

DETERMINANTS OF POVERTY IN SOMALIA: A HOUSEHOLD LEVEL ANALYSIS

SEADYA MOHAMMED AHMED

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DECLARATION

I declare this paper is my original work and has not been presented for a degree in any other University or any other award.


Signature.......... Date..... 21/11/2022

Seadya Mohammed Ahmed

Registration No.: X51/37649/2020

Supervisor's Declaration

This research paper has been submitted for examination with my approval as the university supervisor for this student.

Signature.......... Date..... 22-11-2022

PROF. TABITHA KIRITI NGANGA

SUPERVISOR

DEPARTMENT OF ECONOMICS AND DEVELOPMENT STUDIES

UNIVERSITY OF NAIROBI

DEDICATION

To my parents and entire family.

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ABBREVIATIONS AND ACRONYMS

AfDB	AFRICAN DEVELOPMENT BANK
AIC	AKAIKE INFORMATION CRITERION
BIC	BAYESIAN INFORMATION CRITERION
COVID-19	CORONAVIRUS DISEASE 2019
FE	FIXED EFFECT
FGS	FEDERAL GOVERNMENT OF SOMALIA
GDP	GROSS DOMESTIC PRODUCT
HIV/AIDS	HUMAN IMMUNODEFICIENCY VIRUS/ACQUIRED
IMMUNODEFICIENCY SYNDROME	
IDP	INTERNALLY DISPLACED PERSONS
MLM	MAXIMUM LIKELIHOOD METHOD
MOPIED	MINISTRY OF PLANNING, INVESTMENT AND ECONOMIC
DEVELOPMENT	
NDP	NATIONAL DEVELOPMENT PLAN
NGOs	NON-GOVERNMENTAL ORGANIZATIONS
PPP	PURCHASING POWER PARITY
RE	RANDOM EFFECTS
SDGs	SUSTAINABLE DEVELOPMENT GOALS
SHFS-W1	SOMALI HIGH FREQUENCY SURVEY WAVE 1
SHFS-W2	SOMALI HIGH FREQUENCY SURVEY WAVE 2
SSA	SUB-SAHARAN AFRICA
UNCTAD	UNITED NATIONS CONFERENCE ON TRADE AND
DEVELOPMENT	
USD	UNITED STATES DOLLAR
VIF	VARIANCE INFLATION FACTORS
WB	WORLD BANK

ABSTRACT

The current set of 17 interconnected Sustainable Development Goals (SDGs) puts poverty eradication as its top objective by 2030 because it continues to be one of the multidimensional-complex issues in the 21st-century world. Less-developed and developing countries, in particular, confront poverty laboriously and have developed several policy initiatives over time aiming to lower its effects. Poverty rate in Somalia is widespread, deep, and has persisted over a long-time. The economy of Somalia is recuperating from civil war and decades of conflict and still faces many threats that contribute to its high poverty level. Considering that, this paper aimed to assess the main national determinants of household poverty in Somalia and why some households are not poor or poor, while others live in extreme poverty. The study employed a logit and an ordered logit models in the analysis of the 2017/18 Somali High-Frequency Survey wave 2 (SHFS-W2) data. From the logit model, the paper found that household poverty in Somalia is more pronounced in households; headed by illiterate-females, do not have at least one economically active household member, lack electricity and public transport, do not receive remittances, drink water from public taps and/or an unprotected well/spring, live far away from a health center, and use an open pit latrine toilet facility. From the findings of all categories of the ordered logit model, the study concluded that some of the characteristics found to significantly lower household poverty include literacy of the household head, small household size, access to public transport, having electricity and at least one economically active household member, main sources of income from agriculture and small family business, receiving remittances, drinking from a piped water tap, living near a health center, and having a toilet facility with a sewer system. This study recommends strategies that promote female education, connect more households to electricity, avail clean drinking water taps, basic health, and road infrastructure to remote households that are in deepest states of poverty. Finally, the study urges investments in the agricultural sector and making access of financial and other resources inclusive for small businesses.

CHAPTER ONE

INTRODUCTION

1.1 Definition of Poverty and Wellbeing Concepts

Poverty can be defined in numerous ways and manifests itself in different aspects of life like food, health, shelter, education, and beyond basic human needs such as finding decent employment opportunities and participation in one's community, society, economic activities, and political systems or institutions. Bellu & Liberati (2005) defined poverty as the lack of control over basic goods and services essential in an individual's life such as food, clothing, health, and housing. In the words of Bellu & Liberati, (2005), “poverty is an inability to live a socially acceptable standard of living in a given society at a given time”.

Chambers (2006) defined poverty under four clusters; (1) Consumption or income; (2) Material or desire which includes the absence of shelter, clothing, means of transportation, and unavailability of clean drinking water, sanitization and health facilities, and schooling; (3) Capability poverty which defines deprivation in terms of what individuals can or cannot do and can or cannot be with their physical abilities, skills, and regard or position in their society; (4) Multidimensional poverty which looks at deprivation from several reinforcing dimensions (such as standard of living conditions, mental health, self-belief and empowerment, the quality of work, security, and environmental situations, among others) that make a person poor.

In the literature, poverty is also widely defined in absolute or relative terms by drawing separate lines between the non-poor and poor in the household survey data one chooses for an analysis. According to Ravallion (2008), a poverty line shows the lowest level of income considered sufficient to fulfill one's basic needs in a particular country at a given time. A poverty line takes into consideration differences between individuals in various circumstances, demographic places, or household sizes because living costs and levels of economic welfare differ even if two individuals in distinct parts of the world earn the same amount of income (Ravallion, 2008). As cited in Castañeda et al. (2018), the World Bank (WB) specified the extreme poverty line at living on less than \$1.90 a day in 2015— such that the poor are those who live below that line and the non-poor are those above the line. Laderchi et al. (2003) defines absolute poverty as “a situation where there is a severe lack of primary human needs, including food, clean drinking water, sanitation and health, shelter, education, and information”. Foster (1998) describes

absolute poverty line as “a predetermined cut-off level applied across all resource allocations classifying persons below as poor and above as non-poor”. Absolute poverty approaches measure the number of people who fall below a certain income point that makes them unable to afford fundamental goods and services necessary for living. Therefore, this implies that absolute poverty estimates do not rely on current data and remain fixed over time, adjusting only for inflation.

On the contrary, the society in which individuals live and current data determine relative poverty measures, hence, differs across countries (Foster, 1998). As explained by Foster (1998), the relative poverty line sets from “a percentage cut-off point in the welfare distribution”. It shows a point at which one cannot acquire a bundle of essential products attainable to a reference social group (such as people within the mean, median, or some other quintile income level). Thus, relative poverty indicates whether an income of a household is inferior compared to a median income of a base society.

In economics, the level of utility a person derives from the consumption of food and non-food commodities is used as a welfare measure so that a higher level of consumption shows a greater level of well-being. However, for an individual to attain a level of satisfaction from consumption, they must be able to afford them and hence have a certain level of income. Therefore, economists use consumption and income as proxies for well-being measurements.

1.2 Background of the study

Poverty continues to be one of the multidimensional-complex issues in the 21st-century world. The current set of 17 interconnected Sustainable Development Goals (SDGs) puts poverty eradication as its top objective by 2030. Less-developed and developing countries, in particular, confront poverty laboriously and have developed several policy initiatives over time aiming to lower its effects. According to UNCTAD (2021), “poverty levels in most African households dropped, where an estimated mean proportion of households with a consumption level below the \$1.9 per day poverty line fell from 40% in 2010 to 34% in 2019, and for those with consumption levels below \$3.2 and \$5.5 per day, the poverty rate declined from 63% to 59% and 83% to 80% respectively”. However, despite the progress made, the rate of poverty in the region did not drop to a number comparable to the level of population growth in the continent, and 435.5 million

