TRENDS AND DETERMINATES OF MULTI-DIMENSIONAL URBAN POVERTY IN ETHIOPIA

THESIS

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BY

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DECLARATION

I, ETAFERAHU CHEHA, hereby declare that this dissertation is my original work and has never been any one submitted before

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COLLAGE OF DEVELOPMENT STUDIES

URBAN DEVELOPMENT AND LIVELIHOODS (UDL)

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APPROVAL

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ACRONYMS

UNICEF	United Nations Children's Fund
GDP	Gross Domestic Product
OPHI	Oxford Poverty and Human development Initiative
MPI	Multi-dimensional Poverty Index
MDG	Millennium Development Goals
SDG	Sustainable Development Goals
SNNPR	Southern Nation and Nationality People Regions
WBG	World Bank Groups
UNDP	United Nations Development Programmed
DHS	Demographic of Health Surveys
MICS	Multiple Indicator Cluster Surveys
WHS	World health Survey
OLS	Ordinary least Squares
ESS	Ethiopia socio-economic Survey
LSMS	Living Standards Measurement Study
EAS	Enumeration Areas
CSA	Central Statistical Agency
AF	Alkire - Foster
BMI	Body Mass Index

Abstract

The objective of the study is to estimate determinants of multi-dimensional urban poverty in Ethiopia. The study used secondary data to answer the research questions, it was collected by the Central Statistical Agency of Ethiopia in all urban region and city administration of Ethiopia that is Integrated Surveys on Agriculture Ethiopia Socioeconomic Survey (ESS2 (2013/2014) – ESS3 (2015/2016).The study has used three types of analysis. These are descriptive analysis, econometric analysis using the Tobit regression models and multi-dimensional poverty estimation.

The study found variable that is types of school education positively correlated with the probability of being multi-dimensionally poor people and variables these are age, marital status, household head education, number of rooms, access for own house and access to loan that negatively correlated to the probability of being multi-dimensionally poor.

The finding of the tobit model shows that, factors such as accessed for own house, number of rooms, types of school educated, and access to loan positively and statistically significantly.

Finally, the paper recommends that future studies should study multi-dimensional urban poverty other than the household level and in different points of view that is gender, organization and in rural to get a wider view of poverty profiles and policy implications.

Keywords: multidimensional poverty, urban households, deprivation, determinates of multidimensional poverty, regions, Ethiopia

Chapter One

1. Introduction

1.1 Background of the study

Poverty is described in different ways. Historically, poverty has been related to income, which still remains the core of the concept today. It has evolved from the 19th century idea about 'subsistence needs' what a person needs to survive, to the mid-20th century conceptualization of lacking 'basic needs', extending the subsistence idea by also including basic facilities and services such as healthcare, sanitation and education, to the late 20th century understanding of poverty as 'relative deprivation', including income and other resources, as well as social conditions: (Ludi and Bird, 2007).

However, Poverty was defined by one-dimensional measures, such as Income. As a result of conceptual evolution in understanding poverty, it was realized that no one indicator alone can capture the multiple aspects that constitute poverty. The Multidimensional Poverty, It includes several factors that constitute poor people's experience of deprivation such as poor health, lack of education, inadequate living standard, lack of income (as one of several factors considered), disempowerment, poor quality of work and threat from violence(Arjun.R, 2013).

Multidimensional poverty is much more intense in rural areas. Globally there are 1.1 billion people living in multidimensional poverty in rural areas and 0.2 billion people living in multidimensional poverty in urban areas. The starkest differences between rural and urban poverty are in countries of Sub-Saharan Africa (OPHI, 2018).

About 1.3 billion People live in multidimensional poverty in the 105 developing countries. This represents 23%, nearly a quarter of the population of the 105 countries. They are deprived of at least one-third of overlapping deprivations in health, education, and living standards, lacking such things as clean water, sanitation, adequate nutrition, or primary education (OPHI, 2018).

Multidimensional poverty is found in all developing regions of the world, but it is particularly acute in Sub-Saharan Africa and South Asia. These two regions account together for 83% of all

multi-dimensionally poor people in the world more than 1.1 billion. Also, Two-thirds of all multi-dimensionally poor people live in middle-income countries. About 889 million people in middle-income countries experience deprivations in nutrition, schooling, and sanitation, just like those in low-income countries (OPHI, 2018).

In India, 271 million people moved out of poverty between 2005/6 and 2015/16, but the country still has the largest number of people living in multidimensional poverty in the world (364 million people). After India, the countries with the largest number of people living in multidimensional poverty are Nigeria (97 million), Ethiopia (86 million), Pakistan (85 million), and Bangladesh (67 million) (OPHI, 2018).

In 2010, the urban poverty rate for Ethiopia was 25.7 %. An urban poverty rate of Ethiopia fell gradually from 33.2 % in 1995 to 25.7 % in 2010. Among major towns, Addis Ababa plays a dominant role. About 35% of the urban population lives in the seven major urban centers in Ethiopia, within the 25% of the urban population living in the capital city and that diplomatic center of Africa. In Addis Ababa, with an estimated population of 4 million people, is 14 times bigger than Dire Dawa, the second-largest city in the country and high rate of unemployment (31%), concentration of slum dwellings, and poor housing, infrastructure, and sanitary development, characterize Addis Ababa more than the few good features it hold. Addis Ababa the poverty level is estimated at 60%, which implies that 1.7 million out of the 2.8 million people residing in Addis Ababa are categorized as below the poverty line, So this study is used to determine and measure multi-dimensional urban poverty in the small and large town of Ethiopia (world wide data, 2010).

1.2. Statement of the Problem

Multi-dimensional urban poverty is a serious social and economic issue in Ethiopia that has turned out to be a great global social and economic problem. One of the major challenges of urban development in Ethiopia is the reduction of poverty. Poverty has been associated, for example, with poor health, low levels of education or skills, unwillingness to work, high rates of disorderly behavior, and improvidence. While these attributes have often been found to exist with poverty, their inclusion in a definition of poverty would tend to unclear the relation between them and the inability to provide for one's basic needs and also all nations, whether industrialized or developing, face a broad collection of challenges that will require the application of up-to-date scientific knowledge and technology. Such challenges include stimulating economic growth, justifying environmental problems; safely adopting new technologies, and quickly responding to sudden outbreaks of new diseases. No nation can now afford to be without access to a credible independent science and technology research capacity that would help it to develop informed policies and take effective measures towards poverty eradication (OPHI, 2015).

The Ethiopian government is adopted different policies to eradicate poverty such as MDG, SDG, poverty reduction papers and other policies at different times. However, headcount multidimensional poverty in Ethiopia is still very high about 85% (OPHI, 2015) and also the rate of poverty in Addis Ababa, Dire Dawa, Tigray, SNNPR, Amhara is 8.5%,33.8%, 53.7%,57.4%,58.8% respectively(OPHI,2017).

The poverty in Addis Ababa is quite complex that faces significant development challenges. For example, unemployment and poverty levels in Addis Ababa remain high, estimated at 23.5% and 22% respectively (World Bank Group) and a study by OPHI (2016) shows that the headcount index is 80%. More than one in four households report an unemployed adult compared to one in 10 households in other urban areas, and the informal sector employs about 30% of the economically active labor force in the city (world bank group).

Multi-dimensional Poverty has a number of consequences on food, security, on economic growth and environment, which result from increased crime, limited access to education and health

issue, housing problem, increase unemployment, etc., Hence reduction poverty is important(world bank group).

To reduce multidimensional urban poverty, able to have better understanding determinants of multidimensional poverty, in Ethiopia particularly in Addis Ababa multidimensional urban poverty is the major problems. Recently, the national government and the local government of Addis Ababa and region of Ethiopia have formulated policy to reduce multidimensional urban poverty and providing infrastructural improve the security of the tenure improves housing condition, improves water supply and sanitation and also improve the urban environment to create sustainable health condition in the city. However, biased mostly toward poverty is seen only in the income dimension (World Bank group).

In this regard, there are few analyses of poverty in Ethiopia have generally focused on the determinant of urban poverty such as Esubalew (2006) a household level analysis determinants of urban poverty in Deber Markos and Mohammed (2017) Measurement and Determinants of Urban Poverty in Case of (SNNPR), Ethiopia. They do not evaluate trend of the headcount index and the multidimensional poverty index, and also they don't measure poverty in a multi-dimensionally way simply they focus in income dimension.

However, those studies considered income as the only measurements for poverty and they didn't consider different dimensions of life such as health poverty, education, living standard, empowerment….etc. Poverty is understood in a multi-dimensional way, which includes, education poverty, health poverty, and the standard of living. Hence, this study is responsible to this gap.

Some of poverty literature in Ethiopia dominates their analysis shows multidimensional poverty index in combined way such as multidimensional poverty dynamics in Ethiopia, (llanna and Jolliffe ,2017) don't measure multi-dimensional poverty within each region and also paper those are (llanna and Jolliffe, 2017) and Gebretsadik (2013) multidimensional measurements of poverty analysis in urban area don't evaluate determinates multi-dimensional urban poverty by using econometric model.

It is necessary to study multi-dimensional urban poverty per region in order to see possible differences and how to eradicate it. This paper on determinates of multi-dimensional urban

poverty in Ethiopia in order to identify and see the ways of updating the policy on multi-dimensional poverty. Therefore, this research is responsible for this modification and gap.

1.3 Objective of the study

1.3.1 General objective

The general objective of this study was to find out trends and determinates of multi-dimensional urban poverty in Ethiopia.

1.3.2 Specific objectives of the study are:

- To measure the multi-dimensional poverty index
- To see trends of multi-dimensional urban poverty of Ethiopia.
- To show the number of households deprived in different life indicators.
- To identify the determinants of multi-dimensional urban poverty in Ethiopia.

1.4 Research questions

- What are the indicators of multi-dimensional poverty index?
- How to seen the trend of multi-dimensional urban poverty in Ethiopia?
- What are determinates of multi-dimensional urban poverty in Ethiopia?
- Which households is deprived at different life indicator?

1.4. Scope of the study

The scope of this study assesses trends and determinates of multi-dimensional urban poverty in Ethiopia; it includes Tigray, Afar, Amhara, Oromia, SNNPR, Somalia, Benshangul Gumuz, Gambella and Hariri regions, In addition to this both city Administrations: Addis Ababa and Dire Dawa. It used a two-period data ESS (2013/2014) and ESS (2015/2016). It includes three dimensions which are education, health and living standards.

1.5. Significance of the study

Assessing trends and determinates of multi-dimensional urban poverty will have importance on the justification of the following reasons

Firstly, it is important for governments as well as policymakers to know and understands trend and determinates of multi-dimensional urban poverty in Ethiopia.

Secondly, the finding of the study helps to identify the determinate of multi-dimensional urban poverty and give a possible recommendation to solve the problems faced.

Thirdly, no similar study has been conducted in this area before therefore; another researcher used as a reference document to make further study in the area.

Fourthly, it can give input for NGOs or any interested stakeholders who in one or other way are engaged in developments of the town.

Chapter Two

2. Literature Review

2.1. Theoretical Literature Review

2.1.1. Definition and concept

Poverty is the inability to attain a minimum level of standard of living. This definition considers income and expenditure per capita to be adequate yardsticks for measuring welfare. The definition is used to determine who fall below or above the minimum standard of living and classify them as poor or non-poor respectively, (World Bank, 1990).

