor	412	67.2%	179	33.5%	591	51.5%
Vulnerable	43	7%	41	7.6%	84	7.3%
Poor	56	9.1%	29	5.4%	85	7.4%
Sever	102	16.6%	285	53.3%	387	33.7%
Total	**613**	**100%**	**534**	**100%**	**1147**	**100%**

Source: Own Survey, May, 2024

The data revealed in Table 4.4 shows important insights into the multidimensional poverty status in Bole and Kirkos sub-cities. In Bole sub-city, the majority of individuals, accounting for 67.2%, are classified as not poor, as their deprivation scores fall below the cutoff of 1/3. This indicates a relatively favorable situation in terms of multidimensional poverty. However, there is still a significant portion of the population that faces vulnerabilities, with 7% classified as vulnerable to multidimensional poverty. Additionally, 9.1% of individuals in Bole sub-city are considered to be in a state of multidimensional poverty, indicating the presence of significant deprivation across multiple dimensions. Furthermore, 16.6% of individuals are categorized as severely multidimensionally poor, reflecting a substantial level of deprivation that goes beyond the threshold of 1/2.

In contrast, the situation in Kirkos sub-city is more challenging in terms of multidimensional poverty. A lower proportion of individuals, comprising 33.5%, are classified as not poor, indicating a higher prevalence of deprivation compared to Bole sub-city. Moreover, a notable percentage of the population (7.6%) falls under the category of vulnerable, highlighting the

susceptibility to multidimensional poverty. The proportion of individuals considered multidimensionally poor is lower in Kirkos sub-city, with 5.4% falling into this category. However, a significant portion, encompassing 53.3% of individuals, is classified as severely multidimensionally poor, suggesting a substantial level of deprivation across various dimensions.



Source: Own Survey, May, 2024

Figure 4.3 Multidimensional poverty status of Bole and Kirkos Sub cities

The analysis of the above pie charts representing the multidimensional poverty status in Bole and Kirkos sub-cities reveals distinct patterns. Bole sub-city exhibits a relatively favorable situation, with a majority of individuals classified as not poor. However, a significant portion of the population still faces vulnerabilities and experiences varying levels of poverty. On the other hand, Kirkos sub-city presents a more challenging scenario, with a lower proportion of individuals classified as not poor and a substantial percentage falling under the severely multidimensionally poor category. These findings underscore the importance of targeted interventions and tailored approaches to address the specific challenges faced by each sub-city.

Table 4.5 Estimation of Multidimensional poverty index

Multidimensional poverty cutoffs ($W \geq 0.33$)	Bole sub city	Kirkos sub city	Both sub cities
H(incidence)	0.32	0.66	0.48
A(intensity)	0.46	0.59	0.54
MPI	0.15	0.39	0.26

Source: Own Survey, May, 2024

The analysis of the data on multidimensional poverty cutoffs reveals interesting insights for Bole, Kirkos, and the combined data. In terms of the poverty incidence (H), Bole sub-city has a relatively lower value of 0.32, indicating that 32% of individuals in this sub-city fall below the poverty line. Conversely, Kirkos sub-city exhibits a higher poverty incidence of 0.66, suggesting a greater proportion of individuals experiencing multidimensional poverty. When considering both sub-cities combined, the overall poverty incidence stands at 0.48, indicating a moderate level of poverty prevalence.

Examining the poverty intensity (A), Bole has a value of 0.46, implying that individuals who experience poverty in this sub-city are, on average, deprived in approximately 46% of the dimensions measured. In contrast, Kirkos sub-city has a higher poverty intensity of 0.59, suggesting a deeper level of deprivation across dimensions. Combining both sub-cities, the poverty intensity reaches 0.54, indicating a significant level of deprivation in the dimensions measured.

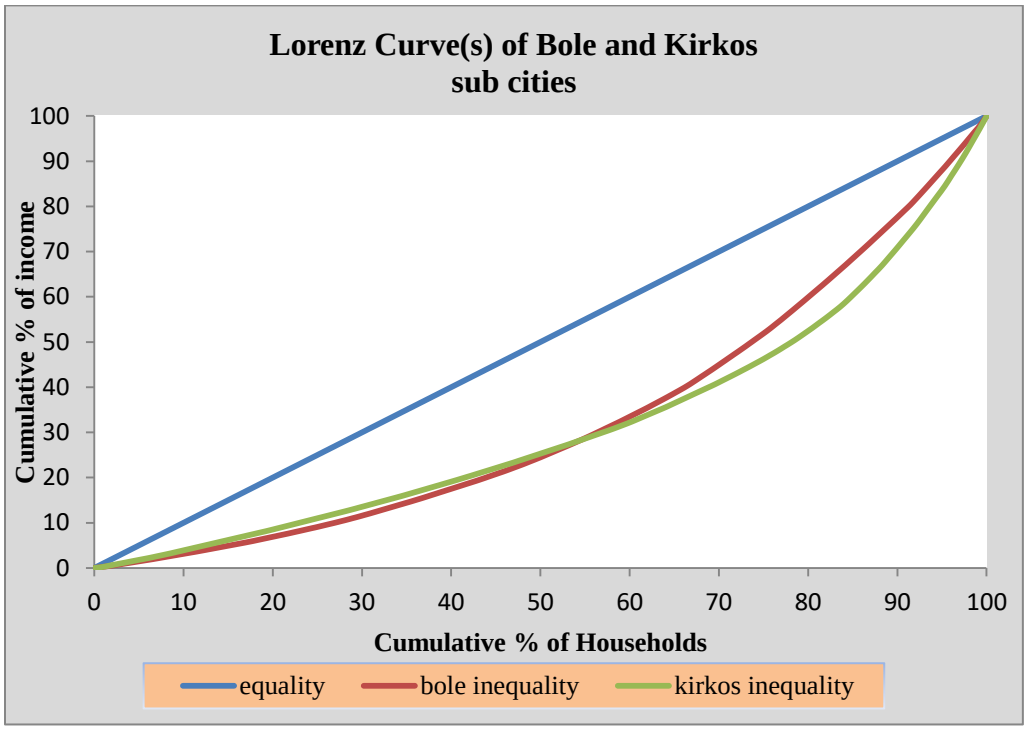
The Multidimensional Poverty Index (MPI) provides a comprehensive measure of multidimensional poverty by considering both incidence and intensity. Bole sub-city has a relatively low MPI of 0.15, suggesting a lower overall level of multidimensional poverty. In contrast, Kirkos sub-city exhibits a higher MPI of 0.39, indicating a more severe level of multidimensional poverty. When considering both sub-cities combined, the MPI stands at 0.26, indicating a moderate level of multidimensional poverty prevalence.

These findings highlight the disparities in multidimensional poverty between Bole and Kirkos sub-cities. Bole sub-city shows a lower poverty incidence, lower poverty intensity, and a lower MPI compared to Kirkos sub-city. However, it is important to note that both sub-cities still face significant challenges in terms of multidimensional poverty.

4.1.4 Estimation of Income inequality

The analysis of the below Lorenz curve provides valuable insights into income distribution and inequality for both Bole sub-city and Kirkos sub-city. When examining the Lorenz curve for Bole sub-city, it becomes apparent that the cumulative share of income increases at a slightly slower pace than the cumulative share of the population. This suggests the presence of income inequality, with a relatively larger portion of the population holding a smaller share of the income. Similarly, the Lorenz curve for Kirkos sub-city exhibits a comparable pattern, indicating income inequality within that sub-city as well. The cumulative share of income rises at a slower rate than the cumulative share of the population, suggesting that a smaller segment of the population possesses a larger proportion of the income.