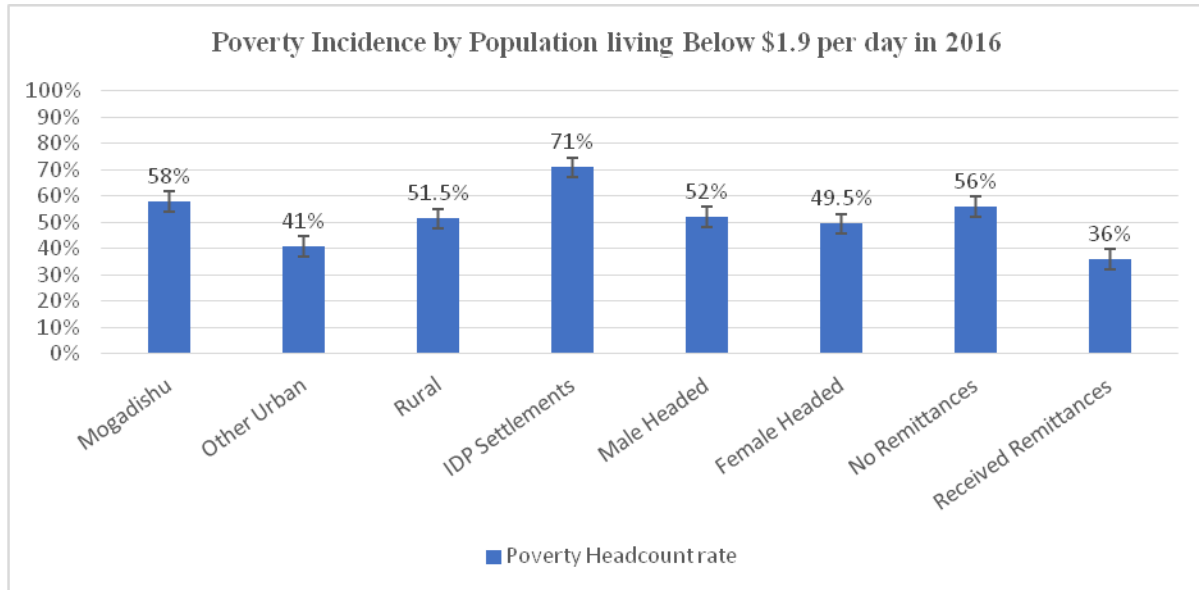
people in Africa lived in harsh poverty in 2018, increasing from 298.3 million in 1991(World Bank, 2020b; *PovcalNet*, n.d.).

Furthermore, the recent COVID-19 pandemic raised Africa's poverty level; the UNCTAD (2021) report indicates that Africa was the hardest impacted region in the world in terms of poor households' loss of earnings. The report added that, due to Coronavirus, the headcount rate for the \$1.90 purchasing power parity (PPP) per day poverty line rose by three percentage points in 2021 compared to pre-pandemic poverty assessments levels. In 2019 the World Bank (2020a) estimated that 478 million Africans lived in extreme poverty. The WB reported that 490 million people in the region lived under the \$1.90 PPP per day poverty line in 2021 (that is, 37 million more people compared to pre-pandemic projections of 453 million). In addition, the WB's assessment shows that Sub-Saharan Africa (SSA) will host the most far-reaching share of the global poor by 2030 —indicating extreme poverty will prevail in the region in the coming decade.

The economy of Somalia is recuperating from civil war and decades of conflict and still faces many threats that contribute to its high poverty level. Poverty rate in the country is widespread, deep, and persisted long-time. In 2019, Somalia's per capita income was 435 United States Dollar (USD), making it the fifth poor nation in the world (see African Economic Outlook, 2018). In addition, the 2018 African Economic Outlook of the African Development Bank (AfDB) pinpointed that roughly half of Somalia's population (51.6%) lived on less than \$1.90 daily at the end of 2016 due to successive lack of rainfalls and down river levels pushing an approximate of 6.7million people in the country in need of critical humanitarian aid. Due to a lack of sufficient and reliable data, only pro-poor strategies from the past five years prepared by the Federal Government of Somalia (FGS) are accessible. The 2017–19 National Development Plan (NDP) was the first national and comprehensive poverty-reduction strategy crafted by the state since 1986. The 2020-2024 NDP becomes the second to define the development priorities of the government. The two NDPs focus on strategies aiming to combat the underlying causes and drivers of poverty and commit to ending the conflict in the country as a priority in the fight against poverty. Figure 1 shows the incident of poverty in Somalia (i.e., the % of the population living on below \$1.9 per day in 2011 PPP terms). The incidence of poverty is more heightened in rural areas compared to urban areas. The incidence was highest in internally displaced persons (IDPs) settlements at 71% followed by 58% in Mogadishu, 51.5% in rural areas, 41% in other

urban areas (excluding Mogadishu), and 52% in households headed by males and 49.5% in those headed by females. In addition, 56% of the households that did not obtain remittances and 36% of those that received remittances lived on less than \$1.9 per day in 2011 PPP.

Figure 1: The Incidence of Poverty in Somalia



Source: Author’s Calculation from the Somalia High Frequency Survey, Wave 1 (2016)

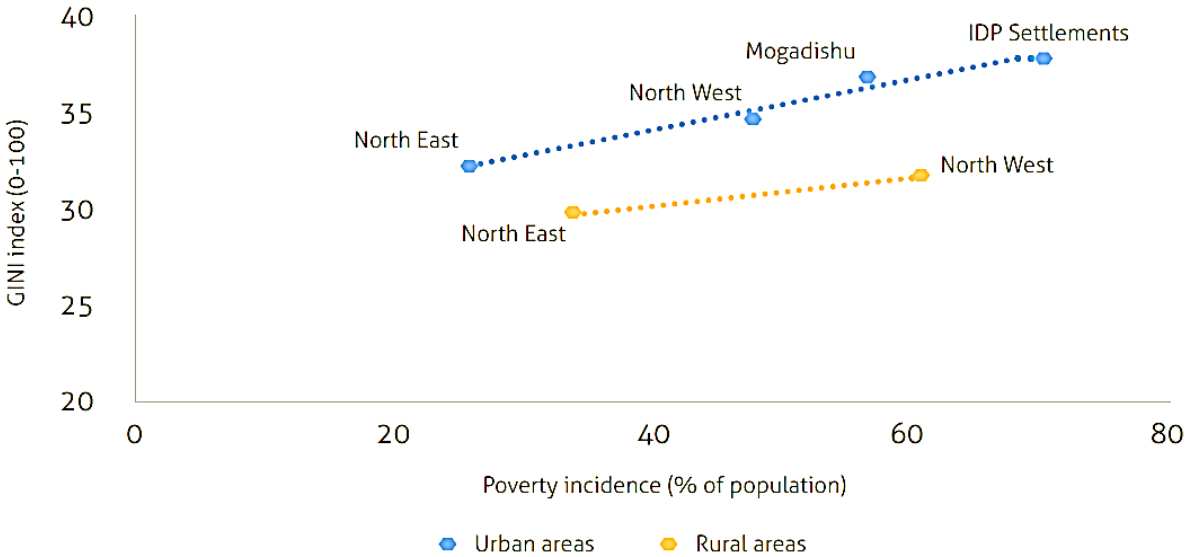
Furthermore, the findings of the Somali High Frequency Survey wave 1 (SHFS-W1) show that poverty heavily affects households in IDP settlements where unemployment levels and delayed enrolment of children in schools are high.

1.2.1 Poverty and Inequality Situation in Somalia

Poverty levels were pervasive in Somalia before the fall of the Central Government and the start of the civil war in 1991. Social services such as clean drinking water, health, and schooling were limited in nomadic and rural areas. In addition, the coverage of social services in urban areas was restricted. Three decades after the civil war began in Somalia, poverty is more severe and prevalent in the country, as the Wave 1 of the Somali High-Frequency Survey (SHFS-W1) data shows—almost 1 in 3 of the people faces intense poverty with a considerable difference in the rate across different parts of the population, ranging from 26% to 70%, with regional disparities overreaching differences between rural and urban areas. Such across-the-board deprivation conditions and a modest poverty gap of 22% indicate that many Somalis are distant from

conquering poverty. The SHFS-W1 data revealed that the poverty rate in urban areas was 26% in the North East and 57% in Mogadishu, while the rate was 34% in the North East and 61% in the North West of the rural areas in 2016. The survey indicates that the poverty incidence in the country is highest among Internally Displaced Persons (IDPs), where seven out of ten people living in these camps are poor, while more than 1.1 million Somalis (around 9% of the population) were estimated internally displaced in 2016. As figure 2 shows, inequality is more evident in urban than rural households. Poverty and inequality are positively correlated when rural and urban households are analyzed separately; IDP camps have the highest poverty and inequality rate, whereas the Northeast region has the lowest level of inequality.