Poverty involves the lack, deficiency and loss of social, economic, cultural, political and other entitlements, rights and benefits. These are the entitlements that individuals, household and communities should enjoy in order to exist and survive in wellbeing with social dignity (UNDP, 1998).

UNDP (2000) gives a comprehensive summary of the basic definitions of poverty. They are divided into two major categories, income and human poverty. Income poverty is further divided into extreme poverty and overall poverty. It is defined as the lack of income necessary to satisfy basic food needs usually defined on the basis of minimum calorie requirements. Overall poverty is the lack of income necessary to satisfy essential non-food needs such as shelter, clothing, and energy. On the other hand, human poverty is the lack of basic human capabilities, illiteracy, malnutrition abbreviated life span, poor material health, and illness from preventable diseases.

Department for International Development (2001), analysis about concepts of poverty has five main findings. First, many factors converge to make poverty a complex, multidimensional phenomenon. Second, as expected, poverty is routinely defined as the lack of what is necessary for material well-being — especially food but also housing, land, and other assets. Poverty is the lack of multiple resources leading to physical deprivation. Third, poor people's definitions reveal important psychological aspects of poverty. Poor people are acutely aware of their lack of voice,

power, and independence, which subject them to exploitation. Their poverty also leaves them vulnerable to rudeness, humiliation, and inhumane treatment by both private and public agents of the state from whom they seek help. Poor people also speak about the pain brought about by their unavoidable violation of social norms and their inability to maintain cultural identity through participating in traditions, festivals, and rituals. Their inability to fully participate in community life leads to a breakdown of social relations. Fourth, the absence of basic infrastructure — particularly roads, transport, water, and health facilities — emerged as critical. While literacy is viewed as important, schooling receives mixed reviews, occasionally highly valued but often notably irrelevant in the lives of poor people. Finally, poor people focus on assets rather than income and link their lack of physical, human, social, and environmental assets to their vulnerability and exposure to risk, (Department for International Development, 2001).

2.1.2 Theories of poverty

There are a number of compelling theories of poverty which frequently caught the attention of researchers when a need arise to anchor the causes of poverty on theories. Human capital theories of poverty developed by Becker (1975) and Mincer (1974) explains both individuals' decisions to invest in human capital (education and training) and the pattern of individuals' lifetime earnings, and their different levels of investment in education and training determine the outcome of an individual either to be poor or non-poor. This theory also explains why the minorities within the society such as women among others have higher incidence of poverty due to lower earnings from labor market which in turn caused by low investment in human capital. But, this theory is too shallow to explain the causes of poverty since earnings are one of the determinants of poverty (Tasew *et al*, 2013).

The other dominant theory tried to relate the causes of poverty on the basis of geographical disparities. This theory explains why poverty is most intense in certain areas and why some regions lack the economic base to compete. More specifically, remoteness, lack of certain types of natural resource endowments, political disadvantageousness, and weak integration can all contribute to the creation of intra-country spatial poverty traps (Morrill & Wohlenberg, 1971).

David Elesh (1970), discussed two categories of theories of poverty to hit the score regarding the causes of poverty (i.e. cultural and structural). Cultural theories find the explanation for poverty in the traits of the poor themselves. These theories assert it is the valuation, attitudinal, and behavioral patterns of the poor which prevent them from being socially mobile. In contrast, structural theories explain poverty in terms of the conditions under which the poor live: unemployment, underemployment, poor education, and poor health…etc. The distinctive traits of the poor so central to the explanation of the cultural Theorists are, for the structural theorists, responses or adaptations to the hostility of the structural conditions the poor face.

The frame of reference for both theories extends across national, cultural, ethnic, racial, and other boundaries. But both cultural and structural theorists have recognized, explicitly or implicitly, that there are certain societal characteristics necessary to the development of the poverty syndrome. Such characteristics are high under- and unemployment for unskilled labor, low wages, little social organization among the poor, a bilateral kinship system, a value system stressing the individual accumulation of wealth. David Elesh (1970).

Since poverty is multifaceted and multidimensional, it is worthy to construct model of poverty determination taking in to account various causes of poverty mentioned in theories and identifies the significant causes for a specific area. David Elesh (1970).

2.1.3 Challenges to Ending Extreme Poverty

The global poverty rate was expected to fall into the single digits for the first time in 2015 at 9.6 percent. While this is good news, when we look ahead, three major challenges stand out for development: the depth of remaining poverty, the unevenness in shared prosperity, and the persistent disparities in the non-income dimensions of development. There are three major challenges to ending extreme poverty (The World Bank, 2015).

First challenge: while the decline in poverty rates has been impressive, poverty remains unacceptably high and deep, especially in Sub-Saharan Africa. There remain 900 million extremely poor people in 2012 and a projected 700 million people in 2015. Over the last decades, the vast majority (about 95 percent) of global poverty has been concentrated in three regions:

East Asia and the Pacific, South Asia, and Sub-Saharan Africa (Figure 1). Yet, there have been large declines in poverty across Asia while Sub-Saharan Africa saw a steady increase and is now home to most of the global poor (43 percent),(The World Bank, 2015).

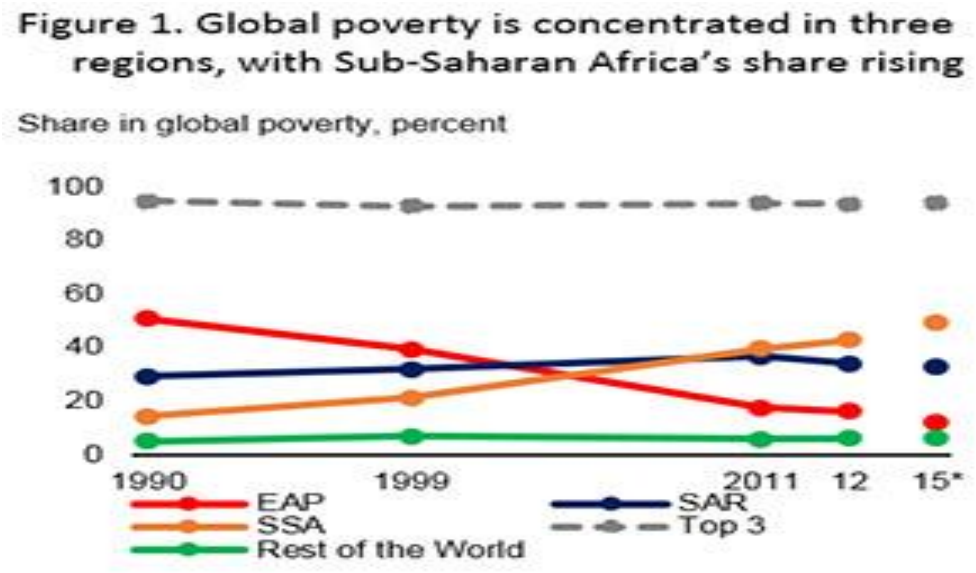


Figure 1 Global poverty with sub-Saharan Africa's share rising

To successfully tackle the remaining poverty, the policy discourse needs to focus on the poorest of the poor, especially in Sub-Saharan Africa, where poverty is most persistent. Poverty headcount rates—the share of the number of people living under $1.90 a day in the total population—provide a big-picture view of the spatial distribution of poverty and the pace of progress over time, but it does not inform us about critical differences among the extremely poor with respect to the depth of poverty—the extent to which the income of the extremely poor fall below the poverty line. Two countries could record the same poverty headcount rate, where in one country poverty is shallow and in the other it is very deep.

To make "depth" a more central element of policy formulation, easy-to-communicate measures are needed. To this effect, the GMR introduces a new concept of "person-equivalent poverty," which marries the intuitive appeal of a poverty headcount rate with the concept of depth. If the typical extremely poor person in a given base year falls 40 cents below the poverty line, then a person whose shortfall is 80 cents is considered and counted as two person-equivalents. Conversely, someone with a 20 cents shortfall would be a half person-equivalent. Counting all the person-equivalents and expressing them as a share in the population yields the person-

equivalent poverty headcount rate. Using such a method provides the insight that, in person-equivalent terms, the poverty rate in Sub-Saharan Africa for 2012 rises from 43 to 46 percent, whereas that for South Asia falls from 19 to 10 percent thus placing emphasis on where poverty is deepest (Figure 2),(The World Bank, 2015).

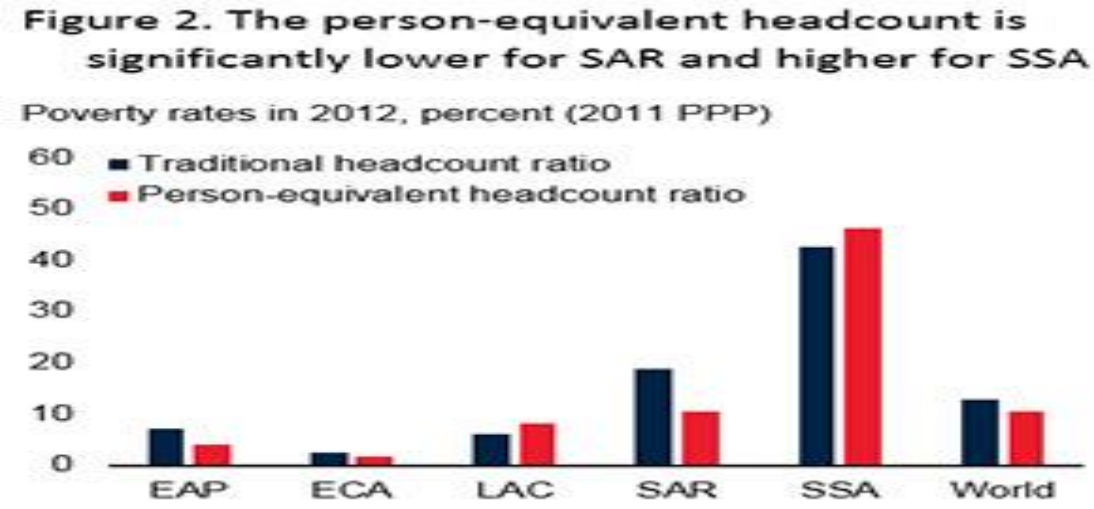


Figure 2 The person equivalent head count

Second challenge: there has been a stark unevenness in shared prosperity. Boosting shared prosperity is taken to promote the income growth of the bottom 40 (B40) percent of the income distribution of each country. Alongside the eradication of extreme poverty, the pursuit of shared prosperity comprises a key institutional objective for the World Bank Group. The characteristics of the B40 may differ significantly across countries. In some, all of the B40 are extremely poor, whereas in many other, richer countries the B40 include the moderately poor and those vulnerable to falling back in poverty. However poverty is measured—be it in absolute or relative terms, with reference to national or international poverty lines—the B40 focus squarely zooms in on the poorer segments of societies,(The World Bank, 2015).

Assessing the world's performance on shared prosperity is made difficult by the sporadic and delayed availability of household survey data. Yet, based on the information available for circa 2007-12, most countries have registered relatively healthy income growth for their B40 populations. Yet, important differences exist. For example, half of the high-income countries and over a third of low-income countries saw B40 incomes decline in absolute terms (Figure 3). Moreover, relative to the earlier period of circa 2006-11, average B40 income growth slowed

from 4.6 to 2.9 percent, whereas average income growth for the entire population declined from 3.0 to 1.7 percent, (The World Bank, 2015).