Comparing the Lorenz curves of Bole sub-city and Kirkos sub-city, it is evident that both sub-cities experience income inequality, with no significant difference in the degree of inequality observed.



Source: Own Survey, May, 2024

Figure 4.2 Lorenz curve(s) of Bole and Kirkos sub cities

The analysis of income inequality using the Gini coefficient reveals intriguing insights for Bole, Kirkos and the combined data. Bole sub-city emerges as the most equal in terms of income

distribution. The majority of residents in Bole have higher incomes, resulting in a relatively lower Gini coefficient of 0.345. This suggests that income disparities within Bole sub-city are moderate compared to Kirkos sub-city and the combined data.

On the other hand, Kirkos sub-city exhibits a slightly higher Gini coefficient of 0.371, indicating a higher level of income inequality. This implies that income disparities within Kirkos sub-city are more pronounced compared to Bole sub-city. The higher Gini coefficient suggests a less equal distribution of income within Kirkos sub-city. When considering both sub-cities combined, the Gini coefficient remains at a similar level of 0.373, indicating that income inequality persists as a significant concern in the overall analysis of the two sub-cities and also this is slightly higher than the national inequality index (0.35) reported by World Bank (2020). These findings underscore the existence of income disparities within both sub-city and Kirkos sub-city exhibiting a slightly higher level of inequality.

Table 4.6 Gini coefficient result in the study area

Sub cities	Gini coefficient
Bole sub city	0.345073
Kirkos sub city	0.371729
Both sub cities	0.373085

Source: Own Survey, May, 2024

4.1.5 Cause of income Inequality

The bar chart data below represent the respondents' opinions on the factors contributing to income inequality. Analyzing the data collected from the households, I found the following patterns: In Bole sub-city, the highest percentage (57.8%) of respondents attributed income inequality to a combination of both individual effort and systematic factors. This suggests that the majority believe that both personal initiative and systemic influences play a significant role in income inequality within Bole. On the other hand, a smaller percentage (6.6%) of respondents identified individual effort alone as a cause of income inequality.

Similarly, in Kirkos sub-city, a similar pattern emerged. The majority of respondents (52.3%) believed that income inequality is influenced by a combination of individual effort and systematic factors, while a considerable portion (14%) attributed it solely to individual effort. When considering both sub-cities collectively, the data showed that the highest percentage of

respondents (55.3%) believed that income inequality is caused by a combination of individual effort and systematic factors. Comparing the three categories across the sub-cities, it is noteworthy that a higher percentage of respondents identified the combination of both factors and systematic factors alone as the causes of income inequality, whereas a smaller percentage attributed it solely to individual effort.

Source: Own Survey, May, 2024

Figure 4.3 The cause of income inequality

4.2 Econometric Analysis

An essential part of any regression analysis involves diagnostic checks before fitting the model. As such, the potential existence of multicollinearity among the explanatory variables was checked by computing the Variance Inflation Factor (VIF). From the results indicated in the appendix VIII, the regression diagnostics showed that the VIF for each of the explanatory variables was found to be significantly less than the standard cut-off value of 10, revealing the non-existence of serious multicollinearity problems among the explanatory variables included in the model. To address the issue of heteroscedasticity, I employed robust standard errors in the analysis. This adjustment ensures that the standard errors of the regression coefficients are corrected for any heteroscedasticity present in the data, providing more reliable inferences.

Further, to validate the model specification, a linktest was conducted. The results of the linktest suggested that the ordered logistic regression model was the most appropriate model to identify

the factors affecting multidimensional poverty, and the quantile regression model was also suitable to analyze income inequality in Bole and Kirkos sub-cities. The linktest results are provided in the appendixVII.

4.2.1 Determinant of multidimensional poverty

The ordered logistic regression model presented in Table 4.7 offers valuable insights into the factors associated with the multidimensional poverty of Bole and Kirkos sub cities. This model was employed to examine the effects of the independent variables on the ordinal dependent variable, which represents the multidimensional poverty status of households. Given the ordered nature of the outcome, with categories ranging from 0 (non-poor) to 1 (vulnerable), 2 (poor), and 3 (severe), the ordered logistic regression approach was deemed appropriate to capture the nuanced relationships between the predictors and the multidimensional poverty status. The model demonstrates a strong overall fit, with a highly significant Chi-square (452.41) is statistic at the 1% level of significant and a substantial Pseudo R-squared value of 0.74, indicating that the included variables collectively explain 74% of the variation in the dependent variable. The results reveal several significant predictors, suggesting that household and financial characteristics play crucial roles in influencing the multidimensional poverty status. By examining the magnitude and statistical significance of the coefficients, as well as the corresponding odds ratios, we can gain a deeper understanding of the complex relationships between the explanatory variables and the ordered categorical outcome. The following sections will provide a detailed interpretation of the significant findings, shedding light on the nuances and implications of this comprehensive analysis.

Marital status: The marital status of the household head emerged as a statistically significant predictor of multidimensional poverty status at the 1% level of significance. The positive coefficient indicates that married household heads are 93% more likely to experience higher levels of multidimensional poverty compared to non-married household heads. This suggests that married households, often with the presence of children, may be more vulnerable to falling into poverty. The additional financial and caregiving responsibilities associated with marriage and family-rearing can increase the strain on household resources, making married households more susceptible to multidimensional deprivations. Conversely, non-married household heads may have more flexibility in allocating their resources and managing their finances, potentially shielding them from severe multidimensional poverty (Mohammed, 2017; Tamirat &

S.SIVAKUMAR, 2020). This insight underscores the importance of considering marital status as a crucial factor in understanding the complex dynamics of multidimensional poverty within the Bole and Kirkos sub cities.

Number of Dependents: The number of dependents within the household was identified as a statistically significant predictor of higher multidimensional poverty status at the 10% level of significance. The positive coefficient suggests that as the number of dependents in a household goes up, the likelihood of the household experiencing greater levels of multidimensional poverty also rises. Specifically, the results indicate that when the number of dependents increases by one person, holding all other factors constant, the probability of the household being in a higher order of multidimensional poverty increases by 10%.

This finding underscores the considerable burden that a larger number of dependents can place on a family's overall well-being and resources. The number of dependents, which includes children, the elderly, or the disabled, reflects the economic pressure faced by households with a greater proportion of non-working members reliant on the household's income and support. As the number of non-working individuals increases, the household's ability to allocate resources towards meeting various dimensions of well-being, including education, health, and living standards, can become strained (Meseret & Zelalem, 2019). This dynamic can trap households in a cycle of multidimensional deprivation, where the higher the number of dependents, the more vulnerable the household becomes to falling into or remaining in severe poverty.

Education: The probability of being in a higher order of multidimensional poverty is negatively and significantly affected by the education level of the household head at the 5% level of significance. Specifically, keeping all other things constant, increasing the education level of the household head by 1 year will reduce the probability of the household being in a higher order of multidimensional poverty by 73 %. Higher levels of education are often associated with improved access to better-paying job opportunities, greater financial management skills, and broader knowledge about accessing essential services and resources. These factors can enhance a household's ability to allocate resources more efficiently, invest in the well-being of family members, and adopt strategies to mitigate various deprivations. This result is also confirmed by (Meseret & Zelalem, 2019; Sisay & Efta, 2020 and Mohammed, 2017) in their respective

Heath status: The health status of the household head was also found to be a statistically significant predictor of multidimensional poverty status at the 5% level of significance. The negative coefficient suggests that when the household head is healthy, the likelihood of the household experiencing higher levels of multidimensional poverty decreases. The results indicate that a healthy household head is associated with a 26% decrease in the probability of the household being in a higher order of multidimensional poverty, holding all other factors constant.