Figure 2: Poverty Inequality within Somali Regions



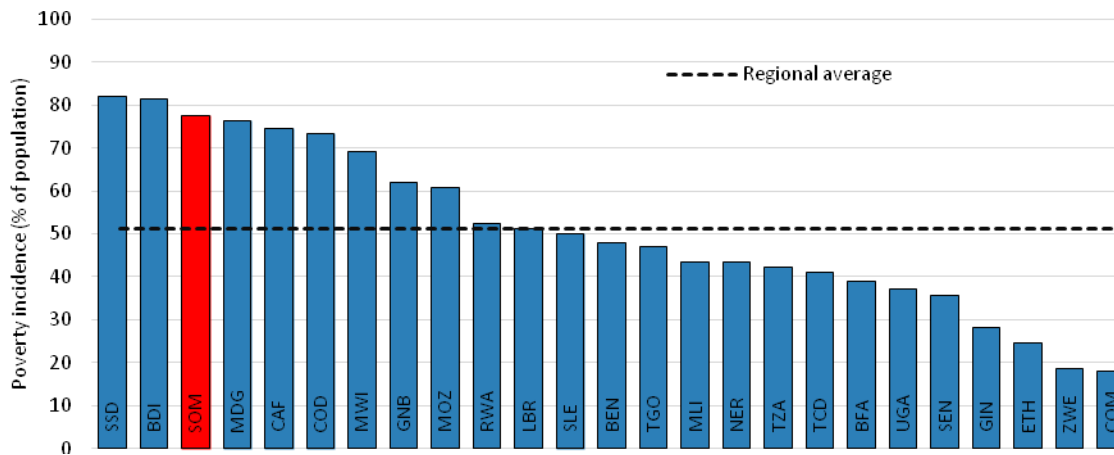
Source: Somalia High Frequency Survey Wave 1(World Bank, 2017)

Poor households are more likely to be illiterate, drop out schooling at the initial stages, miss employment opportunities or unable to participate in the labor market, and live in areas that lack water and health facilities. Moreover, the ongoing droughts in the country recently exacerbated the poverty situation. Given the current political instability and drought-caused rise of internal displacements in Somalia, it is most unlikely that the nation will meet its poverty reduction goals unless extraordinary actions are taken.

1.2.2 Comparing Poverty Rates in Somalia with SSA Countries

Figure 3 below shows poverty in Somalia compared to other SSA countries. In the twenty-five countries, Somalia appears to have the third-highest poverty rate in the region after South Sudan and Burundi. The numbers in figure 3 measure the underlying poverty rate in low levels of economic activity as reflected in Somalia’s per capita gross domestic product (GDP) of \$535 based on the SHFS wave 2— this indicates that per capita income or consumption is a crucial indicator when analyzing poverty determinants. Therefore, for Somalia to effectively reduce and eventually eradicate poverty, it needs growth promotion strategies that allow the poor to transit the poverty threshold.

Figure 3: Cross Country Comparison of Poverty in SSA



Source: Somalia Poverty and Vulnerability Assessment (World Bank Group, 2019)

1.3 Problem Statement

There is a limited number of poverty studies in Somalia that inform the anti-poverty projects of the state and non-governmental organizations (Mohamed 2020; Mohamoud & Bulut 2020). While there are case studies of poverty at regional and district levels in the country, the only two papers that empirically analyzed poverty in the country at the national level (Mohamed 2020; Mohamoud & Bulut 2020) focus on the essential factors that determine household poverty status using logistic regression methods but did not include some crucial explanatory variables in their models such as source of drinking water, time taken to walk to the nearest health center and type of toilet facility the household uses. The study by Mohamed (2020) is the only empirical study

that gives unit change marginal effect of each explanatory variable in the model on the likelihood of being poor. The findings of Mohamed (2020) revealed that the size of the household, having a female household head, and living in a rural area significantly raise household's poverty while sources of earnings from small businesses, being literate, having access to electricity, having one employed family member and receiving remittances lower the probability of being poor. The paper by Mohamoud & Bulut (2020) found literacy, household size, residence area, all main sources of income including agriculture and fishing, access to electricity, and owning a small business as the factors that affect household's poverty status. In addition, Mohamoud & Bulut (2020) reported that the likelihood of being in poverty falls for households with more share of males. However, these two studies never questioned why some sub-groups of the population are poor. The NDPs and poverty profile reports, on the other hand, are limited in their technical analysis. Although poverty profiles give a rough and ready initial clue to the underlying determinants of poverty, they can also be deceptive since they only link the impact of a variable to being poor or non-poor without separating other possible determinants.

Understanding why different sub-groups of population are poor and others are non-poor is paramount in tackling the roots of poverty so that policymakers can develop sustainable systems that alleviate the poor from a prolonged poverty trap. A policy plan that solely relies on a poverty profile addresses merely the momentary necessities of the poor rather than enhancing their capacity to build and create better income-generating tools that can sustain their livelihoods and reduce their risks to vulnerabilities and natural shocks. Therefore, pro-poor policies that rely on studies that provide profound insight into the root determinants of poverty are of great importance in strategies seeking to ameliorate the poor out of poverty. The lack of knowledge on the reason behind the poverty of different population sub-groups restricts the government and other local and international organizations working to reduce poverty in Somalia from recognizing and adopting policy interventions that have the best prospect of improving the standards of living of the poor. Therefore, it is this area of interest that spurs this study. Specifically, the study explored the factors that determine household poverty in Somalia and whether they vary across different population sub-groups. Given the high poverty rate in the country, data-driven strategies that reduce poverty would be prominent to the Government of Somalia and the local and international Non-Governmental Organizations (NGOs) that operate in the country.

1.4 Research Questions

The overall research question of this paper is to assess household determinants of poverty in Somalia. In particular, the paper set out to answer:

- i. What are the determinants of poverty in Somalia?
- ii. Why some sub-groups of the population are not poor, poor, or live in extreme poverty ?
- iii. What are the policy implications of the findings in (i) and (ii) above?

1.5 Research Objectives

The main aim of this study is to assess the determinants of poverty in Somalia. Specifically, the study:

- i. Explores the nature of the determinants of household poverty in Somalia.
- ii. Explains why some households or sub-groups of the population are not poor, poor, or live in extreme poverty.
- iii. Outlines policy implications in the light of the findings in (i) and (ii) above.

1.6 Justification of the Study

This study sought to examine the determinants of poverty in Somalia. There have been only two national studies post-civil war that empirically explore the determinants of poverty in the country. To my knowledge, no empirical poverty study in Somalia so far employed binomial and polychotomous logit models, and there is no prior study that closely examines how poverty affects different population sub-groups. Therefore, this study was the first to utilize binomial and polychotomous (ordered) logit models and contributes to the literature of poverty studies in Somalia. Besides, the paper produced information that serves as a mechanism or a check list for poverty reduction programs and policymakers in informing as well as assessing poverty and designing effective poverty reduction methods in the country. This paper used the 2017/18 Somali High-Frequency Survey wave 2 (SHFS-W2) data for the assignment.

1.7 Organization of the Study

The study is organized into five chapters. Chapter one introduces the background of the study. Chapter two reviews relevant theoretical and empirical literature. Chapter three develops the conceptual framework and the empirical model of the study. Chapter four presents data analysis

of the study and interpret its empirical results. Chapter five draws policy recommendations from the findings in Chapter four and concludes the study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviews relevant theoretical and empirical literature on the determinants of poverty and summarizes the different theories and analytical methods existing studies in the subject utilized.

2.2 Theoretical Literature

Several theories define the underlying determinants of poverty from different perspectives. This study reviews five theories; the individual deficiencies theory, the theory of cultural belief systems that support sub-cultures of poverty, economic, political, and social distortions theory, the theory of geographical disparities, and the theory of cumulative and cyclical interdependencies to deeply understand the root causes of different aspects of the topic.

2.2.1 Individual Deficiencies Theory of Poverty

This theory argues that individuals are responsible for their poverty because of their attitudes, lack of hard work and effort to acquire basic needs. Bradshaw (2007) supports this view that individuals are primarily accountable for their poverty situations, suggesting that hard work, persistence, and better decisions or choices are the best ways the poor can escape poverty. This theory gained strong support from neo-classical economics on the ground that with perfect information, people aim to maximize their welfare and make the best possible choice out of all available alternatives. However, this theory assumes that every poor person lives in a free market economic system that provides opportunities for all, which is not the case for all people.