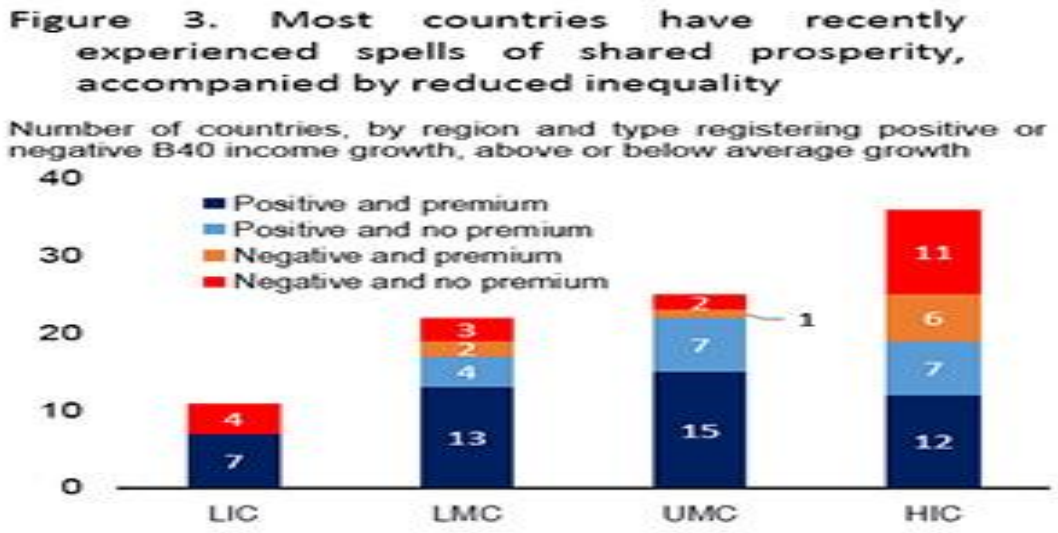


Figure 3 Shared prosperity, accompanied by reduced inequality

Third challenge: there are persistent disparities in the "non-income" dimensions of development between the poor and the non-poor and between the B40 and the rest of the population (Figure 4). The absolute deprivations and inequalities of opportunity of the poor and the B40 in these non-income dimensions tend to transmit poverty across generations and erode the pace and sustainability of shared prosperity, (The World Bank, 2015).

Poverty and prosperity are both multidimensional concepts. Central aspects of both are income deprivations that restrict an individual's ability to consume certain basic goods, such as lack of access to education, health, housing, employment, personal security, and more. Clearly, as the GMR shows, the world has made significant progress in many of these non-income dimensions over the period of the expiring Millennium Development Goals. Close to one-fifth of all children fewer than five remain undernourished, and some 860 million people continue to live in slums. Access to primary school education and literacy rates have improved, yet the quality of education remains a concern. Moreover, while the tide has turned on the incidence of major deadly diseases, a high number of preventable deaths persist, (The World Bank, 2015).

For the world to register sustained development progress over the Sustainable Development Goal (SDG) period, it is essential that these three interrelated challenges are tackled collectively. The

SDG framework augurs for a more holistic approach to development. Whether the world can galvanize its efforts towards Scaled-up development impact will, however, require a much greater focus on the depth of remaining poverty, the unevenness of shared prosperity, and the persistent non-income dimensions of development,(The World Bank, 2015).

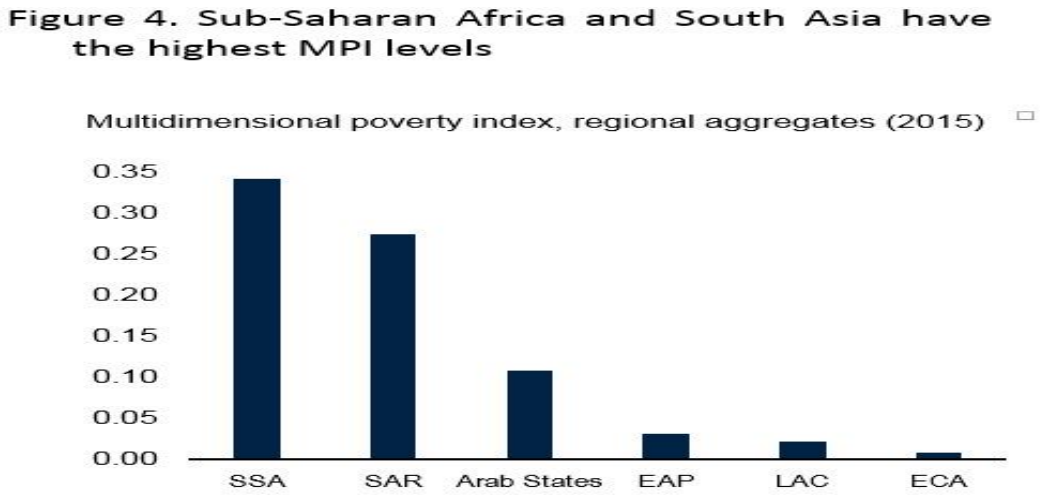


Figure 4 Sub-Saharan African and South Asia have the highest MPI levels

Table 1 Global multi-dimensional poverty index 2018

Dimension of poverty	Indicator	SDG AREA	Deprived if	Weight
Health	Nutrition	SDG 1	Any person under 70 years of age for whom there is nutritional information is undernourished.	1/6
	Child mortality	SDG2	Any child has died in the family in the five-year period preceding the survey	1/6
Education	Years of schooling	SDG3	No household member aged 10 years or older has completed six years of schooling.	1/6
	School attendance	SDG4	Any school-aged child+ is not attending school up to the age at which he/she would complete class 8.	1/6
Living standards	Cooking fuel	SDG7	A household cooks with dung, agricultural crop, shrubs, wood, charcoal or coal.	1/8
	Sanitation	SDG11	The household's sanitation facility is not improved (according to SDG guidelines) or it is improved but shared with other households.	1/8
	Drinking water	SDG6	The household does not have access to improved drinking water (according to SDG guidelines) or safe drinking water is at least a 30-minute walk from home, round trip	1/8
	Electricity	SDG7	The household has no electricity	1/8
	Housing	SDG11	The household has inadequate housing: the floor is of natural materials or the roof or walls are of rudimentary materials.	1/8
	Assets	SDG1	The household does not own more than one of these assets: radio, TV, telephone, computer, animal cart, bicycle, motorbike, or refrigerator, and does not own a car or truck.	1/8

Source**:** Global multi-dimensional poverty index (2018)

2.1.4. COMPONENTS OF THE GLOBAL MPI

The MPI is composed of three dimensions made up of ten indicators (figure 5). Associated with each indicator is a minimum level of satisfaction, which is based on international consensus (such as the Millennium Development Goals or MDGs). This minimum level of satisfaction is called a deprivation cut-off. Two steps are then followed to calculate the MPI, (Santos & Alkire, 2011).

Step 1: Each person is assessed based on household achievements to determine if he/she is below the deprivation cut-off in each indicator. People below the cut-off are considered deprived in that indicator.

Step 2: The deprivation of each person is weighted by the indicator's weight (an explanation on weighting can be found in section 3). If the sum of the weighted deprivations is 33 per cent or more of possible deprivations, the person is considered to be multi-dimensionally poor.

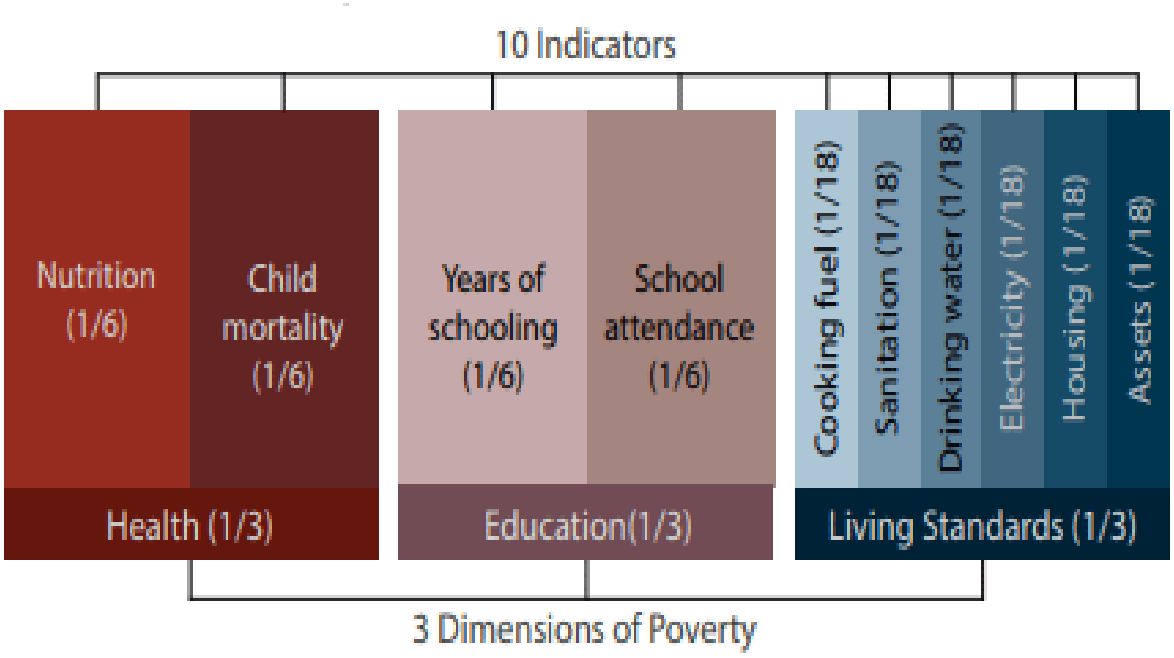


Figure 5 The MPI-dimension and indicators

Education

The MPI uses two indicators that complement each other within the education dimension: one looks at completed years of schooling of household members, the other at whether children are attending school. Years of schooling acts as a proxy for the level of knowledge and understanding of household members. Note that both years of schooling and school attendance are imperfect proxies. They do not capture the quality of schooling, the level of knowledge attained or skills. Yet both are robust indicators, are widely available, and provide the closest feasible approximation to levels of education for household members, (Santos & Alkire, 2011).

In terms of deprivation cut-offs for this dimension, the MPI requires that at least one person in the household has completed five years of schooling and that all children of school age are attending grades 1 to 8 of school, (Santos & Alkire, 2011).

It is important to note that because of the nature of the MPI indicators, someone living in a household where there is at least one member with five years of schooling is considered non-deprived, even though she/he may not be educated. Analogously, someone living in a household where there is at least one child not attending school is considered deprived in this indicator, even though she may have completed schooling. People living in households with no school-aged children are considered non-deprived in school attendance. Hence the incidence of deprivation in this indicator will reflect the demographic structure of the household and country, as well as the educational attainments, (Santos & Alkire, 2011).

Health

Comparable indicators of health for all household members are generally missing from household surveys, making this dimension the most difficult to measure. The MPI uses two health indicators that, although related, depart significantly from standard health indicators (Santos & Alkire, 2011).