This finding underscores the critical role that the household head's health and well-being plays in shielding families from the grip of multidimensional deprivation. Households with a healthy household head are less likely to experience higher levels of multidimensional poverty, potentially due to the availability of resources and support systems that enable the household head to better allocate and manage the household's resources, leading to improved living conditions and reduced multidimensional deprivations.

Equb & Edir membership: Participation in traditional community-based financial and social support groups, such as Equb and Edir, was also identified as a statistically significant predictor of multidimensional poverty status at the 5% level of significance. The negative coefficient suggests that when households participate in these groups, the likelihood of experiencing higher levels of multidimensional poverty decreases.

The results indicate that household participation in Equb and Edir is associated with a 9% decrease in the probability of being in a higher order of multidimensional poverty, irrespective of other factors. This finding underscores the crucial role that community-based social and financial networks play in bolstering household resilience and shielding families from the multifaceted challenges of poverty.

Saving: The household's savings behavior emerged as a highly significant predictor of multidimensional poverty status, significant at the 1% level. The negative coefficient suggests that when households save, the likelihood of experiencing higher orders of multidimensional poverty decreases. The results indicate that household savings is associated with a 2% decrease in the probability of the household being in a higher rank of multidimensional poverty, irrespective of other factors.

This finding underscores the critical role that household savings play in shielding families from the multidimensional aspects of poverty. Savings provide a crucial buffer against economic shocks, health crises, and other contingencies that can push households into deeper deprivation. By having access to financial reserves, families are better equipped to maintain their standards of living and invest in their long-term well-being. Similarly, (Sisay & Efta, 2020 and Mohammed, 2017) found similar findings in their studies.

Table 4.7 Ordered logistic regression result

Variables	**Coef**	**Std. Err**	**Z-score**	**Odd ratio**
sex	-0.55	0.805	-0.68	0.57
age	-0.04	0.056	-0.70	0.96
Marital status	1.78	0.684	- 2.60 *	5.93
Family size	-0.62	0.388	-1.60	0.53
Dependence ratio	0.74	0.422	1.76 ***	2.10
Education	-0.30	0.123	-2.48 **	0.73
Income level	-21.67	1056.64	-0.02	3.85
Heath status	-1.33	0.589	-2.26**	0.26
Equb edir membership	-2.31	1.148	-2.01**	0.09
House ownership	-2.49	1.555	-1.60	0.08
Saving	-4.02	1.320	-3.05*	0.02
Credit	0.76	1.146	0.67	2.14
Remittance	-0.08	0.825	-0.10	0.91
LR chi^2(13)	452.41*			
Log likelihood	-79.42			
Pseudo R^2	0.74			

Source: model result (2024)

*, ** and *** are statistical significance level at 1%, 5% and 10%, respectively

4.2.2 Determinant of income inequality

Quantile model is employed to analyze the determinate of the household's income inequality. The result shows that 9 variables were found to have statistically significant effect on income inequality. The variables are age, marital status, family size, dependency, education, occupation, house ownership, saving and credit. As shown in Table 4.8, quantile regression is a good fit model with significant value of F-statistics and pseudo-R2 ranging between 0.5077 to 0.7474 indicating the model fits very well and adequately represents the empirical data. Quantile model regression coefficients used to indicate direction and magnitude of the impact of the explanatory variables on the dependent variable (income level of the household).

The coefficient for age is positive and statistically significant at the 90th quantile with 1% level of significance. This suggests that as individuals get older, their income levels tend to be higher at the upper end of the income distribution. The positive and significant relationship between age and income can be attributed to the accumulation of work experience and skills over time. As people progress in their careers, they are often able to gain promotions, take on more responsibilities, and leverage their expertise to command higher salaries, leading to higher incomes at the upper end of the distribution. This result is consistent with the findings of previous studies conducted by (Sisay & Efta, 2020).

The family size variable shows a complex relationship with income across the distribution. At the 10^{th} and 25th quantiles, the positive and statistically significant coefficients at the 10% and 5% level of significance, respectively. indicate that larger families tend to have higher incomes at the lower parts of the distribution, likely due to economies of scale and multiple income earners. However, at the 90th quantile, the negative and statistically significant coefficient (at the 1% level) suggests that higher-income individuals with larger families experience lower incomes at the upper end of the distribution, potentially as a result of higher-income earners choosing to have smaller families to maintain their standard of living.

The coefficients for dependence are negative across all quantiles, indicating that as the level of dependents increases, incomes tend to be lower throughout the income distribution. This relationship is statistically significant at the 1% level for the 50^{th} quantiles, and at the 5% level for the 25^{th} and 75^{th} quantile. This pattern can be attributed to the added financial strain and

responsibilities associated with supporting more dependents, which can limit household's ability to accumulate wealth and earn higher incomes. Higher levels of dependence may require diverting resources away from personal investments or opportunities for income growth, constraining upward mobility, especially for those at the lower and middle ranges of the income spectrum. The consistent and significant negative effects of dependence underscore its role as an important factor contributing to income disparities across the board.

As expected, the education level of the household head has a positive influence on incomes across the distribution, with the effects being statistically significant at the 10th, 25th, 50th, and 75th quantiles. Specifically, holding all other factors constant, an additional year of schooling for the household head is associated with increases in monthly income of Birr 1341, 489, 701, and 482 at the 10th, 25th, 50th, and 75th quantiles, respectively. This highlights the significant returns to education, as higher levels of human capital and skills acquired through education enable individuals to access better-paying job opportunities, negotiate higher salaries, and potentially start more lucrative enterprises.

Occupation status, compared to non-government work (running a business, private firm, NGO employment), government employment is negatively associated with higher incomes across the distribution. This negative relationship is statistically significant at the 10th, 50th, and 75th quantiles, suggesting the income disadvantages of government jobs extend to lower, middle, and upper-middle income individuals. Possible reasons include the more limited income-earning potential, less performance-based pay, and less lucrative income streams often found in the public sector, as well as the inability of those with in-demand skills or strong networks to leverage those assets as effectively within rigid public sector pay structures. This result is consistent with the findings of previous studies conducted by (M.K. Jayamohan & Amenu, 2014).

The positive coefficients for marital status indicate that being married is associated with higher incomes, particularly in the middle to upper parts of the distribution. This positive relationship can be attributed to the economic advantages of marriage, such as shared living expenses, combined household resources, and access to spousal income and social/professional networks. However, this finding is somewhat nuanced when considering previous interpretations that married households, often with children, were more vulnerable to multidimensional poverty. The apparent contradiction between marital status being associated with both higher incomes but

higher poverty vulnerability points to a complex interplay between household composition, economic resources, and the multidimensional nature of poverty that requires further investigation.

House ownership is positively associated with higher incomes across all quantiles at the 1% level of significance. This positive relationship can be attributed to the financial and wealth-building advantages of home ownership, such as the ability to accumulate equity, access collateral, and engage in long-term financial planning - opportunities that may be more limited for non-homeowners.

Another economic factor, saving, is also positively related to income and statistically significant at the 1% level across all quantiles. The positive coefficients show that having saved is associated with higher incomes. This is likely due to the financial stability and growth opportunities that savings can provide. Individuals with accumulated savings can more easily weather unexpected expenses, invest in their future, and access credit - all of which can contribute to higher and more consistent income over time.