2.2.2 Theory of Cultural Beliefs that Support Sub-Cultures of Poverty

Bradshaw (2007) notes that this theory emphasizes cultural factors that drive poverty to emerge and persist for a long time— such as dysfunctional thoughts, beliefs, values, habits, and norms that some people hold on to and pass over generations. The notions of the culture of poverty and social isolation provide some of the deep causes that explain poverty. The theory argues that the type of culture practiced in the social group a person identifies with and the environment one lives in tend to shape whether he or she fails or succeeds in life. Nevertheless, the theory does

not specify the extent to which culture defines a person's potential and ignores factors such as willingness of a person to determine their future no matter their circumstances and upbringings.

2.2.3 Economic, Political and Social Distortions Theory

This theory argues that the structure and policies of some economic, political, and social systems limits people from achieving a certain level of well-being and cause poverty. As observed by Sameti et al. (2012), the theory to support its argument took an example for some of the roles in society that demand education and skills that take time, capital, and resources to develop and may be unaffordable to the poor — making them fall behind the rest of a society.

The neoclassical labor-market theory opposes this theory arguing that there are relatively free and open market resources at any given system in which an individual can generate an income with ability and efforts (Sameti et al., 2012 ; Hurst & Lusardi, 2004).

2.2.4 Theory of Geographical Disparities

The theory of geographical disparities argues that some individuals and organizations in certain parts of the world lack the resources required to fulfill their potential merely due to their geographical location. Therefore, this theory focuses on poverty types caused by natural resource endowment differentials and other environmental and geographic characteristics.

According to Bradshaw (2007), this theory views the underlying root causes of poverty from three different perspectives. One theoretical perspective concentrates on economic agglomeration, which explains how the success of one company in a specific geographic location attracts investments and makes the area a hub. While on the other hand, the failure of one firm located in another geographic area with unique characteristics dictates it as a no investment zone and for that reason poverty conditions arise and persist in such a place. Another view is the central place theory which asserts that some areas are more privileged than others and tend to develop faster than underprivileged areas even in periods of widespread economic growth. The third argument is selective-outmigration which argues, according to Wilson (2003), that migration from rural areas to cities by people after they acquire a certain level of education and skills contributes to the poverty rates of such places.

2.2.5 Theory of Cumulative and Cyclical Dependencies

The theory of cumulative and cyclical dependencies causes of poverty originated from the cumulative causation theory developed by Myrdal in 1956 (Fujita, 2004). According to this theory, poverty occurs due to unforeseen circumstances, like natural disasters that suddenly make individuals and households unable to pay for their necessities. The cyclical explanation focuses on the interrelationships between individual economic agents and communities and considers private and community resources mutually dependent (Fujita, 2004).

The theory also considers several psychological problems interrelated to health challenges and lack of employment as factors that contribute to the transmission of poverty from one generation to another. These psychological problems include, but are not limited to, lack of motivation for life, hopelessness, depression, and despair that individuals aggravate in their relationships with others.

2.3 Empirical Literature

There are several existing empirical studies that examine the determinants of poverty across the world. This section reviews some of these relevant studies. Shirazi (1995) examined the impact of various factors such as Sadaqat (charity) on the poverty of households in Pakistan using a 1987-88 income and expenditure survey data and a logit model. The analysis of the study suggests that as the amount of Sadaqat given to the poor rises, the likelihood of a household being in poverty declines. The paper negatively related household income and the education or schooling level of the head of the household to the probability of living in poverty. The study also revealed a positive relationship between household size and being poor.

Rodriguez (2000) studied the determinants of poverty in Mexico using a nationwide household survey of income and expenditure data from 1994 and 1996 and a logistic regression model with several economic and demographic independent variables and a response variable of the likelihood of living in extreme poverty. The analysis of the study revealed a positive correlation between the likelihood of being poor and size of the household, rural area residence, and rural and domestic workers. Conversely, the study found a negative relationship between age, the level of education, professional or middle-level jobs, and the likelihood of being poor.

In Kenya, Oyugi (2000) sought to study household poverty determinants at micro and district levels using a welfare survey data from 1994 and a probit model. The study found nearly all the variables used as crucial determinants of poverty in an analysis that employed discrete and continuous response variable and independent variables that reveal household characteristics. Another study on poverty determinants in Kenya is by Geda et al. (2001). The authors used binomial and polychotomous logit models on the same survey data from 1994. The study used total and food poverty lines as cut-off points to separate the non-poor from the poor, then explored the likelihood of living in moderate poverty conditional on having specified as “poor” in the initial poverty lines and finally calculated the chance of being extremely poor. The paper grouped the several explanatory variables in the study into household factors (size of the household, age, gender, and the household head’s level of education); property-related variables (land and livestock holding); and other categories (residence area such as province, urban or rural, and time taken to obtain energy and fetch water). The authors justified their choice of binomial and polychotomous models on the ground that this approach explains why different sub-groups of the population are poor, non-poor, and others are extremely poor. Results from the study strongly associate poverty with household size, level of education, and agricultural activities. A later study by Otieno (2015) that also explored household poverty determinants in Kenya found the size and education level of the household, occupation, marital status, gender of the household head, area of residence, and time spent on getting to the work place and fetching water determine poverty. The author estimated a logit model in a poverty analysis based on consumption per capita using a 2005/06 household budget survey data.

Okurut et al. (2002) conducted a study to provide an in-depth understanding of the facets that account for regional poverty differentials in Uganda and contribute to better-focused programs for the poor. The study estimated poverty indexes based on regional and national level food poverty lines then compared socioeconomic and demographic features of poor households between and within the regions using household survey data from 1992. The authors employed the Foster, Greer and Thorbecke methodology in computing poverty lines and poverty indexes along with five logistic regression models (one national and four regional) to examine key poverty determinants. The significant poverty determinants the study found are household size, schooling level of the household head, and migration status. In addition, the authors identified Northern Uganda as the poorest region in the country with the worst inequality.

In Egypt, Datt & Jolliffe (2005) analyzed poverty in the country using national household survey data. The authors employed a two-step method, where they first modeled the determinants of individual welfare based on per capita consumption at the household level and then utilized the projections of the model to examine the measures of poverty in connection with their consumption level in the second step. The study opted for a per capita consumption model compared to an income method to estimate household poverty level justifying their preferred approach on the basis that consumption estimates are consistent with their preferred poverty line as opposed to income poverty models that vary with the choice of the poverty line (absolute or relative) used. The most crucial determinant of the standard of living reported in the paper are the level of education of household members. Meyer & Sullivan (2003) conducted a material well-being study that evaluated income and consumption measures and concluded that consumption indicators are more suitable than income when few resources are involved. The study favors consumption measures of well-being because of their effectiveness on poverty policy programs.

In SSA, Adeyemi et al. (2009) empirically studied poverty determinants in the region using the consumption approach. Utilizing cross-country data and multiple regression techniques, the study reported that a growth in the population rate, debt services from external sources, inflation, lack of clean drinking water, gender discrimination, low economic activities, racial and religious disputes, and human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS) negatively influence the poverty rate in the SSA region.

In studying the determinants of poverty, Ramaele (2008) was inquisitive in exploring why some sub-groups of the population in Lesotho were non-poor, poor, or live in extreme poverty using household level budget survey data from 2002/2003 and a binomial along with polychotomous probit models. The author grouped explanatory variables into property-related, household characteristics and other categories. The study used food and absolute poverty lines as cut-off points in ordering the sub-groups of the population. The study found the size of the household and attained level of education mostly determine household poverty. The paper identified the portion of land owned, the distance between home and rudimental public services, marital status, gender, and age as trivial poverty determinants. Overall, the study found that education lowers the likelihood of being poor.

A study by Epo (2010) employed household survey data and binomial and ordered logit regression methods to explore determinants of poverty status at the household and district levels in Cameroon. Similar to Geda et al. (2001), Epo (2010) used a two-stage approach where the author identified poverty determinants in the first step. In the second step, the author subsequently examined the likelihood of living in moderate and extreme poverty dependent on having considered “poor” to explain the what determines poverty in the various population sub-groups. The study pinpointed that the schooling level and the age of household head, having a household member(s) engaged in the labor market, and infrastructure availability lower the poverty status. In addition, the study reported that living in rural Haut Plateau, rural forest, and savanna regions increase the probability of living in poverty.