The first indicator looks at nutrition of household members. For children, malnutrition can have life-long effects in terms of cognitive and physical development. Adults or children who are malnourished are also susceptible to other health disorders; they are less able to learn and to concentrate and may not perform as well at work. Data from the Demographic and Health

Surveys (DHS) usually provides nutritional information on children and women of reproductive age. Multiple Indicator Cluster Surveys (MICS) provide nutritional information on children, and World Health Survey (WHS) data provides nutritional information on adult household members (men or women). The nutritional indicator used for children relates to being under-weight (also called weight-for-age), which is used to track the MDGs. A child is under-weight if she is two or more standard deviations below the median of the reference population. The nutritional indicator used for adults meanwhile is the Body Mass Index (BMI). An adult is considered to be undernourished if he or she has a BMI lower than 18.5. The international MPI does not consider children or adults that are overweight as deprived in nutrition, (Santos & Alkire, 2011).

The MPI identifies a person as deprived in nutrition if anyone in their household (for whomever there is information on—children, women or other adults) is malnourished. Therefore, it is fundamental to note that deprivation rates by indicator depart from the standard nutritional statistics, and depend upon the survey used and the demographic structure of the household, (Santos & Alkire, 2011).

The second indicator uses data on child mortality. Most, although not all, child deaths are preventable, being caused by infectious disease. Child malnutrition also contributes to child death. In the MPI each household member is considered to be deprived if there has been at least one observed child death (of any age) in the household. It is important to observe that this indicator differs from the standard mortality statistics (Santos & Alkire, 2011).

Living standards

The MPI considers six indicators for standards of living. It includes three standard MDG indicators that are related to health and living standards, and which particularly affect women: access to clean drinking water, access to improved sanitation, and the use of clean cooking fuel. The justification for these indicators is adequately presented in the MDG literature. It also includes two non-MDG indicators: access to electricity and flooring material. Both of these provide some rudimentary indication of the quality of housing for the household. The final indicator covers the ownership of some consumer goods, each of which has a literature surrounding them: radio, television, telephone, bicycle, motorbike, car, truck and refrigerator (Santos & Alkire, 2011).

The selected deprivation cut-offs for each indicator (except for the one relating to assets) are backed by international consensus as they follow the MDG indicators as closely as data permit (Santos & Alkire, 2011).

Water: A person has access to clean drinking water if the water source is any of the following types: piped water, public tap, borehole or pump, protected well, protected spring or rainwater, and it is within a distance of 30 minutes' walk (round trip). If it fails to satisfy these conditions, then the household is considered deprived in access to water.

Improved sanitation: A person is considered to have access to improved sanitation if the household has some type of flush toilet, or ventilated improved pit or composting toilet, provided that they are not shared. If the household does not satisfy these conditions, then it is considered deprived in sanitation.

Electricity: A person is considered to be deprived here if it does not have access to electricity.

Flooring: Flooring material made of dirt, sand or dung counts as deprivation in flooring.

Cooking fuel: A person is considered deprived in cooking fuel if the household cooks with dung, charcoal or wood.

Assets: If a household does not own more than one radio, TV, telephone, bike, motorbike or refrigerator, and does not own a car or tractor then each person in it is considered deprived.

2.1.5. Multi-dimensional Poverty Index Measurement

The MPI is an index designed to measure acute poverty. Here explain the methodology step-by-step, as if you were to design a national multidimensional poverty measure, but specified particular case of the MPI (Alkire and Foster (2007, 2011).

Step 1: Defining the data source

The first fundamental requirement for any MPI (global, regional, national or sub-national) is that all the information for the individual or household must come from the same survey. This is to determine whether a person is deprived in a number of things altogether. Thus, one cannot collect indicators from different data sources - for example, one cannot use health data from one source, and education data from another (as is done for the HDI, the IHDI, the GII and other measures),(Alkire and Foster, (2007, 2011).

If you are designing a national multidimensional poverty measure, you will need to decide which data source best allows to measure poverty. This selection is obviously linked to Step 2 and 3. It is also worth noting that, for cross country comparability, surveys must contain indicators with comparable definitions. This has been the premise when selecting the surveys used to estimate the MPI (Alkire and Foster, (2007, 2011)).

Step 2: Choosing the unit of analysis

As already explained, the global MPI identifies an individual as deprived based on household achievements so the unit of analysis is the household because internationally comparable surveys do not have individual-level information for the ten indicators in the MPI (in particular, the health indicators are the most problematic for individual-level data). However, when designing a national measure, it may be the case that a local survey collects individual-level data for all the indicators of interest, in which case the unit of analysis can be the individual.

Step 3: Choosing the dimensions and indicators

The MPI uses ten indicators belonging to three dimensions which mirror the HDI. Their intrinsic and instrumental value has been well discussed. When designing a national multidimensional poverty measure, the selection of dimensions and indicators is a key step. There is no fixed list of what should be included, and the MPI does not intend to constitute one. The list is open, and the most important thing is the process through which it is selected. It must be agreed upon with a certain degree of consensus. Such a consensus may derive from different sources, including participatory experiments, a legal basis, international agreements such as the MDGs or human

rights, and empirical evidence regarding people's values. Statistical relationships between variables must also be explored and understood.

Step 4: Choosing the indicators' deprivation cut-offs

The MPI and any multidimensional poverty measure of its type requires a deprivation cut-off for each indicator. Usually, the indicators' deprivation cut-offs are noted as z_i, so that person i is considered deprived if her achievement in that indicator xi is below the cut-off, that is, if $xi < zi$. Clearly, well-founded reasons are needed to determine each cut-off. In the case of the MPI, most of the deprivation cut-offs are based on the internationally agreed upon MDG standards. When designing a national measure, different cut-offs may be set based on current policy priorities in the country and what is considered to be non-deprived according to the culture. Empirical evidence and previous practices must be considered.

Step 5: Choosing the indicators' weights

Once the indicators and their corresponding cut-offs have been selected, the next step is to define the weights each indicator will have in the measure. In the MPI the three dimensions are equally weighted, so that each of them receives a 1/3 weight. The indicators within each dimension are also equally weighted.

Thus, each indicator within the health and education dimension receives a 1/6 weight and each indicator within the living standards dimension receives a 1/18 weight (1/3 ÷ 6). If the number of indicators per dimension is changed, the weights will need to be adjusted according to the same principle as above. Alternatively, if there are well-justified reasons for a different weighting, such as giving more weight to the health dimensions, the weights can also be adjusted to this alternative structure. However, note that intricate weighting systems create challenges in interpretation, so it can be useful to choose the dimensions such that the natural weights among them are roughly equal and then apply robustness tests.

Here we note the indicator i weight as Wi, with $\sum_{i=0}^{d} \mathrm{wi} = 1.$

Step 6: Choosing the poverty cut-off (to identify the poor)

Next, each person is assigned a deprivation score according to his or her deprivations in the component indicators. The deprivation score of each person is calculated by taking a weighted sum of the number of deprivations, so that the deprivation score for each person lies between 0 and 1. The score increases as the number of deprivations of the person increases and reaches its maximum of 1 when the person is deprived in all component indicators. A person, who is not deprived in any indicator, receives a score equal to 0. Formally:

$$C_i = w_1 I_1 + w_2 i_2 + \ldots\ldots + w_d I_d$$

Where $I_i = 1$ if the person is deprived in indicator i and $I_i = 0$ otherwise, and w_i is the weight attached to indicator i with $\sum_{i=0}^{d} \mathrm{wi} = 1.$

A second cut-off or threshold is used to identify the multi-dimensionally poor, which in the Alkire-Foster methodology is called the **poverty cut-off.** In this chapter we define the poverty cut-off as the share of (weighted) deprivations a person must have in order to be considered poor, and we will note it with *k.* In this way, someone is considered poor if her deprivation score is equal or greater than the poverty cut-off. Formally, someone is poor if $C_i >= k$. In the MPI, a person is identified as poor if he or she has a deprivation score higher than or equal to 1/3. In other words, a person's deprivation must be no less than a third of the (weighted) considered indicators to be considered **MPI poor**. For those whose deprivation score is below the poverty cut-off, even if it is non-zero, this is replaced by a "0"; what we call **censoring** in poverty measurement. To differentiate between the original deprivation score from the censored one, we use for the censored deprivation score the notation $C_i(k)$. Note that when $C_i >= k$, then $C_i(k) = C_i$, but if $C_i < k$, then $C_i(k) = 0$. $C_i(k)$ is the deprivation score of the **poor**.

Step 7: Computing the MPI

As mentioned in the overview, the MPI combines two key pieces of information: (1) the **proportion** or **incidence** of people (within a given population) who experience multiple deprivations and (2) the **intensity** of their deprivation: the average proportion of (weighted) deprivations they experience. Formally, the first component is called the **multidimensional headcount ratio** (H):

$$\mathbf{H=q/n}$$

Here *q* is the number of people who are multi-dimensionally poor and *n* is the total population. The second component is called the **intensity** (or breadth) of poverty (A). It is the average deprivation score of the multi-dimensionally poor people and can be expressed as:

$$\mathbf{A} = \sum_{\boldsymbol{i=0}}^{\boldsymbol{n}} \boldsymbol{ci(k)/q}$$

Where, Ci (k) is the censored deprivation score of individual i and q is the number of people who are Multi-dimensionally poor.

The MPI is the product of both: $\mathbf{MPI = H \times A.}$

2.2. Empirical literature

There are contradicting results in some of the studies such as Esubalew (2006) Determinants of Urban Poverty in Debre Markos, Ethiopia: A Household Level Analysis. The data source is primary source. The study used is logistic regression modal. The finding of this study was out of the 260 household heads 172(66%) of them have to be poor and the variables that are positively correlated with household size, and also disease incidence of the household Variables that negatively correlated with income, educational level, marital status, employment, age, housing tenure, and water source. And the other one is Determinants of Urban Poverty: The Case of Nekemte Town, Eastern Wollega Zone of Oromia Regional State, (Melese, et al., 2017). The study used both primary and secondary data and also the logit model was used to identify determinants of poverty. The variable sex of the household head, education level, and salary employment were found to have a negative and significant effect on poverty. And study Measurement and Determinants of Urban Poverty in Case of Southern Nations, Nationalities, and Peoples' Region (SNNPR), Ethiopia, Mohammed (2017). This study used logistic regression to identify the determinants of urban poverty that found to be statistically significant variables are marital status, family size, total dependency, education level, saving habit, and source of energy.

Some of the studies as I mentioned in the previous used the modal that is logistic regression However, the other used ordinary least squares such as Kabubof.m(2008). Determinants of poverty in urban areas: a case study of Mathare Valley in Nairobi, Ordinary Least Squares (OLS), primary and Secondary. Marital status of household head, Level of On-The-Job Training-OJT, of Years Lived inheritance efficiency, level of education ,What the monthly remuneration of head, Household Size, Number of Earners in the Household Positively affect having the probability of poor and the study used multinomial logistic regression analysis such as Eunice Busia B.URP (Mak)(2011), Determinants of poverty among households in Uganda, multinomial logistic regression analysis, age, marital status, sex, household head employments, household education as significant determinants of urban poverty, Source of data used Secondary.