Similarly, access to credit service shows significance across most quantiles, except the 10th quantile. The coefficients are positive, because having access to credit is associated with higher incomes compared to those without credit access. The possible explanation for this is that households who are able to access credit have the advantage to leverage those financial resources, which can increase their income level. This positive relationship between credit access and income is statistically significant across most of the income distribution.

Table 4.8 Quintile regression model result

Dependent variable is income level (Hinc_continu)										
Variable	**0.1**		**0.25**		**0.5**		**0.75**		**0.9**	
	Coef	**t ratio**	**Coef**	**t ratio**	**Coef**	**t ratio**	**Coef**	**t ratio**	**Coef**	**t ratio**
sex	-1771.698	-1.50	-932.9983	-1.21	-1035.411	-1.26	500.9191	0.40	13.27434	0.01
age	1.886792	0.02	-20.93802	-0.33	89.23513	1.31	142.9228	1.36	243.3628	3.14*
Marital stat	868.8679	0.70	1252.931	1.53	2001.416	2.30**	4068.015	3.04 *	3165.929	3.20*
Family size	998.1132	1.69***	876.0469	2.26**	392.3513	0.95	-492.6471	-0.78	-1433.628	-3.06*
Dependence	-745.283	-1.25	-1003.35	-2.56**	-1553.824	-3.73 *	-1295.496	-2.03**	-179.2035	-0.38
Education	1341.509	7.00*	489.9497	3.90*	701.1331	5.24 *	482.5368	2.35**	183.6283	1.21
occupation	-2522.642	-2.34**	-933.8358	-1.32	-2354.108	-3.13*	-2307.904	-2.00**	-887.1681	-1.04
Heath status	960.3774	0.77	546.9012	0.67	-269.1218	-0.31	-788.1434	-0.59	-772.1239	-0.79
Equb edir	868.8679	0.56	582.0771	0.58	1179.887	1.10	1924.173	1.17	2026.549	1.66
House own’	6861.321	4.15*	7962.312	7.35*	8878.187	7.71*	10982.08	6.21*	17070.8	13.05*
saving	4249.057	3.10*	4293.132	4.78*	5427.762	5.68*	6005.515	4.10*	6276.549	5.79*
Credit	2372.642	1.57	4918.76	4.95*	4232.295	4.01*	3986.673	2.46**	7073.009	5.90*
_cons	-13115.09	-2.92	-611.3903	-0.21	-4087.819	-1.30	-2368.566	-0.49	-42.0354	-0.01
Pseudo R2	0.5077		0.5952		0.6848		0.7358		0.7474	

Source: model result (2024)

*, ** and *** are statistical significant level at 1%, 5% & 10%, respectively

4.2.3 Model Test Results

4.2.3.1 Testing for Model Specifications

Assessing the validity of the model specification is a crucial step in regression analysis. One important test for model specification is the linktest, which examines whether the functional form of the model is correctly specified. In the ordered logistic regression output provided, the linktest results provided in appendix VII offer valuable insights.

The linktest checks if the predicted values (_hat) are significant, indicating the model has captured the linear relationship between the independent and dependent variables. Additionally, it assesses whether the squared predicted values (_hatsq) are significant, which would suggest the model is missing important terms or has an incorrect functional form.

In this case, the linktest results show the coefficient of _hat is statistically significant, implying the original model is correctly specified. However, the coefficient of _hatsq is not significant, further supporting the notion that the functional form of the model is appropriate and does not require a more complex specification.

4.2.3.2 Testing for Multi-collinearity

Evaluating the presence of multicollinearity is an essential step in regression analysis, as it can have significant implications for the reliability and interpretation of the model's coefficients. One common approach to detecting multicollinearity is the variance inflation factor (VIF) test, which provides insights into the degree to which the variance of each coefficient is inflated due to collinearity with other independent variables.

In the provided output, the VIF values for the variables in the model are presented. The VIF measures how much the variance of a coefficient is increased due to collinearity. Generally, a VIF value greater than 5 or 10 is considered indicative of concerning levels of multicollinearity, requiring further investigation. Examining the VIF results, we can see that the mean VIF for the model is 2.76 and 3.35 for quantile and ordered logistic regression, respectively. Which is within an acceptable range. However, some individual variables, such as "incomelevel" with a VIF of 7.48 and "house ownership" with a VIF of 6.04, exhibit relatively higher VIF values. This

suggests the potential for moderate multicollinearity involving these variables. The VIF results are provided in the appendixVIII**.**

4.2.3.3 Testing for Heteroskedasticity

While we use survey (cross-sectional) data we may encounter problem of heteroscedasticity (Gujirati, 2004). We can evaluate the robust standard errors to correct the hetero-scedasticity problem. Hence, the order logit and quantile regression which are used in this paper is adjusted for hetero-scedasticity problems using the robust command in Stata version 14 (robust standard errors are estimated).

CHAPTER FIVE

5 SUMMERY, CONCLUSION AND RECOMMENDATION

5.1 Summaries

This study provides a detailed comparative analysis of poverty and income inequality between the Bole and Kirkos sub-cities in Addis Ababa, employing descriptive statistical methods. The findings revealed stark socioeconomic contrasts between these two distinct neighborhoods. Additionally, the study utilized econometric analysis to uncover the key determinants of poverty and income inequality within the combined study area.

The descriptive analysis painted a striking picture - Kirkos sub-city exhibited significantly higher levels of multidimensional poverty across various indicators, including nutrition, education, and living standards, compared to the more prosperous Bole sub-city. In Bole, a remarkable 67.2% of individuals were classified as not poor, while in Kirkos, this proportion plummeted to just 33.5%. Moreover, Kirkos sub-city grappled with a higher incidence of severe multidimensional poverty, with 53.3% of individuals categorized as severely deprived, a stark contrast to the 16.6% in Bole. The poverty incidence (H) in Kirkos sub-city soared to a concerning 0.66, compared to a more modest 0.32 in Bole, indicating that two-thirds of Kirkos residents lived below the poverty line, in sharp contrast to the one-third in Bole. Similarly, the poverty intensity (A) was higher in Kirkos at 0.59, versus 0.46 in Bole, suggesting a deeper level of deprivation across dimensions. Consequently, the Multidimensional Poverty Index (MPI) was substantially higher in Kirkos at 0.39, compared to 0.15 in Bole, underscoring the more severe multidimensional poverty in the Kirkos sub-city.

An examination of income inequality reveals that the Lorenz curves for both sub-cities indicate the existence of uneven income distribution, with the cumulative share of income increasing at a slower pace than the cumulative share of the population. Delving deeper, Bole sub-city exhibits a relatively moderate level of income inequality with a Gini coefficient of 0.345, while Kirkos sub-city has a higher Gini coefficient of 0.371, signaling more pronounced income disparities. Considering the combined data for both sub-cities, the Gini coefficient stands at 0.373, slightly above the national average.

The determinants of multidimensional poverty analysis provides valuable insights into the key factors shaping household well-being in the Bole and Kirkos sub-cities. Using ordered logistic regression, the study reveals that household composition and financial behaviors play a pivotal role, with married households, those with more dependents, and those without access to savings being more likely to experience higher levels of multidimensional deprivation. Furthermore, the analysis highlights the importance of community-based social and financial networks, as households that do not participate in traditional support groups are more vulnerable to multidimensional poverty. The education level and health status of the household head emerge as essential determinants, with higher education and healthier household heads being associated with a lower probability of experiencing severe multidimensional poverty.