In a study that sought to analyze the effect of social, economic, and demographic factors of households on poverty status in Ethiopia, Deressa & Sharma (2014) utilized a survey of household data from 2010-11 in a logistic regression model. The study classified the poor from the non-poor based on absolute per capita consumption of Ethiopian Birrs 3781. The findings of the study show that agricultural landowners and working in the formal sector or being self-employed increase the chances of escaping poverty. The result of the analysis also indicates that poverty adversely affects households headed by females, those with high dependency ratios and family sizes.

Using national income data, Biyase & Zwane (2018) utilized random effect (RE) and fixed effect (FE) probit estimation methods to assess household poverty and welfare determinants in South Africa. Findings from the FE and RE probit models suggest that the education level, employment status, race, gender and marital status of the household head significantly determine household wellbeing. The study also found that farming and living in an urban area lower the chances of being in poverty.

In Somalia, Mohamoud & Bulut (2020) and Mohamed (2020) are the only two studies that empirically analyzed the determinants of poverty since the civil war broke out in the country in 1991. Both of the studies employed logistic regression methods in their analysis of the SHFS-W2 data. The study of Mohamed (2020) identified that the household size, having a female household head, and residing in a rural area significantly raise the likelihood of a household being in poverty while sources of earnings from agriculture and small businesses, being literate,

having access to electricity, having one employed family member and receiving remittances lower the probability of being poor. The study by Mohamoud & Bulut (2020) reported that literacy, household size, residence area, all main sources of income including agriculture and fishing, access to electricity, and owning a small business are factors that explain the poverty level of households in Somalia. In addition, Mohamoud & Bulut (2020) reported that the likelihood of being in poverty falls for households with more males.

2.4 Summary of the Reviewed Literature

The above theoretical and empirical literature shows the diverse nature of poverty and that there is no unanimously accepted approach that entirely explains the numerous dimensions of poverty. The individual deficiency theory focuses on personal factors that induce poverty (such as mindset and attitude towards life, lack of hard work, and willingness, efforts, and determination to achieve well-being). The theory of cultural beliefs that supports sub-cultures considers the cultural factors that cause poverty to arise and last for a prolonged time— such as dysfunctional thoughts, values, ritual beliefs and practices, and norms that some people retain and pass over generations.

According to the economic, political, and social distortions theory, deprivation arises due to the structure and policies of the institutions and systems of a country that limit people from achieving a certain level of well-being. The theory of geographical disparities looks at poverty types that arise due to the relationship between peculiar geographic characteristics of a place and social and economic outcomes. Such peculiar natural and environmental characteristics include soil quality, predictability of rainfalls, and tropical lands. The theory of cumulative and cyclical dependencies, on the other hand, looks at the causes of poverty from an unforeseen circumstances point of view. Such unanticipated events include the death of a provider of a family, job layoffs, a sudden loss of wealth due to, for example, warfare and warm climate change effects such as devastating fires. The theory also regards psychological problems linked to health challenges and lack of employment as elements that contribute to the transfer of poverty from one generation to another. Some of these psychological problems are lack of motivation for life, hopelessness, depression, and despair that individuals aggravate in their relationships with others.

The empirical studies reviewed have measured and modeled poverty determinants in various ways. For instance, Rodriguez (2000), Deressa & Sharma (2014), and Okurut et al. (2002) used logistic regression models, while Geda et al. (2001) and Epo (2010) employed binomial and polychotomous logit regression analysis methods. Other studies like Ramaele (2008) utilized binomial and polychotomous probit models. In addition, the reviewed empirical studies also analyzed poverty using consumption per capita indicators in examining the factors that determine poverty. Though studies such as those of Rodriguez (2000) and Biyase & Zwane (2018) have followed different methods, all appear to agree that household size and education as main significant determinants of poverty.

Among the reviewed literature, Mohamoud & Bulut (2020) and Mohamed (2020) are the only two national studies post-civil war that empirically analyze the determinants of poverty in Somalia. These two studies (Mohamoud & Bulut, 2020 and Mohamed, 2020) did not include the source of drinking water, time taken to walk to the nearest health center, and type of toilet facility the household uses as explanatory variables in their analysis of poverty determinants. This study filled this gap and is the first to employ binomial and polychotomous (ordered) logit models in the poverty analysis of Somalia. Moreover, this study analyzed poverty based on a per capita consumption welfare indicator measure.

CHAPTER THREE
RESEARCH METHODOLOGY

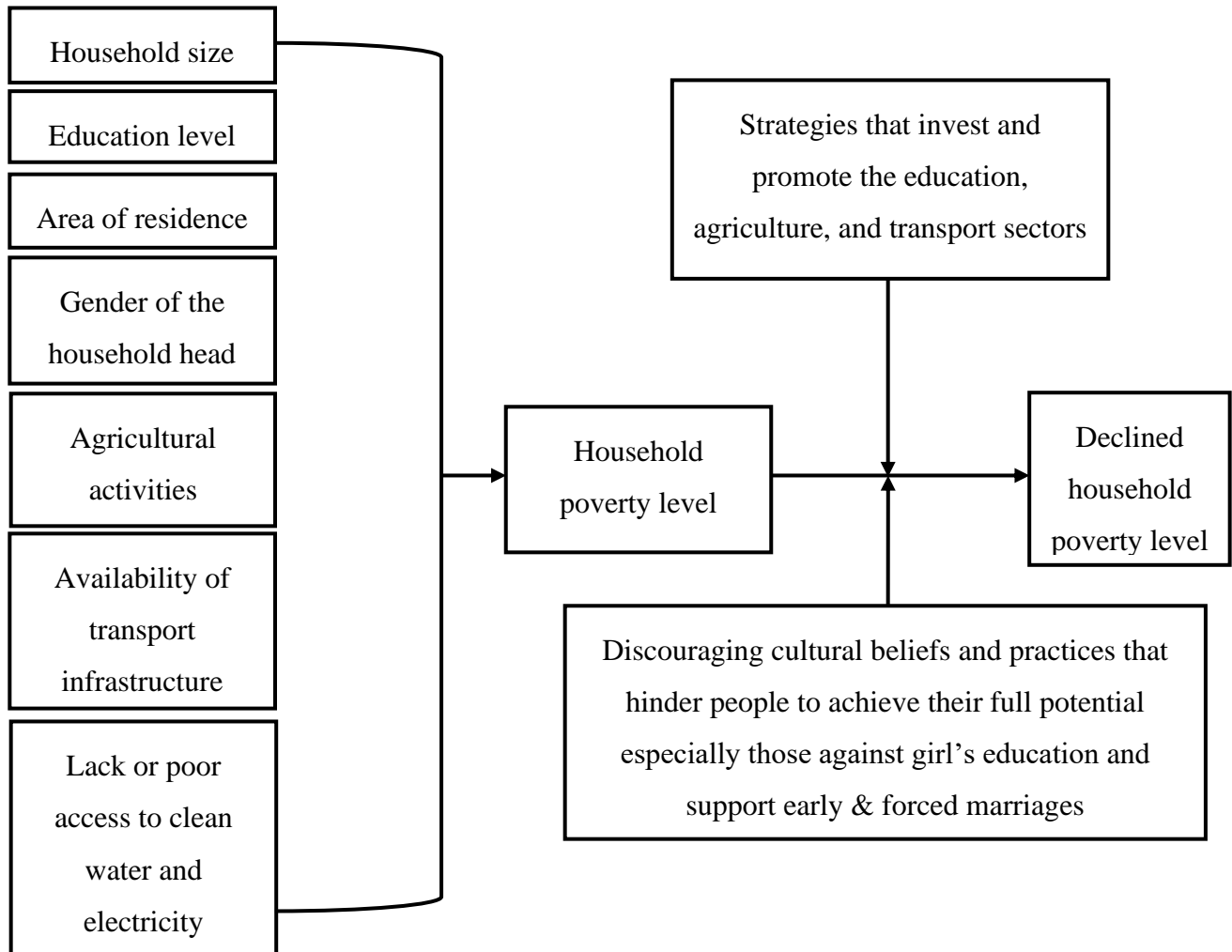
3.1 Introduction

This chapter develops the methodology the study utilized to examine the determinants of poverty in Somalia. It outlines the conceptual framework and the specification of the empirical model of the study, as well as data type and sources.

3.2 Conceptual Framework

The conceptual framework below recaps the most common variables that were found to determine household poverty level in the reviewed literature and strategies that lower poverty as shown in Figure 4.