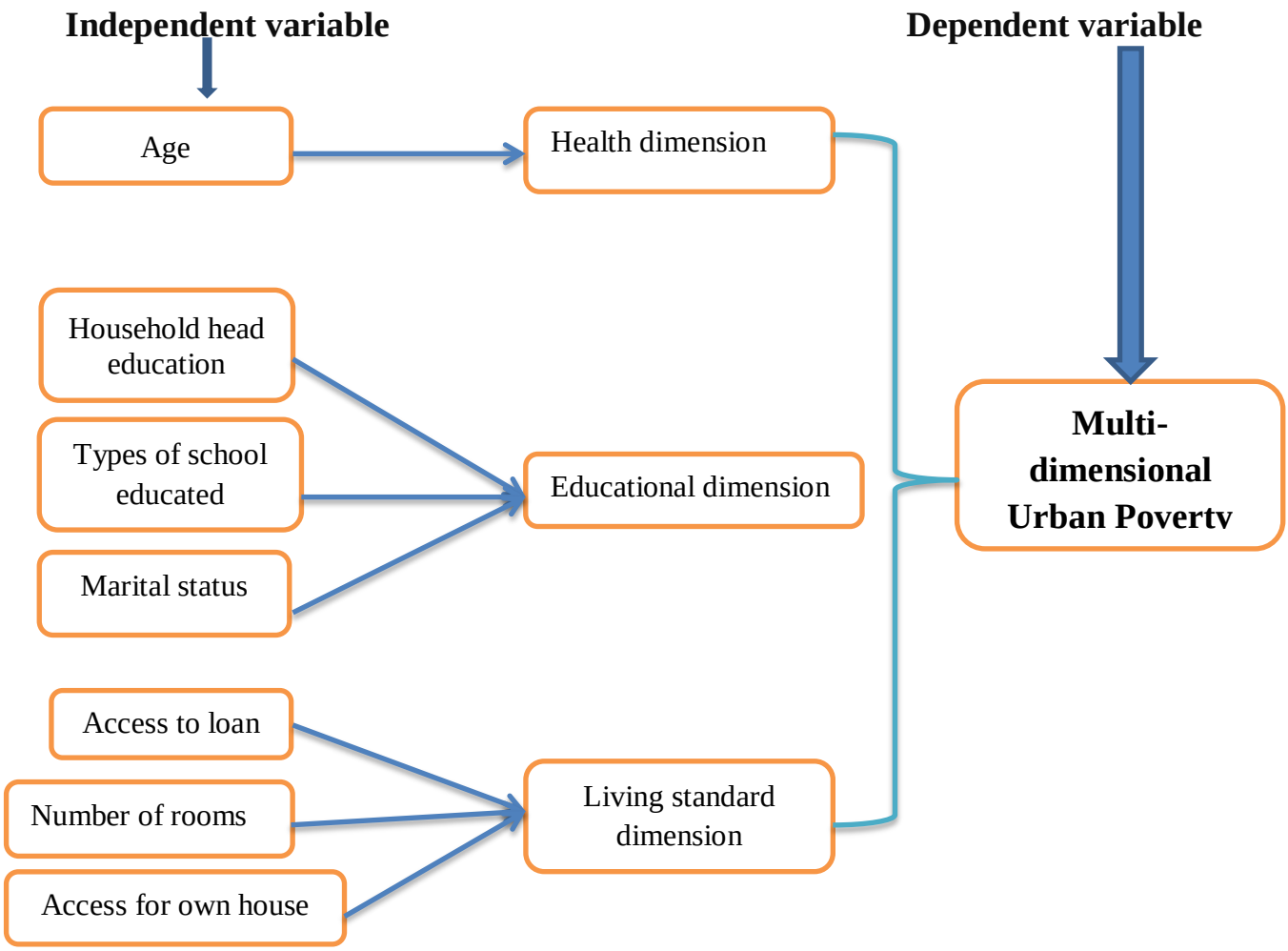
Table 1 Summery of empirical literature

No	Author	Title	Method	Main findings	Data	Limitation
1	Kabubof. m.(2008)	Determinants of poverty in urban areas: a case Study of mathare valley in Nairobi	Ordinary Least Squares (OLS)	Marital status of household head, Level of On-The-Job Training-OJT, of Years Lived inheritance efficiency, level of education ,What the monthly remuneration of head, Household Size, Number of Earners in the Household Positively affect having the probability of poor	primary and Secondary	The result is not the same to other findings
2	Eunice Busisa B.(Mak) (2011)	Determinants of poverty among households in Uganda	multinomial logistic regression analysis	Age, marital status, sex,household head employments, house hold education as significant determinants of urban poverty	Secondary	The result is not the same to other findings
3	Mohammed Beshir Mohammed(2017)	Measurement and Determinants of Urban Poverty in Case (SNNPR), Ethiopia	logistic regression coming	family size, total dependency, education, saving habit, and source variables statically significant determinants of urban poverty	primary	This study is missed the variable that is income
4	Esubalew alehegnti runeh(2006)	Determinants of urban poverty in debremarkos,ethiopia: A household level analysis	A Logistic regression model	Average monthly income, family size, educational level and disease incidence as significant determinants of urban poverty.	Primary data	The result is not the same to other findings
5	MeleseTerefeChewaka(et al., 2017)	Determinants of Urban Poverty: The Case of Nekemte Town,Eastern Wollega	logit model	family size and rural-urban migration have positively affect the probability of a household being poor	primary	This study is missed the variable that is income

Source: own combination

2.3. Conceptual Framework

Figure 6: Conceptualizing determents of multi-dimensional urban poverty



Source: own creation

Figure 6 Conceptualizing determinants of multidimensional urban poverty

Chapter Three

3. Research Methodology

3.1 Introduction

In this chapter, the methodology shows how the data evaluated. It includes: research design, source of data and methods of analysis.

3.2 Research Design

The main purpose of this study was to assess trends and determinant of multi-dimensional urban poverty in Ethiopia Therefore, to investigate this study were used both descriptive and econometric analysis and also was used multi-dimensional poverty estimation to calculate multi-dimensional poverty index.

3.3 Source of data and Types

In order to evaluated trends and determinants of multi-dimensional urban poverty in Ethiopia, the study used secondary data from LSMS—Integrated Surveys on Agriculture Ethiopia Socioeconomic Survey (ESS2 (2013/2014) – ESS3 (2015/2016) conducted by Central Statistical Agency of Ethiopia and World Bank. The data covered 2116 households selected in all urban regions of Ethiopia.

3.4. Methods of data analysis

3.4.1 Multi-dimensional poverty index estimation

The Alkire-Foster (AF) Method is a way of measuring multidimensional poverty developed by OPHI's Alkire and Foster (2011). In this study three multidimensional poverty measures were applied.

1. Headcount ratio or H represents the proportion of households identified as multi-dimensionally poor, according to the parameter k or

$$H = \frac{q(k)}{n}$$

Where q (k) is the number of multi-dimensionally poor people (or households) and n is the total number of people.

2. The intensity of multi-dimensional poverty or A is defined as the average share of weighted indicators in which poor households are deprived, written as

$A = \sum_{i=1}^{q} \frac{ci(k)}{q(k)}$ Where, ci is the deprivation score of individual i.

3. This measure captures the extent of deprivations experienced by multi-dimensionally poor households.M_0 is calculated as the product of H and A:

The MPI (multi-dimensional index) is M_0=HA.

The following Steps were used the study to calculate multidimensional urban poverty according to (Alkire and Foster (2007, 2011), those are:-

1. Select dimension:- health, education, living standard dimension
2. Select indicators for each dimension according to data: three indicators for each that list in the above table
3. Use the first cutoff to determining deprivations (1 = deprived and 0 = non deprived)

4. Attach weight for three dimensions each has weight .33 and for each dimension equally distributes the weight among indicator, since each dimension has three indicators (0.33/3) = 0.11, so multiply each indicator value with 0.11.
5. Find aggregate score index ci
6. Use second cutoff to determine poor person, since we have nine indicators, a person who do not have 1/3 of the total nine indicators considered as poor 0.11×3 = 0.33, So a person who score below 0.33 considered as non-poor and get value 0 then count number of poor and calculate headcount index(H) = no of poor/total no of household and the other one is the intensity of poverty (A) is the average deprivation score of those $A = \sum_{i=1}^{q} Ci(k)/q(k)$
7. Last calculate Mo = H×A.

i. MPI dimensions, indicators and weight

This study used three dimensions to measure multidimensional urban poverty: education, health, the standard of living and each dimension have choice three indicators according to the availability of data this selection is based on the Global multi-dimensional poverty index 2018. The following table shows those indicators with the associated cutoffs used to identify deprived households.

Table 2 Description of indicators offs and weight

Dimension of MDI	Indicators in each dimension	Indicators cutoff(deprived if)	Weight
Education(1/3)	The highest grade achieved in household	Below Eight years of schooling	1/9
	Kinds of organization for attending school	Not having privet schooling	1/9
	School fees(the past 12 months)	Below 100 birr	1/9
Health (1/3)	Faced health problem(last 2 months)	Having faced health problem	1/9
	get medical assistance	Don't get medication	1/9
	Has had diarrhea(in the last two weeks)	Having diarrhea	1/9
Living standards(1/3)	The household walls made	Having walls mud, wood and plastic	1/9
	Source of electric	Not having electric- privet	1/9
	Anything to make water to safe drink	Having not safe water	1/9

Source: own computation

3.4.2. Econometric modeling

The Tobit model is a statistical model proposed by James Tobin in 1958, used in order to explain the relationship between a non-negative dependent variable and an independent one assuming that there is a latent variable which linearly depends on the independent one trough a parameter (beta) that determines the relationship between the independent and latent variables. According to Verbeek (2004) [14] Tobit regression is usually the best model when the dependent variable is continuous and has a constrained rage, represents a positive variable. This statistical model has previously been used in studies such as Trabelsi et al. (2008) [6], Hussainey and Al Najjar (2011) [9].

$$y_i^* = \beta^t x_i + e_i \qquad i = 1,2,\dots,n$$
$$y_i = y_i^* = \begin{cases} y_i = y_i^* \ if \ y_i^* > 0 \\ y_i = 0 \ if \ y_i^* \leq 0 \end{cases} \tag{1}$$

Where:

e_i Random error, the set represents all the variables is non-observed influencing in the dependent variable y_i^* distributed $y^* \sim N(0,\sigma^2)$ which *i.i.d*

y_i^*: Represents (Latent variable) It is generated through traditional linear regression model according to the formula $(I_i = \beta^t x_i)$ it is non-observer when $y_i^* < 0$.

y_i, x_i : Is the independent variable and the dependent variable known each $i = 1,2,\dots,n$.