The quantile regression analysis reveals several key drivers of household income inequality in the study area. Factors such as age, family size, dependency, education, occupation, home ownership, savings, and access to credit are found to have significant impacts on income levels across the distribution. Notably, higher education and more autonomous/private sector occupations are associated with greater incomes, particularly at the lower and middle quantiles. Conversely, larger family size and dependency levels tend to constrain incomes, especially at the upper end of the distribution.

5.2 Conclusions

This comprehensive study on poverty and income inequality in the Bole and Kirkos sub cities of Addis Ababa highlights a clear socioeconomic contrast between the two areas. The findings clearly demonstrate the severe widespread poverty and income gaps that plague the Kirkos sub city, in contrast to the relative prosperity and more even income distribution observed in Bole.

The significantly higher levels of poverty, lack of resources, and inequality in Kirkos require targeted development efforts. The fact that two-thirds of Kirkos residents are classified as poor, with over half experiencing severe multidimensional poverty, is a pressing issue that needs to be addressed. On the other hand, Bole appears to be a relatively prosperous area, with a majority of its population enjoying a decent standard of living. The statistical analysis provides valuable insights into the key drivers of poverty and inequality, highlighting the critical roles of household financial behaviors, social connections, education, and occupation. These findings can help

government and development practitioners design more effective, evidence-based programs and interventions to address the root causes of poverty and income disparities.

However, the study also raises important factors that have contributed to the poverty and income inequality of these two neighboring sub cities. Ultimately, this study serves as a call for the city of Addis Ababa to prioritize inclusive and equitable development, with a focus on uplifting the most marginalized communities like Kirkos.

5.3 Recommendations

The thorough study on poverty and income inequality in the Bole and Kirkos sub-cities has provided invaluable insights into the pronounced socioeconomic contrasts between these two distinct neighborhoods. The findings reveal the urgent need for targeted interventions to address the multifaceted challenges facing the more disadvantaged Kirkos sub-city, while also considering measures to promote greater equity across the broader study area.

Based on the findings of the study, the following recommendations are proposed:

i. Targeted Poverty Alleviation Interventions: Given the pronounced disparity in multidimensional poverty levels between the two sub-cities, with Kirkos exhibiting significantly higher incidence and intensity, the government should prioritize targeted interventions to alleviate poverty in the Kirkos sub-city. This could involve tailored social protection programs, improved access to essential services, and community-based development initiatives that address the multidimensional nature of poverty.

ii. Promoting Inclusive Financial Services: The analysis revealed that households without access to savings are more likely to experience higher levels of multidimensional poverty. The government should, therefore, prioritize the expansion of inclusive financial services, such as savings and credit facilities, to empower households in the Bole and Kirkos sub-cities to build financial resilience and better manage economic shocks.

iii. Strengthen Community-Based Support Networks: Support and empower community-based social and financial support systems, particularly in the Kirkos sub-city, to foster greater social cohesion and mutual assistance among residents.

iv. Addressing Drivers of Income Inequality: The quantile regression analysis identified key factors, such as house ownership and occupation, that drive income inequality across the distribution. The government should promote home ownership by implementing affordable housing programs, providing access to tailored financing, and incentivizing private developers to construct more affordable units, in order to enable low-income households to acquire their own homes and reduce this driver of inequality.

v. Strengthening Institutional Capacity and Governance: Effective implementation of the proposed recommendations will require institutional capacity and good governance practices. The government should invest in building the administrative, monitoring, and evaluation capabilities of local authorities to ensure efficient and transparent implementation of poverty alleviation and inequality reduction initiatives.

vi. This study was carried out based on a limited sample drawn from a small number of respondents. The conclusions are based on these sample households, so the study cannot generalize to the whole of Addis Ababa or the national level. As a result, further studies are needed in this area, working in collaboration with stakeholders for funding sources, to undertake similar study that uses a larger sample size and different econometric models.

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APPENDIX

APPENDIX **I:** ordered logistic regression

Ordered logistic regression — Number of obs = 280
LR chi2(13) = 452.41
Prob > chi2 = 0.0000
Log likelihood = -79.413685 — Pseudo R2 = 0.7402

povertyL_	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
Hsex_	-.5515684	.8057415	-0.68	0.494	-2.130793	1.027656
Hage	-.0400595	.0569993	-0.70	0.482	-.1517759	.071657
Hmar_	1.780258	.6840475	2.60	0.009	.43955	3.120967
Hfamsiz	-.6210975	.388728	-1.60	0.110	-1.38299	.1407954
Hdr	.7450343	.4226141	1.76	0.078	-.0832741	1.573343
Hedu	-.3063364	.1235134	-2.48	0.013	-.5484181	-.0642546
Hinc	-21.67898	1056.64	-0.02	0.984	-2092.656	2049.298
Hhs_	-1.331537	.5892196	-2.26	0.024	-2.486386	-.1766878
Hequb_	-2.311698	1.148086	-2.01	0.044	-4.561905	-.0614912
Hhome	-2.495579	1.555069	-1.60	0.109	-5.543458	.5523006
Hsav_	-4.022495	1.320705	-3.05	0.002	-6.611029	-1.433962
Hcred_	.763212	1.146862	0.67	0.506	-1.484597	3.011021
Hremi_	-.0857424	.8253767	-0.10	0.917	-1.703451	1.531966
/cut1	-54.69443	2113.283			-4196.654	4087.265
/cut2	-36.81048	1056.647			-2107.8	2034.179
/cut3	-34.21672	1056.646			-2105.205	2036.772

Ordered logistic regression — Number of obs = 280
LR chi2(13) = 452.41
Prob > chi2 = 0.0000
Log likelihood = -79.413685 — Pseudo R2 = 0.7402

povertyL_	Odds Ratio	Std. Err.	z	P>|z|	[95% Conf.	Interval]
Hsex_	.5760456	.4641439	-0.68	0.494	.1187431	2.794508
Hage	.9607323	.054761	-0.70	0.482	.8591808	1.074287
Hmar_	5.931389	4.057352	2.60	0.009	1.552009	22.66829
Hfamsiz	.5373544	.2088847	-1.60	0.110	.2508273	1.151189
Hdr	2.106514	.8902424	1.76	0.078	.920099	4.822742
Hedu	.736139	.090923	-2.48	0.013	.5778632	.9377662
Hinc	3.85e-10	4.06e-07	-0.02	0.984	0	.
Hhs_	.2640711	.1555958	-2.26	0.024	.0832101	.8380414
Hequb_	.0990928	.1137671	-2.01	0.044	.0104421	.9403612
Hhome	.0824487	.1282135	-1.60	0.109	.003913	1.737245
Hsav_	.0179082	.0236515	-3.05	0.002	.0013454	.2383627
Hcred_	2.145155	2.460198	0.67	0.506	.2265936	20.30813
Hremi_	.9178306	.757556	-0.10	0.917	.1820542	4.627266
/cut1	-54.69443	2113.283			-4196.654	4087.265
/cut2	-36.81048	1056.647			-2107.8	2034.179
/cut3	-34.21672	1056.646			-2105.205	2036.772

APPENDIX **II: 10th** quantile regression

.1 Quantile regression — Number of obs = 280
Raw sum of deviations 303683.8 (about 6000)
Min sum of deviations 149516.2 — Pseudo R2 = 0.5077