Figure 4: Determinants of Poverty and Strategies that Lead to its Reduction

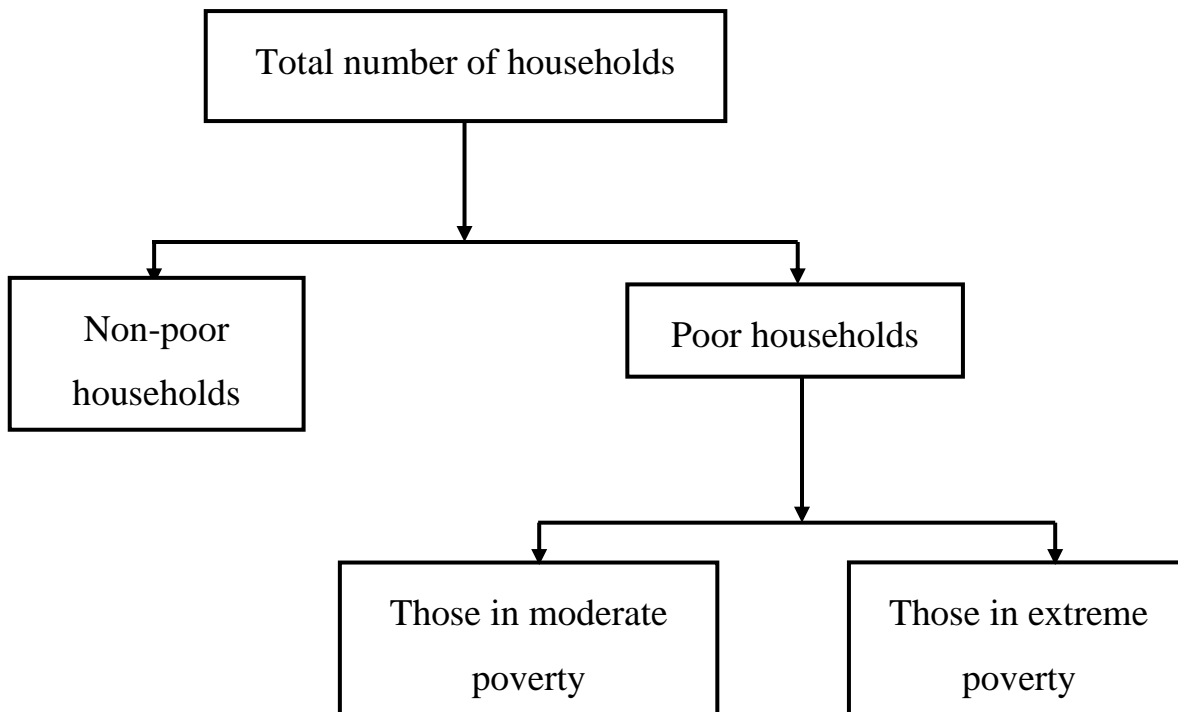


Source: Author's illustration based on the findings in the reviewed literature

The framework depicts that the size of the household, education level, area of residence, gender of the household head, agricultural activities, availability of transport infrastructure, and poor or lack of access to clean drinking water and electricity are the top factors the studies reviewed in the literature found to determine household poverty level. The framework also illustrates different strategies that best address the main factors that contribute to poverty and, hence, enhance the standards of living of the poor. However, the poverty reduction scheme needs to be sub-group and region-specific.

This study relies on the household features recorded in the SHFS-W2 data. Moreover, Figure 5 shows the process the study followed in estimating the poverty status of different households in the population.

Figure 5: A Nested Layout of Poverty Situation



Source: Geda et al. (2001)

The paper used the poverty lines as set in the dataset. In measuring poverty, this study used poverty headcount index (P_0), the poverty gap index (P_1), and the poverty severity or squared poverty gap index.

3.3 Model Specification

3.3.1 The Logit Model

This study adopts the methodology utilized by Geda et al., (2001) (see Maddala 1983 p. 22-49). This methodology aims to explain and identify why some sub-groups of the population are non-poor while others are in moderate or extreme poverty. The paper first classified the non-poor and the poor, then examined the likelihood of being in moderate household poverty dependent on having specified as "poor" (i.e., the study also calculated the likelihood of living in severe or extreme poverty).

The study assumes an underlying dependent variable that captures the actual economic status of a person and determines the probability of falling into a particular poverty category. In the case of being poor or non-poor (i.e., a binary poverty status), let the following regression relationship define the underlying response variable y^* :

$$y_i^* = \sum x_i' \beta + u_i \quad (3.1)$$

Where $\beta' = [\beta_1, \beta_2, \dots, \beta_k]$ and $x_i' = [1, x_{i2}, x_{i3}, \dots, x_{ik}]$

Practically y^* in equation (3.1) is unobservable since it is a latent variable. However, a categorical or dummy variable y defined by equation (3.2) below is observable:

$$y = 1 \text{ if } y^* > 0$$

$$y = 0 \text{ otherwise} \quad (3.2)$$

Relating equation (3.2) to (3.3), the following expression can be derived:

$$Prob(y_i = 1) = Prob(u_i > -\sum x_i' \beta)$$

$$= 1 - F(-\sum x_i' \beta) \quad (3.3)$$

Where F is the cumulative distribution function for u_i and

$$Prob((y_i = 0|\beta, \mathbf{x}_i) = F(-\sum \mathbf{x}_i' \beta).$$

The observed values of y are the binomial realizations of the probabilities in equation (3.3) and depends on \mathbf{X}_i . Therefore, the likelihood function can be expressed as:

$$L = \prod_{y_i=0} [F(-\sum \mathbf{x}_i' \beta)] \prod_{y_i=1} [1 - F(-\sum \mathbf{x}_i' \beta)]$$

Which can be rewritten as:

$$L = \prod_{y_i=1} [F(-\sum \mathbf{x}_i' \beta)]^{1-y_i} [1 - F(-\sum \mathbf{x}_i' \beta)]^{y_i} \quad (3.4)$$

The functional form of F in equation (3.4)¹ hinges on what the u_i in equation (3.1) is assumed about.² Assuming the cumulative distribution of the u_i in F of equation (3.4) is logistic, the relevant expressions of the logit model for this study is given as:

¹ The log likelihood function for the equations in [3.4] can be expressed as:

$$l(\beta) = \log L(\beta) = \sum_{i=0}^n y_i \log(1 - F(-\sum \mathbf{X}_i' \beta)) + (1 - y_i) \log F(-\sum \mathbf{X}_i' \beta)$$

² The assumptions made shapes the difference between probit and logit methods. However, logistic and cumulative normal distributions lead to almost similar results. Hence, the use of one or the other produces the same result (see Maddala 1983 and Geda et al. 2001)

$$1 - F(-\sum x_{it} \beta) = \frac{e^{\sum x_{it} \beta}}{1 + e^{\sum x_{it} \beta}} \quad (3.5a)$$

$$F(-\sum x_{it} \beta) = \frac{e^{-\sum x_{it} \beta}}{1 + e^{-\sum x_{it} \beta}} = \frac{1}{1 + e^{\sum x_{it} \beta}} \quad (3.5b)$$

Where \mathbf{X}_i 's represent household attributes, and the β 's are the coefficients for the variables in the logit regression model. After estimating equation (3.4) with maximum likelihood method ((MLM), equation (3.5a) gives the probability of being poor (Prob($y_i = 1$)) while equation (3.5b) gives the probability of being non-poor (Prob($y_i = 0$)).

3.3.2 The Ordered Logit Model

After modeling the non-poor and the poor, the paper turns to a polychotomous model (specifically an ordered logit model) that addresses the extreme poverty versus the moderate poverty and non-poor. The choice for the ordered logit model is justifiable because; (1) The study explicitly orders sub-samples of the population utilizing overall poverty as well as food poverty line as cut-off points; (2) The poverty categories in the model have a natural order; and (3) The categories do not refer to the choices made (see Maddala 1983).

Assuming three categories (1, 2 and 3 and corresponding probabilities P1, P2 and P3), an individual would fall in category 3 if $u < \beta'x$, in category 2 if $\beta'x < u \leq \beta'x + \alpha$, and in category 1 if $u \geq \beta'x + \alpha$. Where $\alpha > 0$ and u is the disturbance or error term in the underlining response model (see Equation 3.1). These relationships are shown as:

$$P_3 = F(\beta'X_i)$$

$$P_2 = F(\beta'X_i + \alpha) - F(\beta'X_i)$$

$$P_1 = 1 - F(\beta'X_i + \alpha) \quad (3.6)$$

Where F denotes the logistic distribution in the ordered logit model. Let an underlying response model be defined as:

$$y_i = \beta'X_i + u_i \quad (i = 1, 2, \dots, n) \quad (3.7)$$

The underlying response variable is not observable but after extending equation (3.7) into a generalization of m categories, which of the categories y belongs to can be known if $\alpha_{j-1} < Y < \alpha_j$; where $j=1,2,\dots,m$ (see Maddala 1983 p. 46-47).