Generally, it can be defined as follows:

$$y_i = \begin{cases} \beta^t x_i + e_i \ if \ RHS > 0 \\ 0 \ o.w \end{cases} \tag{2}$$

While (Herman and Bierens, 2004) knew (Tobit Regression Model) and supposed the dependent variable observer y_i for observers $i = 1,2,\dots,n$ is achieved as follows:

$$y_i = max(y_i^*, 0) \tag{3}$$

For the purposes of estimate suppose that:

$$e_i \sim N[0, \sigma^2]$$
$$y_i^* / x_i \sim N[\beta^t x_i, \sigma_u^2]$$
$$D_i = 1 \; if \; y_i^* > \gamma$$
$$= 0 \; if \; y_i^* \leq \gamma$$

Then the Maximum Likelihood Function:

$$L = \prod_{i=0}^{n} \Pr\left(y_i^* < \gamma\right)^{(1-D_i)} \prod_{i=0}^{n} \left\{\Pr\left(y_i^* > \gamma\right) f\left(y_i^* / y_i^* \geq \gamma\right)\right\}^{D_i} \quad (4)$$

The function (4) can be simplified as follows:

$$P(y_i^* < \gamma) = Pr(\beta^t x_i + e_i < \gamma) = Pr\left(\frac{\beta^t x_i + e_i}{\sigma_u^2} < \frac{\gamma}{\sigma_u^2}\right) = Pr\left(\frac{e_i}{\sigma_u^2} < \frac{\gamma - \beta^t x_i}{\sigma_u^2}\right) = \Phi\left(\frac{\gamma - \beta^t e_i}{\sigma_u^2}\right) \quad (5)$$

When $\gamma = 0$, that:

$$P(y_i^* < \gamma) = \Phi\left(\frac{-\beta^t x_i}{\sigma_u^2}\right) = 1 - \Phi\left(\frac{\beta^t x_i}{\sigma_u^2}\right) \quad (6)$$

$$P(y_i^* \geq \gamma) = 1 - \Phi\left(\frac{\gamma - \beta^t x_i}{\sigma_u^2}\right) \quad (7)$$

When $\gamma = 0$, that:

$$P(y_i^* > \gamma) = \Phi\left(\frac{\beta^t x_i}{\sigma_u^2}\right)$$
$$f(y_i^* / y_i^* > \gamma) = \frac{1/\sigma \, \phi((y_i^* - \beta^t x_i)/\sigma_u)}{P(y_i^* > \gamma)} = \frac{1/\sigma \, \phi((y_i^* - \beta^t x_i)/\sigma_u)}{1 - \Phi((y_i^* - \beta^t x_i)/\sigma_u)} \quad (8)$$

Therefore:

$$L = \prod_{i=0}^{n} \Phi\left(\frac{\gamma - \beta^t x_i}{\sigma_u}\right) \prod_{i=0}^{n} \left\{1 - \Phi\left[\frac{\gamma - \beta^t x_i}{\sigma_u}\right]\right\} \prod_{i=1}^{n} \frac{1/\sigma\, \phi((y_i^* - \beta^t x_i)/\sigma_u)}{1 - \Phi((\gamma - \beta^t x_i)/\sigma_u)} \quad (9)$$

$$L = \prod_{i=0}^{n} \Phi\left(\frac{\gamma - \beta^t x_i}{\sigma_u}\right) \prod_{i=1}^{n} \sigma^{-1} \phi\left(\frac{y_i^* - \beta^t x_i}{\sigma_u}\right)$$

When $\gamma = 0$ that:

$$L = \prod_{i=0}^{n} \left[1 - \Phi\left(\frac{\beta^t x_i}{\sigma_u}\right)\right] \prod_{i=1}^{n} \sigma^{-1} \phi\left(\frac{y_i^* - \beta^t x_i}{\sigma_u}\right) \quad (10)$$

Where $\Phi(.)$ & $\phi(.)$ represents the probability distribution function, the probability density function, respectively for normal distribution, the Tobit Regression Model, described in the above to know the limited regression model.

If y_i & x_i are not observed when $y_i^* \leq 0$ then the model is known as truncated regression model, in other words the data y_i^* & x_i are observed only when $y_i^* \geq \gamma$.

i. Variable definition

Table 3 Description of dependent variable

Variable name	The variable is	Definition	Expected sign
Multi-dimensional poverty(MDP)	Dependent	Continuous (range between 0 and 1)	
Age(A)	Independent	Continuous	Negative
Number of room(NR)	Independent	Continuous	Positive/negative
Household Education(HE)	Independent	Dummy(1 = not educated ,0 = educated)	Positive/negative
Marital status(MS)	Independent	Dummy(1=single, 0= married, divorced and widowed	Positive/negative
Access to Loan(AL)	Independent	Dummy(1 = no ,0 = yes)	Negative
Access for Own House(AOH)	Independent	Dummy(1 = no ,0 = yes)	Negative
Types of school education type(TSE)	Independent	Dummy(1 = government ,0 = private)	Negative/positive

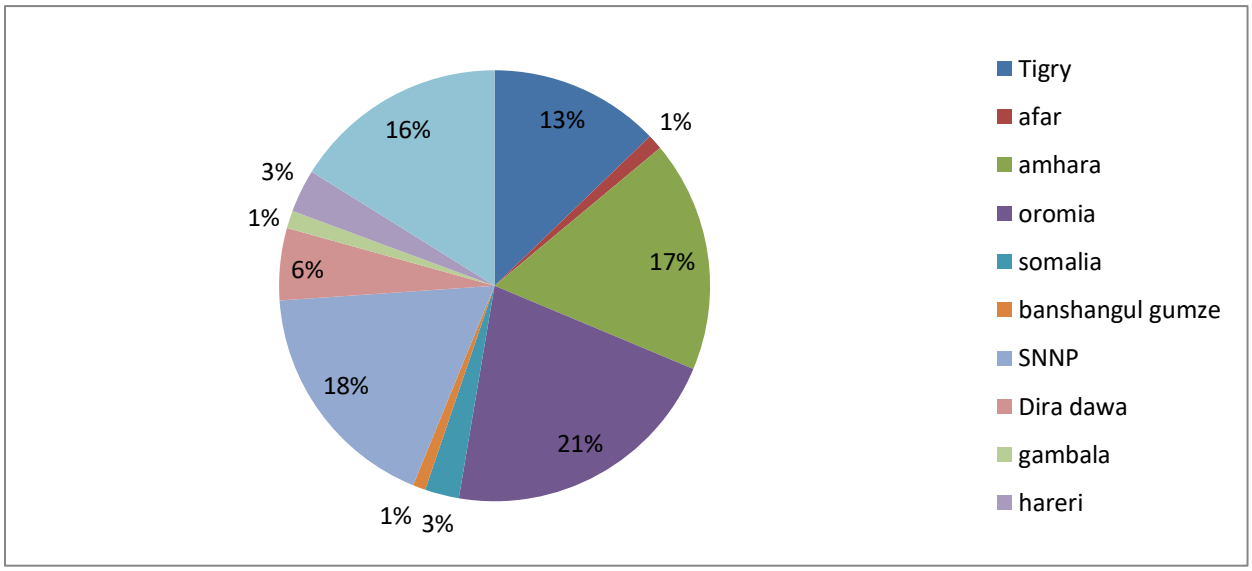
Source: own combination

Chapter Four

4. Data analysis and Discussion

4.1. Descriptive Statistics

It is a technique used to organizing, summarizing, and presenting numerical data in a convenient form through graphs, charts, tables, etc. It deals with the description of the characteristics of large masses of data and also compares and contrasts different categories of sample unit with respect to the desired characteristics so as to draw some important implication of the data.

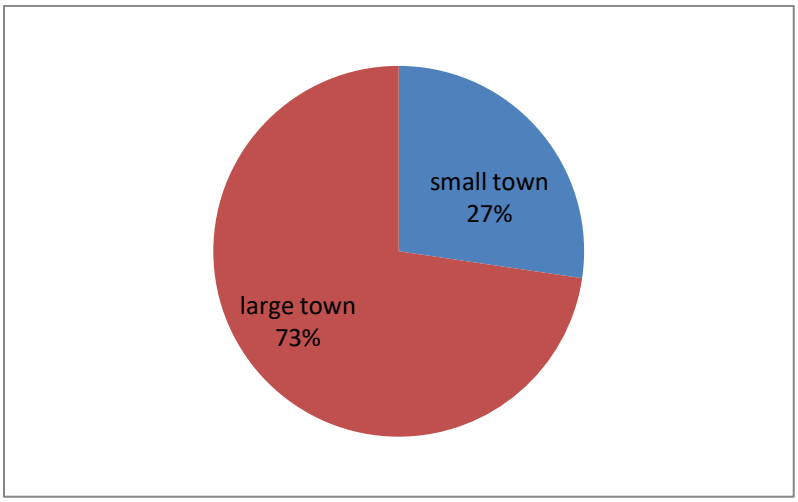


Source: computed based on (ESS2&ESS3)

Figure 7 the distribution of household-based on the region to determine MUP

As shown the figure 7 according to a given data: 12.8% of the respondents from Tigray region, 1.1% from afar,17.3% from Amhara, 21.3% from Oromia,2.5 from Somalia, 1% from Banshangul, 17.7% from SNNP,5.4% from Dire Dawa, 1.3% from Gambella,3.2% from Hareri and 16.1% from Addis Ababa to determine multidimensional poverty index**.**

Figure 8: The distribution of household-based on the small and large town to determine multi-dimensional urban poverty



Source: computed based on (ESS2&ESS3)

Figure 8 the distribution of household-based on the small and large town to determine MUP

As shown in the figure above according to a given data: 27.3% of the respondents are from the small towns of a region and the remaining 72.7% of them are from the large towns of Ethiopia to determine multi- dimensional urban poverty.

4.2 Trends Deprived household in each indicator

Based on data that by using dimension of multi-dimensional index total no of deprived in a year ESS2 (2013/2014) is 1980 and in a year ESS3 (2015/2016) is 1951 by using the head count number of deprived and then the percentage of deprived shown as below in table 4.

Table 4 Number of household deprived in different indicators

Dimension of MDI	Indicators in each dimension	No of deprived household		Percentage of deprived	
		2013/2014	2015/2016	2013/2014	2015/2016
Education	The highest grade achieved in household	1428	1367	72.1%	70.1%
	Kinds of organization for attending school	587	1386	29.6%	71%
	School fees(the past 12 months)	1178	1084	59.5%	55.5%
Health	Faced health problem(last 2 months)	276	289	13.9%	14.8%
	has get medical assistance	1576	1524	79.6%	78.1%
	Has had diarrhea(in the last two weeks)	343	357	17.3%	18.3%
Living Standards	The household walls made	1429	1135	72.1%	58.2%
	Source of electric	1676	976	84.6%	50%
	Anything to make water to safe drink	995	1261	50.2%	64.6%

Source: computed based on (ESS2&ESS3)

The above table 4 shows: According to a given ESS data trends of indicators those are kinds of organization for attending school, faced health problem (last 2 months), has had diarrhea (in the last 2 weeks) and anything to make water to safe the number of deprived was increase and other indicators the highest grade achieved in household, School fees (the past 12 months), has get medical assistance, The household walls made and Source of electric the number of deprived is decline.

In terms of dimension, in health dimension most indicators of the a households less deprived those are Faced health problem (last 2 months) and has had diarrhea (in the last two weeks) and also in educational dimension have higher number of deprived as compare to other dimension this are highest grade achieved in the household and kinds of organization for attending school indicator have share the large portions.

In this analysis found that Educational dimension higher number of deprived that means in Ethiopia the highest number of a household attending class not higher than eight, it's according to global multi-dimensional index (2018) educational dimension standards.

The above table 4 shows: the living standard dimension, two indicators show that some improvement those indicators are source of electric and the household walls made quality and also educational dimension shows that some of indicators of a household those highest grade achievements in household and School fees (the past 12 months) in addition to that on health dimension: Faced health problem (last 2 months) and has had diarrhea (in the last two weeks) indicators are some improvement within two years.

Indicators facing health problem have less number of deprived so, health problem and a habit get medical assistance is less number of deprived.