Hinc_continu	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
Hsex_	-1771.698	1178.958	-1.50	0.134	-4092.934	549.5379
Hage	1.886792	97.88037	0.02	0.985	-190.8288	194.6023
Hmar_	868.8679	1248.432	0.70	0.487	-1589.156	3326.892
Hfamsiz	998.1132	591.5771	1.69	0.093	-166.6363	2162.863
Hdr	-745.283	597.5354	-1.25	0.213	-1921.764	431.1977
Hedu	1341.509	191.6734	7.00	0.000	964.1258	1718.893
occu_	-2522.642	1079.155	-2.34	0.020	-4647.377	-397.9059
Hhs_	960.3774	1239.786	0.77	0.439	-1480.623	3401.377
Hequb_	868.8679	1543.032	0.56	0.574	-2169.191	3906.927
Hhome_	6861.321	1651.867	4.15	0.000	3608.978	10113.66
Hsav_	4249.057	1369.337	3.10	0.002	1552.984	6945.129
Hcred_	2372.642	1515.072	1.57	0.119	-610.3674	5355.65
_cons	-13115.09	4495.761	-2.92	0.004	-21966.75	-4263.441

APPENDIX **III:** 25th quantile regression

.25 Quantile regression — Number of obs = 280
Raw sum of deviations 712136.5 (about 7100)
Min sum of deviations 288254.7 — Pseudo R2 = 0.5952

Hinc_continu	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
Hsex_	-932.9983	772.9805	-1.21	0.228	-2454.911	588.9142
Hage	-20.93802	64.17502	-0.33	0.744	-147.2915	105.4154
Hmar_	1252.931	818.5316	1.53	0.127	-358.6662	2864.529
Hfamsiz	876.0469	387.8661	2.26	0.025	112.3818	1639.712
Hdr	-1003.35	391.7726	-2.56	0.011	-1774.707	-231.9935
Hedu	489.9497	125.6702	3.90	0.000	242.5191	737.3804
occu_	-933.8358	707.5451	-1.32	0.188	-2326.913	459.2417
Hhs_	546.9012	812.8624	0.67	0.502	-1053.534	2147.337
Hequb_	582.0771	1011.685	0.58	0.566	-1409.819	2573.973
Hhome_	7962.312	1083.043	7.35	0.000	5829.921	10094.7
Hsav_	4293.132	897.8024	4.78	0.000	2525.459	6060.805
Hcred_	4918.76	993.3534	4.95	0.000	2962.958	6874.563
_cons	-611.3903	2947.634	-0.21	0.836	-6414.954	5192.174

APPENDIX **IV:** median regression

```
Median regression                                   Number of obs =        280
  Raw sum of deviations  1216491 (about 12000)
  Min sum of deviations 383411.4                    Pseudo R2     =     0.6848
```

Hinc_continu	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
Hsex_	-1035.411	822.26	-1.26	0.209	-2654.349	583.5277
Hage	89.23513	68.26634	1.31	0.192	-45.1737	223.644
Hmar_	2001.416	870.7151	2.30	0.022	287.0754	3715.757
Hfamsiz	392.3513	412.5935	0.95	0.342	-419.9994	1204.702
Hdr	-1553.824	416.7491	-3.73	0.000	-2374.357	-733.2917
Hedu	701.1331	133.682	5.24	0.000	437.9282	964.3381
occu_	-2354.108	752.653	-3.13	0.002	-3835.998	-872.2177
Hhs_	-269.1218	864.6845	-0.31	0.756	-1971.589	1433.346
Hequb_	1179.887	1076.183	1.10	0.274	-938.9977	3298.771
Hhome_	8878.187	1152.089	7.71	0.000	6609.851	11146.52
Hsav_	5427.762	955.0397	5.68	0.000	3547.395	7308.129
Hcred_	4232.295	1056.682	4.01	0.000	2151.805	6312.784
_cons	-4087.819	3135.554	-1.30	0.193	-10261.37	2085.738

APPENDIX **V: 75th** quantile regression

```
.75 Quantile regression                             Number of obs =        280
  Raw sum of deviations  1246746 (about 24000)
  Min sum of deviations 329378.6                    Pseudo R2     =     0.7358
```

Hinc_continu	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
Hsex_	500.9191	1261.785	0.40	0.692	-1983.395	2985.233
Hage	142.9228	104.7569	1.36	0.174	-63.33194	349.1775
Hmar_	4068.015	1336.141	3.04	0.003	1437.302	6698.727
Hfamsiz	-492.6471	633.1383	-0.78	0.437	-1739.226	753.9317
Hdr	-1295.496	639.5152	-2.03	0.044	-2554.63	-36.36216
Hedu	482.5368	205.1394	2.35	0.019	78.64011	886.4334
occu_	-2307.904	1154.971	-2.00	0.047	-4581.913	-33.89588
Hhs_	-788.1434	1326.887	-0.59	0.553	-3400.635	1824.349
Hequb_	1924.173	1651.438	1.17	0.245	-1327.325	5175.67
Hhome_	10982.08	1767.919	6.21	0.000	7501.242	14462.91
Hsav_	6005.515	1465.54	4.10	0.000	3120.03	8890.999
Hcred_	3986.673	1621.514	2.46	0.015	794.0932	7179.252
_cons	-2368.566	4811.61	-0.49	0.623	-11842.09	7104.958

APPENDIX **VI:** 90th quantile regression

.9 Quantile regression — Number of obs = 280
Raw sum of deviations 689698.2 (about 35000)
Min sum of deviations 174189.6 — Pseudo R2 = 0.7474

Hinc_continu	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
Hsex_	13.27434	933.3916	0.01	0.989	-1824.47	1851.018
Hage	243.3628	77.4928	3.14	0.002	90.78814	395.9375
Hmar_	3165.929	988.3956	3.20	0.002	1219.888	5111.97
Hfamsiz	-1433.628	468.3571	-3.06	0.002	-2355.771	-511.4853
Hdr	-179.2035	473.0744	-0.38	0.705	-1110.634	752.2272
Hedu	183.6283	151.7496	1.21	0.227	-115.1498	482.4065
occu_	-887.1681	854.3769	-1.04	0.300	-2569.341	795.0048
Hhs_	-772.1239	981.5499	-0.79	0.432	-2704.686	1160.439
Hequb_	2026.549	1221.633	1.66	0.098	-378.711	4431.808
Hhome_	17070.8	1307.799	13.05	0.000	14495.89	19645.71
Hsav_	6276.549	1084.117	5.79	0.000	4142.043	8411.054
Hcred_	7073.009	1199.497	5.90	0.000	4711.333	9434.685
_cons	-42.0354	3559.336	-0.01	0.991	-7049.971	6965.901

APPENDIX **VII:** Test of mdel specification with linktest

Ordered logistic regression — Number of obs = 280
LR chi2(2) = 452.75
Prob > chi2 = 0.0000
Log likelihood = -79.242621 — Pseudo R2 = 0.7407

povertyL_	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
_hat	1.395527	.7081296	1.97	0.049	.0076184	2.783436
_hatsq	.0043697	.0074157	0.59	0.556	-.0101649	.0189042
/cut1	-63.21191	17.97756			-98.44728	-27.97654
/cut2	-45.16738	15.81731			-76.16872	-14.16603
/cut3	-42.53167	15.70904			-73.32082	-11.74253