Using the normalization rule that $\text{var}(u) = 1$ (hence, $u \sim \text{IN}(0,1)$), consider a set of ordinal variables defined as:

$Z_{ij} = 1$ if y_i falls in the j^{th} category.

$Z_{ij} = 0$ otherwise.

$$\text{Then, } \text{Prob}(Z_{ij} = 1) = \Phi(\alpha_j - \beta'X_i) - \Phi(\alpha_{j-1} - \beta'X_i) \quad (3.8)$$

Where Φ is the cumulative logistic distribution and the α_j 's are the equivalent of the α 's in equation (3.6). The likelihood function is:

$$L = \prod_{i=1}^n \prod_{j=1}^m [\Phi(\alpha_j - \beta'x_i) - \Phi(\alpha_{j-1} - \beta'x_i)]^{Z_{ij}} \quad (3.9)$$

And the log-likelihood function is:

$$L^* = \text{Log } L = \sum_{i=1}^n \sum_{j=1}^k Z_{ij} \log[\Phi(\alpha_j - \beta'x_i) - \Phi(\alpha_{j-1} - \beta'x_i)] \quad (3.10)$$

Maximizing equation (3.11) the typical way and solving it iteratively by numerical methods gives the probability estimations of the model (see Maddala 1983 p. 48-49).

3.3.3 Explanation and Measurement of Variables used in The Estimated Models

Table 1 below lists and defines the variables used in the estimated logit and ordered logit equations.

Table 1: Explanation of the Variables used in The Estimated Models

Variables	Definition
Dependent Variable: Poor	P=1 if poor, 0 otherwise. Poverty estimates-based food and absolute poverty line in the dataset
Independent Variables	
Age of the household head	Age of the household head in years
Age squared	Squared age of the household head
Household size	Household size
Gender of the household head	=1 if male, 0 female
The head of the household can read and write	=1 if able to read and write, 0 otherwise
Area of residence	=1 if Urban, 0 otherwise =1 if Rural, 0 otherwise =1 if IDP, 0 otherwise =1 if Nomad, 0 otherwise
Access to public transport	=1 if yes, 0 otherwise
Household's main source of income	=1 if Salaried labor, 0 otherwise =1 if Remittance, 0 otherwise =1 if Agriculture, fishing, and hunting, 0 otherwise =1 if Small family business, 0 otherwise =1 if Other sources, 0 otherwise
Household has at least one economically active member	=1 if true, 0 otherwise
Received remittance	=1 if received, 0 otherwise
Access to electricity	=1 if household has electricity, 0 otherwise
Drinking water source of the household	=1 if Piped water, 0 otherwise =1 if Public tap, 0 otherwise =1 if Borehole, protected well/spring, or rainwater, 0 otherwise =1 if Tanker-truck or bottled water, 0

	otherwise =1 if Unprotected well/spring or other sources, 0 otherwise
Time taken to walk (one way) to the to the nearest health center	=1 if Less than 5 minutes, 0 otherwise =1 if Between 5 and 10 minutes, 0 otherwise =1 if Between 10 and 30 minutes, 0 otherwise =1 if Between 30 minutes to an hour, 0 otherwise =1 if Between 1 and 2 hours, 0 otherwise =1 if Between 2 and 5 hours, 0 otherwise =1 if Between 5 and 10 hours, 0 otherwise =1 if Between 10 hours and 1 day, 0 otherwise =1 if More than 1 day, 0 otherwise
Type of toilet facility used	=1 if Flush/pour flush to: piped sewer system, 0 otherwise =1 if Pit latrine without slab/open, 0 otherwise =1 if Flush/pour flush to: pit latrine, 0 otherwise =1 if Other facility, 0 otherwise

In addition, Table 2 below shows how the study measured the variables when estimating the logit and ordered logit equation and the expected signs based on the findings in the reviewed studies.

Table 2: Measurement of Variables used in The Logit and Ordered Logit Models

Variable	Measurement	Expected Sign	References (those who support or found a positive /negative relationship between poverty and the variable in question)
Age & Age squared	Measured by the head of the household's age in years.	Positive	See Geda et al. 2001 and Ramaele 2008
Household size	Measured by the number of individuals in the household	Positive	See Shirazi 1995; Rodriguez 2000; Geda et al. 2001; Okurut et al. 2002; Ramaele 2008; Deressa & Sharma 2014; Otieno 2015; Mohamoud & Bulut 2020

			and Mohamed 2020
Gender of the household head	Measured by a categorical variable that takes 1 if male and 0 if female	Positive for females and negative for males	See Deressa & Sharma (2014); Biyase & Zwane 2018; Geda et al. 2001; Mohamoud & Bulut 2020 and Mohamed 2020
The household head is literate	Measured by whether the household head can read and write or not	Negative	See Ramaele 2008; Mohamoud & Bulut 2020 and Mohamed 2020
Area of residence	Measured by residing in either urban, rural, IDP, or Nomad areas	Positive for rural areas and IDP camps	See Rodriguez 2000; Geda et al. 2001; Otieno 2015; Mohamoud & Bulut 2020 and Mohamed 2020
Access to public transport	Measured by a categorical variable that takes 1 if household has access to public transport and 0 otherwise	Negative	See Mohamoud & Bulut 2020 and Mohamed 2020
Household's main source of income	Measured by the sources defined in table 1	Positive for Agriculture, fishing and hunting.	See Geda et al. 2001; Mohamoud & Bulut 2020 and Mohamed 2020
Household has at least one economically active member	Measured by as defined in table 1	Negative if there is at least one economically active household member	See Mohamoud & Bulut 2020 and Mohamed 2020
Household received remittance	Measured by a categorical variable that takes 1 if the household received remittance and 0 otherwise	Negative if received remittance	See Mohamoud & Bulut 2020 and Mohamed 2020
Access to electricity	Measured by a categorical variable that takes 1 if household has electricity and 0 otherwise	Negative if household has electricity	See Ramaele 2008; Mohamoud & Bulut 2020 and Mohamed 2020
Household's main source of drinking	Measured by the categories defined in table 1	Whether positive or negative is category-specific	See Ramaele 2008

water			
Time taken to walk to the nearest health center	Measured by the categories defined in table 1	Negative	See Ramaele 2008 and Awiti, J. O. (2014).
Type of toilet facility used	Measured by the categories defined in table 1	Negative for Pit latrine toilet facilities	See Ramaele 2008

3.4 Diagnostic Tests

3.4.1 Multicollinearity

When independent variables in a model are correlated, multicollinearity arises. This results in infinitely large and inaccurate standard errors and variances for the correlated estimates. Thus, this study assessed the severity of multicollinearity using Variance Inflation Factors (VIF).

3.5 Data types and Source

The study used the 2017/18 wave 2 of the Somali High Frequency Survey (SHFS-W2) data conducted in December 2017 by the WB in partnership with Somali statistical authorities at the Ministry of Planning, Investment and Economic Development (MOPIED) of the Federal Government of Somalia (FGS). The SHFS-W2 is a household survey that captures the welfare status of the residents in all of the covered accessible areas of the seventeen regions inside Somalia's pre-war borders including Somaliland. The survey interviewed a total of 6,092 households; 4,011 of them were from urban, 1,106 came from rural, 468 from IDP settlements, and 507 from nomadic areas.

3.5.1 Information Collected

The SHFS-W2 collected data on the characteristics of the household such as the size, residence area, age, education level, and gender of the head of the household, employment status, access to services, details before displacement, the source of household income, information on assets and food and non-food consumption along with other economic characteristics.

CHAPTER FOUR

EMPIRICAL FINDINGS AND DISCUSSION

4.1 Introduction

This chapter reports the results of the empirical analysis of the data. The chapter begins with descriptive statistics followed by diagnostic tests, and interpretation and discussion of the results of the logit and ordered logit models. The paper used the SHFS-W2 data in its analysis.