4.3 Trends for Multi-dimensional urban poverty index

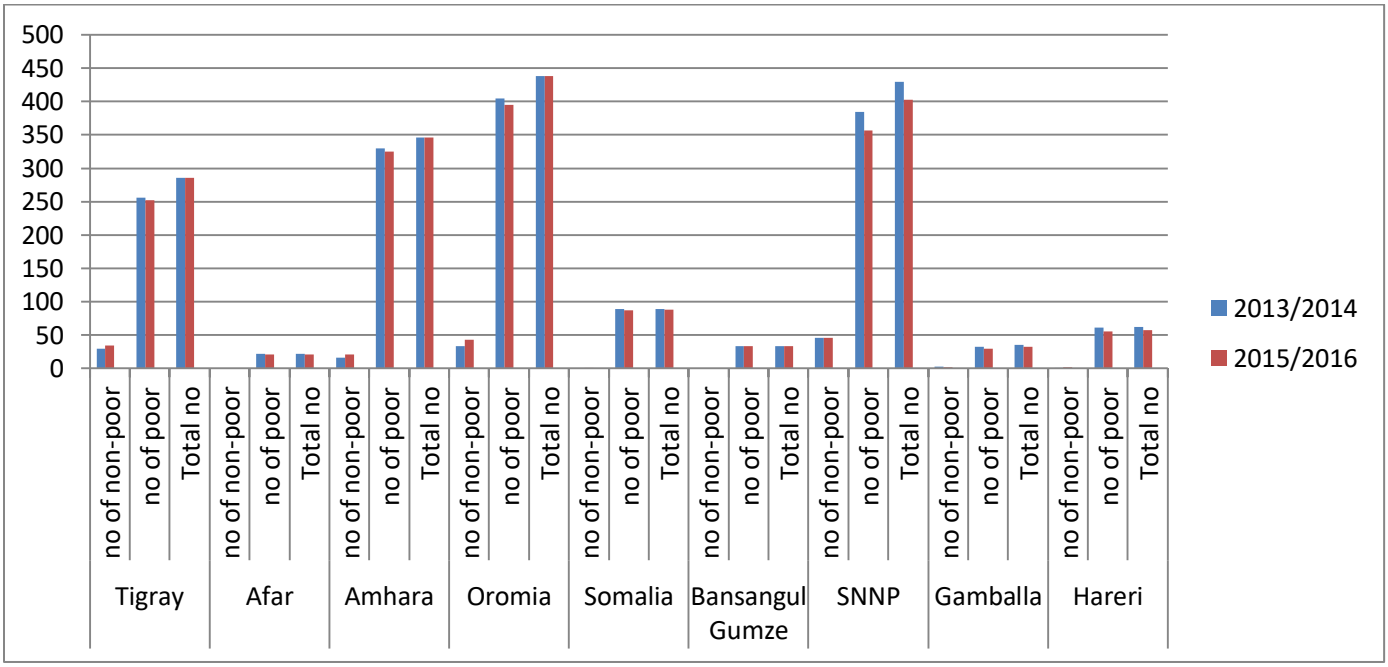
Table 5: Multi-dimensional urban poverty (M), incidents of poverty (H) and intensity of poverty (A)

	2013/2014	2015/2016	Absolut change	Relative change (%)
H(incidence)	0.916	0.905	-0.011	-0.012
A(intensity)	0.516	0.507	-0.009	-0.017
M_0	**0.473**	**0.459**	**-0.014**	**-0.029**

Source: own computation

As shown in the above table 5, there is a slight decrease in the headcount ratio between the two periods, the poverty headcount decreased from 91.6% to 90.5%, and also the intensity of poverty slightly decline in two years. On average, those households are deprived 51.6 percent and 50.7 percent in years respectively. Comparison with that poor people was deprived of 37.4 percent and 35.1 percent in the years 2004 and 2009 respectively. Findings Andualem(2015) and also other that Oxford University(2014). Ethiopia ranks second poorest country in the world that is 87.3% of Ethiopians are classified as multidimensional poor. The absolute Multi-dimensional-poverty index decreased by approximately 1.4% across the two periods, this implies that multi-dimensionally poor household is decreased from 47.3% to 45.9% within two years.

4.4 Trends of poor and non-poor Combination by region and two Administrative city



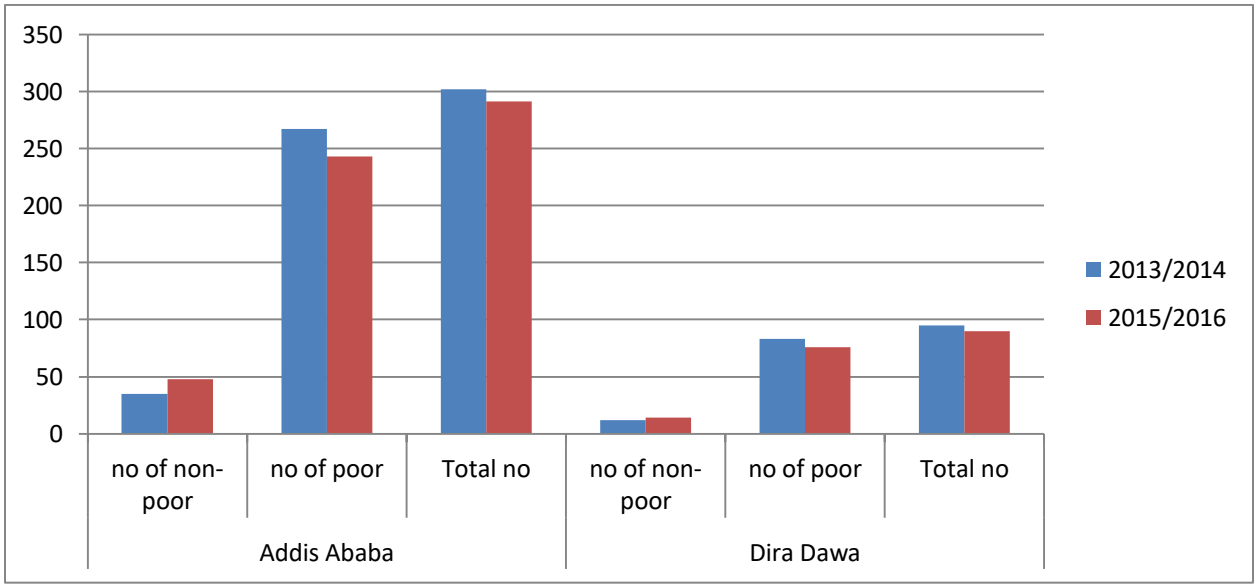
Source: own combination

Figure 9 Trends of non-poor within the region of Ethiopia

As we have seen in the above figure 9, trends of the number of a poor person in Amhara, Afar, Oromia, Tigray, SNNP, Hariri regions are decreased within two years and also in Somalia, Bansangul Gumze and Gambella regions are there is no change in the number of poor people with two periods.

In addition, the trends of number of non-poor in Amhara, Afar, Oromia, Tigray regions are increase within two years and also in Somalia, Gambaballa and Hareri region were to some extent increase in the number of non-poor people but, in Bansangul Gumze and SNNPR region have no difference within two years in number of non-poor people.

Figure 10 Trends of poor and noon poor within two administrative cities of Ethiopia



Source: own combination

Figure 110 Trends of poor and noon poor within two administrative cities of Ethiopia

As we see in the above figure trend of a number of poor in Addis Ababa city is decrease but, the number of non-poor is increased. Trends of the number of poor in Dire Dawa administrative city were decline and the number of non-poor is increase.

Table 6 Trends of multidimensional poverty within regions and two administrative cities

Region/city	Years	H	A	Mo
Tigray	2013/2014	0.895	0.062	0.056
	2015/2016	0.881	0.062	0.055
Afar	2013/2014	1	0.0058	0.0058
	2015/2016	1	0.0063	0.0063
Amhara	2013/2014	0.956	0.087	0.083
	2015/2016	0.94	0.085	0.079
Oromia	2013/2014	0.925	0.109	0.101
	2015/2016	0.901	0.108	0.097
Somali	2013/2014	1	0.033	0.033
	2015/2016	0.99	0.027	0.027
Benishangul-Gumuz	2013/2014	1	0.009	0.009
	2015/2016	1	0.009	0.009
SNNPR	2013/2014	0.893	0.103	0.092
	2015/2016	0.886	0.105	0.093
Gambella	2013/2014	0.914	0.017	0.015
	2015/2016	0.937	0.008	0.007
Harari	2013/2014	0.984	0.015	0.015
	2015/2016	0.965	0.016	0.015
Dire Dawa	2013/2014	0.874	0.019	0.017
	2015/2016	0.844	0.019	0.016
Addis Ababa	2013/2014	0.884	0.064	0.056
	2015/2016	0.835	0.061	0.051

Source: own combination

In the above table 6, when we see tends of multi-dimensional poverty of the Tigray region gradually decreases and also the headcount index in this region is slightly decreases. The headcount index is the same in two years and the trend of multi-dimensional poverty index was decrease 0.058 to 0.0063.

The proportion of Afar region is the same in two periods and trends of multi-dimensional poverty of this region incline from 0.0058 to 0.0063. This study shows that Afar region is low multi-dimensionally poverty as compare to other region, this implies that in this study that cover the urban parts of a region, So the capital city of afar region is Semera, this capital city recently constructed city as a result of this the city fabricated deferent facility such as educational, health and also have access to good living standard this refers that in afar region there have lower multi-dimensionally poor.

When we see in the Amhara region the proportion of poor people decreased from 95% to 94% & tends of multi-dimensional poverty index is decreased from 0.083 to 0.79. The headcount index (proportion of poor people) is decreased from 92% to 90% and the multi-dimensional poverty index of this region is decreased from 0.101 to 0.097.

In Oromia region the proportion of poor person decline from 92.5% to 90.1% and also multi-dimensional poverty index is decrease from 10.1% to 9.7%. In this region have higher in multi-dimensional poverty index relative to other region and this implied that in this region the highest portion of a households have poor education, poor health, no water and sanitation, poor housing. Findings unicef (2019), key findings from report indicates number deprived in oromia region having the highest number and also for every child the poverty rates of oromia region is 91.2% according to Oxford University study(2014).

Similarly, the headcount index of the Somali region is decreased from 100% to 99% and the multi-dimensional index of this region is decreased from 0.033 to 0.027.

When we see the Benishangul Gumuz region of headcount index and multi-dimensional index of the two periods are the same that means there is no change in the multi-dimensional index through two years but, the proportion of poor people is high in this region.

In Southern Nations Nationalities and People Region (SNNPR), the headcount index decrease in this region from 89.3% to 88.6% and the multi-dimensional poverty of this region is slightly decreased to 0.092 to 0.093.

The trend of a headcount ratio of the Gambella region increases from 0.914 to 0.937 but, the multi-dimensional poverty index of this region is a decrease from 0.015 to 0.007.

In the Harari region, the headcount index is decreased from 0.984 to 0.965 but, the multi-dimensional poverty index of this region is the same within two years which means there is a constant in multi-dimensional poverty.

When we see in the above table the headcount index of Addis Ababa city administrative is a decline from 0.884 to 0.835

Multi-dimensional poverty index decrease from 0.056 to 0.55 and also the headcount index of Dire Dawa administrative city is decreased from 0.874 to 0.844 and the multi-dimensional poverty index is decreased from 0.017 to 0.016.This city has low in multi-dimensional index as compare to Addis Ababa city. if the population is small have access to quality education, health care in all place and higher quality of standard of living so this city have access to quality education, health and higher quality at the same time than other Addis Ababa city.