APPENDIX **VIII:** variance inflation factor

Variable	VIF	1/VIF
Hinc	7.48	0.133609
Hhome	6.04	0.165698
Hfamsiz	5.35	0.186842
Hcred_	4.06	0.246269
Hsav_	3.45	0.289980
Hage	3.37	0.296875
Hdr	2.95	0.338476
Hedu	2.20	0.453768
Hremi_	2.09	0.479002
Hhs_	1.77	0.565965
Hmar_	1.69	0.591842
Hsex_	1.62	0.617823
Hequb_	1.47	0.681673
Mean VIF	3.35	

Variable	VIF	1/VIF
Hfamsiz	5.32	0.187897
Hhome_	4.04	0.247768
Hcred_	3.69	0.271300
Hage	3.37	0.296403
Hsav_	3.31	0.302332
Hdr	2.84	0.352291
Hedu	2.43	0.411874
Hhs_	1.77	0.565804
occu_	1.66	0.602456
Hmar_	1.62	0.616753
Hsex_	1.62	0.617677
Hequb_	1.47	0.679680
Mean VIF	2.76	

በድህነት እና በቤተሰብ የገቢ አለመመጣጠን ላይ ያተኮረ የዳሰሳ ጥናት መጠይቅ

ይህ የዳሰሳ ጥናት የተዘጋጀው በአዲስ አበባ ከተማ ውስጥ በቦሌ እና ቂርቆስ ክፍለ ከተሞች መካከል ስላለው የድህነት እና የገቢ ልዩነት ንፅፅር ትንተና ጥናትና ምርምር ለማድረግ ነው። ጥናቱም በአዲስ አበባ ዩኒቨርሲቲ የልማትና ኢኮኖሚክስ የማስተርስ ዲግሪ የመመረቂያ ጽሁፍ ማሟያ ነው። ስለዚህ በዚህ ጥናት ውስጥ ከተሳተፉት መካከል አንዱ ለመሆን ተመርጠዋል እና እውነተኛ መልስዎን በፈቃደኝነት እንዲሰጡ እጠይቃለሁ። የእርስዎ ምላሾች ለሌላ አካል እንደማይጋሩ ወይም ለሌላ ዓላማዎች ጥቅም ላይ እንደማይውሉም በማረጋገጥ የእኔ ስኬት በከፍተኛ ደረጃ በእርስዎ ትርጉም ባለው እና ጠቃሚ መረጃ ላይ የተመሰረተ ነው ብዬ አምናለሁ። በዚህ ዳሰሳ ላይ ምንም አይነት ጥያቄ ካሎት እባክዎን የዚህን ጥናት ባለቤት በሚከተለው አድራሻ ያነጋግሩ። ስም፡ ወንዶሰን ጸጋው; ስልክ፡ +251-9-49-93-01-13; ኢሜል ፡ Ronsetsegaw@gmail.com

ክፍል I:-መጠይቁን ለመሙላት የሚያስችሉ መመሪያዎች፡- ይህ መጠይቅ ድህነትን እና የገቢ አለመመጣጠንን ለመተንተን የተለያዩ ገጽታዎችን እንድንረዳ የሚረዱን በርካታ የጥያቄ ምድቦችን ያካትታል። ከእነዚህ ጥያቄዎች ውስጥ ለአንዱም ትክክለኛ ወይም የተሳሳተ መልስ የለም። በተለያዩ የመጠይቅ አይነቶች የሚገኙ ጥያቄዎችም አሉት፤ ሳጥኑ ላይ ምልክት እንዲያደርጉ ወይም የመረጡትን ቁጥር እንዲጽፉ ወይም አስተያየትዎን በተሰጠው ቦታ ላይ እንዲጽፉ በትህትና እንጠያቃለን።

ክፍል II፡ የቃለ መጠይቆች

የጥናት ቦታ (ክፍለ ከተማ)፡ _____ ወረዳ፡ _____

የቤተሰብ ቅንብር፡-

1. እርስዎ የቤተሰቡ መሪ ነዎት? ☐ አዎ ☐ አይ
2. የቤተሰብ አስተዳዳሪ ጾታ፡ ☐ ወንድ ☐ ሴት
3. የቤተሰብ አስተዳዳሪ የትምህርት ደረጃ፡- ☐ ማንበብና መጻፍ የማይችል
   ☐ የመጀመሪያ ደረጃ ትምህርት ቤት ያጠናቀቀ ☐ ሁለተኛ ደረጃ ትምህርት ቤት ወይም መሰናዶ
   ☐ ቴክኒክ እና ኮሌጆች ዲፕሎማ ☐ የመጀመሪያ ዲግሪ
   ☐ ሁለተኛ ዲግሪ ☐ ሶስተኛ ዲግሪ
4. የጋብቻ ሁኔታ፡ ☐ያላገባ ☐ ያገባ ☐ የተፋታ ☐ ባል/ሚስት የሞተበት
5. ሃይማኖት/ቤተ እምነት፡ ☐ ኦርቶዶክስ ክርስቲያን ☐ እስላማዊ ☐ ካቶሊክ ክርስቲያን
   ☐ ፕሮቴስታንት ☐ ሌሎች (ይግለጹ)_____
6. የቤተሰብ ኃላፊ ዕድሜ፡- _____
7. የቤተሰብ መጠን:_____

8. እድሜያቸው ከ65 በላይ እና ከ18 በታች የሆኑ ቤተሰቦች/ሰዎች ቁጥር፡_____

9. እርስዎን ጨምሮ ምን ያህል ሰዎች በቤተሰብዎ ውስጥ በገንዘብ ይደግፋሉ? _____

የቤተሰብ ገቢ

10.የአሁኑን የስራ ሁኔታዎን በተሻለ ሁኔታ የሚገልጸውን መልስ ይምረጡ፡-

☐ መንግስት ሲቪል ሰራተኛ ☐ የመንግስት ልማት ድርጅቶች ሰራተኛ ☐ ግል ድርጅት ሰራተኛ ☐ መንግሥታዊ ያልሆነ ድርጅት ሠራተኛ ☐ ራሱን የቻለ (የግል) ☐ ሌላ (ይግለጹ) _____

11.ምን ያህሉ ቤተሰብዎ ነው የተቀጠሩት (ገቢ በሚያስገኝ ስራ ላይ ያሉት)? _____

12.ገቢዎት በቂ ነው ብለው ያስባሉ? ☐ አዎ ☐ አይ

13.አሁን ያለዎትን የገቢ ሁኔታ እንዴት ይገመግሙታል? ☐ደካማ ☐ ፍትሃዊ ☐ ጥሩ ☐ በጣም ጥሩ

14.ካሁን በፊት ብድር ወስደው ያዉቃሉ? ☐ አዎ ☐ አይ

15.ለጥያቄ 14 "አዎ" ካሉ ለምን ብድሩ አስፈለገዎት? ☐ ሥራ ለመጀምር ☐ ለመኖሪያ ቤት ☐ኪራይ ☐ለምግብ ☐ለሕክምም ☐ የትምህርት ክፍያ ☐ሌሎች ይግለጹ_____

16.ብድሩን ያገኙበትን ተቋም ይምረጡ ? ☐ የማይክሮ ክሬዲት እና ቁጠባ ኢንስቲትዩት ☐ ባንክ ☐ ዘመዶች እና ጓደኞች ☐ ሌላ የሚገለጽ ከሆነ_____