4.5 Econometrics Analysis

Besides the descriptive analysis, this paper used the Tobit model. This modal is used to identify the determinants of multi-dimensional urban poverty. Because the dependent variable, multi-dimensional poverty score is the outcome specify the lower limit that is 0 and/or upper limit of the outcome is 1. A Tobit model can be used to predict an outcome that is censored from above, from below.

$$MDUPI(Y) = \beta 0 + \beta 1\ A + \beta 2\ NR + \beta 3\ HHE + \beta 4\ MS + \beta 5\ AL + \beta 6\ AOH + \beta\ 7\ TSE$$

Here, ***A*** is age, ***NR*** is number of room, is Household Education, ***MS*** is Marital Status, ***AL*** is Access to Loan, ***AOH*** is Access to Own House, and ***TSE*** is Types of School you educated

4.5.1 Determinates of multi-dimensional urban poverty

```
. tobit MDP aoh c.HHS tse c.A c.MS c.hhe al, ul(1)ll(0)

Refining starting values:

Grid node 0:    log likelihood =    7735.402

Fitting full model:

Iteration 0:    log likelihood =    7735.402
Iteration 1:    log likelihood =   7740.8893
Iteration 2:    log likelihood =   7740.9117

Tobit regression                                  Number of obs      =        1,088
                                                    Uncensored       =        1,007
Limits: lower = 0                                   Left-censored    =           81
        upper = 1                                   Right-censored   =            0

                                                  LR chi2(7)         =        19.31
                                                  Prob > chi2        =       0.0073
Log likelihood =  7740.9117                       Pseudo R2          =      -0.0012
```

MDP	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
aoh	-.0000173	7.53e-06	-2.30	0.022	-.0000321	-2.55e-06
HHS	-6.50e-06	3.04e-06	-2.14	0.033	-.0000125	-5.36e-07
tse	.0000128	6.21e-06	2.07	0.039	6.42e-07	.000025
A	-1.34e-07	2.72e-07	-0.49	0.623	-6.68e-07	4.00e-07
MS	2.46e-06	3.15e-06	0.78	0.436	-3.72e-06	8.64e-06
hhe	-6.41e-08	6.87e-08	-0.93	0.351	-1.99e-07	7.07e-08
al	-.000012	6.15e-06	-1.95	0.052	-.0000241	8.12e-08
_cons	.0002547	.0000138	18.50	0.000	.0002277	.0002817
var(e.MDP)	9.66e-09	4.42e-10			8.83e-09	1.06e-08

Source: from Stata result

$$MDUPI(Y) = 0.0002575 - 1.60e^{-07}A - 6.25e^{-06}NR - 5.95\ e^{-08}HHE + 2.33\ e^{-08}\ MS - .000018\ AL - 0.000159AOH + 0.0000123TES$$

LRchi2 (7) – This is the Likelihood Ratio (LR) Chi-Square test that at least one of the predictors' regression coefficient is not equal to zero. It is defined by the number of predictors in the model (7).

Prob > chi2 – This is the probability of obtaining this chi-square statistic (19.31) or one more extreme if there is ,in fact, no effect of the predictor variables. This p-value is compared to a specified alpha level, our willingness to accept a type I error, which is typically set at 0.05 or 0.01. The small p-value from the LR test, <0.0001, would lead us to conclude that at least one of the regression coefficients in the model is not equal to zero. The parameter of the chi-square distribution used to test the null hypothesis is defined by the degrees of freedom in the prior line, **chi2 (7)**

Pseudo R2 – -0.0012 indicates which model better predicts the outcome because of the range between -1 and 1.

The variables those access to **own house, number of room, types of school educated and access to loan** are statically significant at because of p > 0.001.

AOH: for one unit increase in having access to own house, there is a 0.00016 point decrease in the predicted value of multi-dimensional urban poverty.

NR: if a subject were to increase his household size by one class, expected multi-dimensional poverty decreased by $5.95e^{-08}$points while holding all other variables in the modal constant. Thus, the higher number of household in size, less predicted multi-dimensionally poor.

TSE: if a subject attended in the government school, expected multi-dimensional would be 0.0000123 points higher than private school.

AL: for one unit increase in having access to lone, there is a 0.000018 point decrease in the predicted value of multi-dimensional urban poverty.

As we have seen in the above Stata results, the coefficient of

Access to own house: This variable is statistically significant and negative, as expected. The result indicates that households that having private house that is less likely to become multi-dimensionally poor, this implied that a household having own house, free from fee , so have probability of access to advanced private school by high pay and able to medical treatment during health problem and also quality standard of living there is no share in electricity, toilet, kitchen, and water most of owned house have every things individually, is no in a group so, that is why the probability of own house have multi-dimensionally less poor than having own house. The findings multidimensional poverty analysis of urban and rural households in South Africa by Ebenezer Toyin MEGBOWON*, 2018, University of Fort Hare, South Africa found the coefficient of asset ownership of household is with a negative sign and significant ($p<0.05$) for both urban and rural households, This implies that, If other variables are held constant, the more assets a household owns the less likely they are to be multi-dimensionally poor. This is because asset ownership is both of economic advantage and a source of social prestige.

Number of rooms: The result of this study also indicates that a household having large number of class room having the probability of becoming multi-dimensionally less poor than having less number of rooms. The coefficients of number of rooms are statistically significant and negative. This implied that specially, in urban area there is a scarcity of house and their house rent is higher so, if a household having large number of class room, renting their rooms and haven't problem in money to get quality of education, health care and living standards.

Types School Educated: Furthermore, the coefficient of types of school you educated is positive and statistically significant that means when household member is that learn in government school having the probability of being highly multi-dimensionally poor. This implied that now a days in private school there is a higher computation between private educational institution to get benefit so, in order to get this they fulfill every educational materials and employee teachers in higher salary to conduct this private school able because of high payment otherwise government schools is not prefer that is because of low standard of living or low income so a household that join government school having the probability of low living standards and they multi-dimensionally poor.

Access to loan: Also, the coefficient of access to loan the household is with a negative sign and statistically significant as expected. That, if other variables are held constant, the higher access to lone having the probability of less multi-dimensionally poor. This implied that a households

having access to loan in any organization, they create a better life by doing their own business and a household's increase living standards, change their life style by getting a better health care or nutrition, school and standard of living that is the quality of house, access to safe water, improvement in sanitation, So a household that assess to getting loan having a probability of being multi-dimensionally poor.

The coefficient of marital status is not statistically significant and it's a negative sign this implies no impacts on multi-dimensional poverty.

The coefficient of Age and household education is not statistically significant and they have a negative sign this implies no multi-dimensional poverty.

Chapter Five

5. Conclusion and Policy Implication

5.1 Conclusion

The objective of the study was to identify trends and determinates of multi-dimensional urban poverty in the small and large town of Ethiopia. The study used the secondary data that is ESS 2012/2013 and ESS 2015/2016 from Statically agency of Ethiopia and the study was taken 2160 households to calculate multi-dimensional urban poverty and 1088 households to identify determinates of multi-dimensional urban poverty that selected from each region and two administrative cities

The research used three dimensions to calculate multi-dimensional index those are education, health and living standards and also in each indicators has three indicators those are for education: the highest grade achieved in household, Kinds of organization for attending school, School fees(the past 12 months), for health: Faced health problem(last 2 months), get medical assistance, Has had diarrhea(in the last two weeks) and standard of living includes the household walls made, Source of electric and Anything to make water to safe drink.
Based on this approach the study found that out of 2160 households in years ESS 2012/2013 1980 households are below the poverty line and in years ESS 2015/2016 out of 2160 households 1954 households are below the poverty line, a headcount index is 0 .916 and 0.905 respectively in Ethiopia.

Variables were employed to determine and analyze multi-dimensional urban poverty are age, household size, household education, marital status, access to loan, access for own house, types of school educated. These variables were analyzed through descriptive statistics, Econometric analysis and multi-dimensional poverty index.
In the descriptive part, by using charts show the distribution of household-based on region and the distribution of household-based on the small and large town to determine multi-dimensional

urban poverty. In the Econometric part, the study was employed the Tobit model, that the dependent variable of multi-dimensional urban poverty this was used scored result that is between the upper limit 1 and the lower limit 0. In the multi-dimensional poverty index, by using the global multi-dimensional index, the study showed the head count ratio and multi-dimensional poverty in urban region and city of Ethiopia.

In this study the multi-dimensional urban poverty of Ethiopia, health dimensions have some improvement; however, the educational dimension has a large number of deprived.
In terms of indicators: faced health problem (last 2 months) number of deprived was 276 and 289 within two respective years, so this implies on both years less number of deprived as compared to other indications. However, source of electric in a year 2013/2014 and do get medical assistance during health problem in a year 2015/2016 have a higher number of deprived as relative to other indicators.

The result shows that the number of deprived and multi-dimensional urban poverty in Ethiopia slowly decrease but, trends of the number of a poor person in Amhara, Afar, Oromia, Tigray, SNNP, Hariri regions are decreasing and also in Somalia, Bansangul Gumze and Gambella regions are there is constant in two years. Number poor in Addis Ababa city is decrease and Dire Dawa administrative city
Afar region and Dire Dawa city administration were multi-dimensionally less poor. But, Oromia region and Addis Ababa city haven multi-dimensionally poor households.
Number of room, access to loan, access for own house, types of school educated of the household were found statistically significant affecting the incidence of multi-dimensional urban poverty. However, household education, marital status, and age were found statistically insignificant variables.
A quantitative analysis in this study the fact that households have own house have not the probability of being multi-dimensionally poor, similarly when the household have many rooms having the probability of being multi-dimensionally is not poor. When a household is to learn their education in private school is not having the probability of being multi-dimensionally poor and also when a household is having access to loan that is the probability of not having multi-dimensionally poor And also number of room, access to loan, access for own house are

negatively significant with multi-dimensional poverty and types of school educated was positively significant to multi-dimensional.

Age, household head education and marital status were negatively insignificant to multi-dimensional poverty.

The incidence of multi-dimensional urban poverty in Ethiopia 91.6% in a year 2012/2013 and 90.5% in a year 2015/2016 this calls for urgent poverty is still a problem for urban development. One way of doing this was studied the determinants of multi-dimensional urban poverty by updating concerned parties as the factors are important in fighting against multi-dimensional poverty, So to make this clear identification of the factors for the multi-dimensional urban poverty. However, because it is difficult to bring change for the whole problems overnight prioritization of which variable is importance is a big deal.

5.2 Policy Implication

The messages and policy implications of this research among other things include the following:

1. Set a comprehensive multi-dimensional urban poverty profile any concerned body such as stakeholders, government, town administrators, NGOs, researchers.
2. This research was needed in order to be able to put better models of the determinants of multi-dimensional urban in a town of Ethiopia.
3. Regional government formulate different policy and responsibility properly use of a resource.
4. The study measures the multi-dimensional urban poverty index at household level, it tells the incident and intensity of multi-dimensional poverty so that the future studies should study the town's multi-dimensional urban poverty other than the household level and in different points of view that is gender, organization and in rural to get a wider view of poverty profiles and policy implications.
5. The study found that access to have own house were multi-dimensionally is not poor this implication is therefore that in the urban area that is lack of own house and its rent is high so that concerned body able to construct policy for accessing the house to eradicate multi-dimensional poverty.
6. Types of school education were the determinate of multi-dimensional urban poverty that implies the quality of education is different within private and government institution therefore able to assess policy and implementation on both educational institutions.
7. Access to lone the determinate for multi-dimensional urban poverty that able to make Entrepreneurship development so the government able to give attention for access to lone in a different place.

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