17.ከሀገር ውጪ ገንዘብ የሚልክልዎት አለ? ☐ አዎ ☐ አይ

18.ለጥያቄ 17"አዎ"ካሉ፣በዓመት ምን ያህል ገንዘብ ይላክልዎታል (በግምት)? _____

19.እንደ አቁብ፣ እድር፣ ወዘተ ባሉ ማህበራዊ ካፒታል ውስጥ ይሳተፋሉ? ☐አዎ ☐ አይ

20.ለጥያቄ 19 'አዎ' ካሉ በወር ስንት ብር ነው የሚያዋጡት? (በግምት)_____

21.በአማካይ በወር ከአጠቃላይ ገቢዎት ውስጥ ምን ያህል ብር ያገኛሉ? (ግምታዊ) _____

22.ሌሎች የቤተሰብ አባላትን ጨምሮ የቤተሰብዎ አጠቃላይ አማካይ ገቢ በወር ስንት ብር ነው? _____

23.ከገቢዎ ላይ ገንዘብ ይቆጥባሉ? ☐ አዎ ☐ አይ

24.ለጥያቄ 23 "አዎ" ካሉ በወር ምን ያህል ገንዘብ ይቆጥባሉ (በግምት)? _____

25.በአማካይ በወር ምን ያክል ብር ወጭ ያወጣሉ? _____

የጤና ሁኔታ እና መኖሪያ ቤት

26.ከቤተሰብዎ አባላት መካከል በተደጋጋሚ በበሽታዎች የሚታመም አለ? ☐አዎ ☐አይ

27.ለጥያቄ 27 "አዎ" ካሉ ስንት የቤተሰብ አባላት ታመዋል?_____

28.በሽታው በእሱ/ሷ የስራ እንቅስቃሴ ላይ የጎላ ተጽእኖ ይኖረዋል? ☐አዎ ☐ አይ

29.የመኖሪያ ቤትዎ ባለቤት/ ይዞታ እነማን ናቸው? ☐ የራስዎ ☐ የቀበሌ ኪራይ☐ የግል ኪራይ ☐ ሌሎች (ይግለጹ) _____

<u>የገቢ አለመመጣጠን</u>

30.በአካባቢያችሁ በተለያዩ አባወራዎች መካከል ከፍተኛ የገቢ ልዩነት እንዳለ ይሰማዎታል?

☐ አዎ ☐ አይ ☐ እርግጠኛ አይደለሁም።

31.በክፍለ ከተማችሁ ያለው የሀብት ክፍፍል ፍትሃዊ ነው ብለው ያስባሉ? ☐አዎ ☐ አይ

32.ከላይ ላለው ጥያቄ መልስዎ 'አይደለም' የሚል ከሆነ በክፍለ ከተማዎ ውስጥ ለገቢ አለመመጣጠን አስተዋጽኦ የሚያደርጉ ልዩ ልዩ ኢንዱስትሪዎች ወይም ዘርፎች አሉ? ከሆነ፣ እባክዎን የተወሰነውን ኢንዱስትሪ ወይም ዘርፍ ይፃፉ _____

33.የገቢ አለመመጣጠን የግለሰብ ጥረት ወይም የሥርዓት ምክንያቶች ውጤት ነው ብለው ያምናሉ?

☐ በዋናነት የግለሰብ ጥረት ☐ የመንግስት ፖሊሲ ☐የሁለቱም ጥምረት ☐እርግጠኛ አይደለም

34.በክፍለ ከተማዎ ስላለው የገቢ አለመመጣጠን ደረጃ ከሌላው የከተማው ክፍል ጋር ሲወዳደር ምን አስተያየት አለዎት?☐ ከፍተኛ ☐ ዝቅተኛ ☐ ተመሳሳይነት ☐ እርግጠኛ አይደለም

35.የመንግስት ፖሊሲ የገቢ አለመመጣጠንን ውጤታማ በሆነ መንገድ ሊቀንስ ይችላል ብለው ያምናሉ?

☐ አዎ ☐ አላምንም ☐ በ ተወሰነ ደረጃ ☐ እርግጠኛ አይደለሁም።

36.የገቢ አለመመጣጠንን በመቀነስ ረገድ የግብር ፖሊሲዎችን ሚና እንዴት ይገመግማሉ?

☐ በጣም ውጤታማ ☐ ውጤታማ ያልሆነ ☐ እርግጠኛ አይደለሁም

37.የገቢ አለመመጣጠን ለማህበራዊ አለመረጋጋት አስተዋጽኦ ያደርጋል ብለው ያምናሉ?

☐አዎ፣ በጉልህ ☐አዎ፣ በተወሰነ ደረጃ ☐አይ፣ በፍፁም ☐ እርግጠኛ አይደለሁም።

38.በክፍለ ከተማዎ ውስጥ የገቢ አለመመጣጠን ለመቀነስ የታለሙ ጥረቶች ወይም ፖሊሲዎች አይተዋል?

☐አዎ ☐ አይ

39.ከላይ ለተጠቀሱት ጥያቄዎች መልስዎ 'አዎ' ከሆነ፣ እባክዎን የገቢ አለመመጣጠንን ለመቀነስ የተደረጉትን ሁለት ነገሮች በዝርዝር ይጥቀሱ። _____

<u>የድህነት አመልካቾች</u>

ልኬት	አመላካቾች	የድህነት መለኪያዎች	እባክዎ ምልክት ያድርጉ[✓]	
			አዎ	አይ
ጤና	የሕፃናት ሞት	ከ18 ዓመት በታች የሆነ ልጅ በቤተሰብዎ ውስጥ በሂወት አልፎአል ከዳሰሳ ጥናቱ በፊት ባሉት አምስት ዓመታት ውስጥ?		
	የተመጣጠነ ምግብ	በእርስዎ ቤተሰብ ውስጥ የምግብ እጥረት ያለበት አዋቂ ወይም ልጅ አለ?		
ትምህርት	የትምህርት ዓመታት	እድሜው 10 ዓመት ወይም ከዚያ በላይ የሆነ የቤተሰብ አባል የስድስትኛ ክፍል ትምህርቱን ያጠናቀቀ የለም?		
	የትምህርት ቤት መገኘት	የእርስዎ ቤተሰብ ውስጥ እድሜ ለትምህርት የደረሰ ልጅ እስከ 15 አመት ድረስ ትምህርት አይማርም?		
የኑሮ ደረጃ	በነዳጅ ማብሰል	የእርስዎ ቤተሰብ በእንጨት ወይም በከሰል ያበስላል?		
	የንፅህና አጠባበቅ	የቤተሰብዎ ሻውር አና ሽንት ቤት አልተሻሻለም? ወይም ከሌሎች ቤተሰቦች ጋር ይጋራል ወይስ ሁለቱም?		
	ንፁህ ውሃ መጠጥ	የእርስዎ ቤተሰብ የተሻሻለ የመጠጥ ውሃ ለማግኘት ከቤት ከ 30 ደቂቃ በላይ የእግር መንገድ ጉዞ አለው?		
	ኤሌክትሪክ	የእርስዎ ቤተሰብ ኤሌክትሪክ አለው?		
	መኖሪያ ቤት	የቤትዎ ጣሪያ ፣ ግድግዳ እና ወለል በቂ አይደሉም ወይንስ በቀላል ቁሳቁሶች የተገነቡ ናቸው?		
	ንብረቶች	የእርስዎ ቤተሰብ ከእነዚህ ንብረቶች ውስጥ ከአንድ በላይ ማለትም ሬዲዮ፣ ቲቪ፣ ስልክ፣ ኮምፒውተር፣ የእንስሳት ጋሪ፣ ብስክሌት፣ ሞተር ሳይክል ወይም ማቀዝቀዣ እና መኪና ወይም የጭነት መኪና አለው?		

ስለ መልካም ትብብርዎ እናመሰግናለን !!