4.2 Descriptive Statistics

The sample in the analysis of this paper consists of 5909 households because some households were dropped from the original sample of 6092 households due to missing data for some of the essential variables in the study. Table 3 shows the descriptive statistics of fifteen variables (one dependent and fourteen explanatory variables) the study took into account.

Table 3: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Poor	5909	0.616	0.487	0	1
Age of the hhh	5909	37.76	11.842	16	90
Age Squared	5909	1566.057	1043.632	256	8100
Household size	5909	5.483	2.031	1	15
Gender of the hhh	5909	0.503	0.5	0	1
Hhh is literate	5909	0.528	0.499	0	1
Area of Residence	5909	1.572	0.937	1	4
Access to transport	5909	0.456	0.498	0	1
Main source of income	5909	2.836	1.757	1	5
Hh has active member	5909	0.805	0.397	0	1
Remittance	5909	0.19	0.392	0	1
Electricity	5909	0.63	0.483	0	1
Water	5909	2.209	1.511	1	5
Health	5909	3.177	1.375	1	9
Type of toilet facility	5909	3.076	1.083	1	4

Source: Author's computation from SHFS-W2 Data

The age of the household heads in the data range from 16 to 90 years. About 49.70 percent of the 5909 households in the sample are headed by females while 50.30 percent are headed by males. About 52.83 percent of the household heads in the sample are literate (1,289 of those are female heads and 1,833 are male heads) while 47.17 percent are illiterate (1,648 of those are females and 1,139 are males). About 66.41 percent of the sample came from urban areas, 17.92 percent came from rural areas, 7.70 percent came from IDP settlements, and 7.97 percent came from

nomadic areas. More than half of the households (54.39 percent) in the sample do not have access to public transport while about 45.61 percent have access to public transport. About 42.82 percent of the households in the sample earn their main source of income from salaried labor, 20.83 percent from small family business, 13.54 percent from agriculture, fishing, and hunting, 7.46 percent from remittances and 15.35 percent from other sources. Majority of the households in the sample (80.45 percent) have at least one economically active household member, whereas the rest (19.55 percent) do not have one. About 63.02 percent of the households in the sample have electricity and 36.98 percent lack it. Only 18.97 percent of the households in the sample receive remittances while 81.03 percent do not. Majority of the household (54.31 percent) in the sample have piped drinking water, 18.99 percent rely on other water sources such as from boreholes, protected wells/springs, or rainwater, 15.60 percent rely on unprotected wells/springs or other sources of water, 6.38 percent get their drinking water from public taps, whereas 4.72 percent get it from tanker-truck and bottled water. It take less than 5 minutes for 8 percent of the sample to walk to their nearest health center, about 26.45 percent of the sample walk to their nearest health center between 5 and 10 minutes, 31.09 percent take between 10 and 30 minutes on their walk (one way) to the nearest health center, 16.94 percent take 30 minutes to an hour, 11.63 percent take between 1 and 2 hours, 4.25 percent take between 2 and 5 hours, 1.15 percent take between 5 and 10 hours, 0.37 percent take between 10 hours and a day, and it takes 0.12 percent of the sample more than a day to walk to their nearest health center. The kind of toilet facility households in the sample use range from 10.04 percent of open pit latrine users, 15.01 percent of piped sewer systems users, 27.28 percent of pit latrine users to 47.67 percent who use other facilities.

4.3 Diagnostic Tests

4.3.1 Multicollinearity

To examine the degree of multicollinearity, the study utilized a tolerance and a VIF measures. The tolerance is $1/\text{VIF}$ and the corresponding VIF is $1/(1 - R^2)$. The VIF values for the variables used in the analysis are shown in Table 4. All of the variables (except age and age squared of the household head) had VIF values below 5, which suggests severe multicollinearity is not present.

Table 4: Multicollinearity

	VIF	1/VIF
Age of the hhh	30.20	0.0331
Age Squared	29.38	0.0340
Household size	1.22	0.8219
Gender of the hhh	1.17	0.8541
Hhh is literate	1.36	0.7354
Area of Residence	1.54	0.6514
Access to transport	1.15	0.8667
Main source of income	1.34	0.7463
Hh has active member	1.15	0.8687
Remittance	1.05	0.9520
Electricity	1.76	0.5691
Water	1.48	0.6756
Health	1.34	0.7464
Type of toilet facility	1.10	0.9119
Mean VIF	5.09	.

Source: Author's computation from SHFS-W2 Data

4.4 Discussion and Interpretation of Results

4.4.1 The Logit Model Results, Interpretation, and Discussion

Table 5 shows the logit model results. This model as a whole fits significantly better than a model with no predictors, according to the likelihood ratio chi-square, which is 903.668 and has a p-value of 0.0000.

Table 5: Logit Model Results

Poor	Coef.	Odds Ratio	Marg. Effects
Age of the hhh	-0.0196 (0.0135)	0.980595 (0.0132463)	-0.0039777 (0.0027408)
Age squared	0.000197 (0.000152)	1.000197 (0.0001522)	0.00004 (0.0000309)
Household Size	0.356*** (0.0179)	1.427912*** (0.0255974)	0.0723*** (0.0031888)

Gender of the Household			
Male	-0.146** (0.0634)	0.65968** (0.0734322)	-0.02966** (0.012855)
Hh is Literate			
Literate	-0.202*** (0.0683)	0.8173515*** (0.0555831)	-0.0411*** (0.013911)
Area of Residence			
Rural	-0.314* (0.0981)	0.7308499* (0.0716605)	-0.0639* (0.019994)
IDP	-0.0778 (0.123)	0.9251576 (0.113491)	-0.0155798 (0.0246743)
Nomads	-0.323** (0.152)	0.7239356* (0.1096973)	-0.065869* (0.031120)
Access to Transport			
Yes	-0.2267*** (0.0635)	0.79716*** (0.0796941)	-0.0459*** (0.0127665)
Main source of income			
Remittances	0.219 (0.125)	1.245218 (0.1562191)	0.043421 (0.024371)
Agriculture, Fishing and Hunting	-0.754*** (0.281)	0.470480*** (0.1320444)	-0.1576*** (0.058712)
Small Family Business	-0.164** (0.0803)	0.8490132** (0.068185)	-0.03351** (0.016458)
Other Sources	0.0270 (0.0886)	1.027329 (0.091054)	0.0054396 (0.0178778)
Household has at least one active member			
Yes	-0.275*** (0.0820)	0.759743*** (0.0622877)	-0.0549*** (0.0160687)
Remittances			
Received	-0.654*** (0.0798)	0.5197558*** (0.0414689)	-0.1374*** (0.0168584)

Household has electricity			
Yes	-0.956*** (0.0860)	0.3844176*** (0.033058)	-0.1903*** (0.0159013)
Drinking water source			
Public tap	0.256* (0.139)	1.291753* (0.107577)	0.0522035* (0.0285325)
Borehole, protected well/spring, or rainwater	0.0137 (0.0995)	1.013809 (0.1008347)	0.0027327 (0.0198148)
Tanker-truck, bottled water	0.209 (0.145)	1.232714 (0.1788765)	0.040854 (0.0278016)
Unprotected well/spring/other	0.447*** (0.10301)	1.563614*** (0.0658699)	0.09196*** (0.0210364)
Time taken to walk to the nearest health center			
Between 5 and 10 minutes	0.3605*** (0.12179)	1.434046*** (0.084929)	0.06938*** (0.0227909)
Between 10 and 30 minutes	0.3645*** (0.200398)	1.439794*** (0.0833758)	0.07017*** (0.0224079)
30 minutes to an hour	0.3947*** (0.130345)	1.483939*** (0.0878387)	0.07625*** (0.024612)
Between 1 and 2 hours	0.65033*** (0.147632)	1.916173*** (0.0770452)	0.12873*** (0.0285584)
Between 2 and 5 hours	0.65061*** (0.191436)	1.916710*** (0.054814)	0.25479*** (0.0285584)
Between 5 and 10 hours	0.65333*** (0.296956)	1.921930*** (0.0664372)	0.30521*** (0.0584725)
Between 10 hours and a day	0.6542419* (0.494512)	1.923684* (0.1927035)	0.1901277* (0.1035486)
More than 1 day	0.6900055** (1.104803)	1.993726** (0.0607864)	0.53422*** (0.1325802)
Type of household's toilet facility			
Pit latrine without slab/open	0.5316967*** (0.136915)	1.701817*** (0.2330047)	0.10311*** (0.0259491)

Flush/pour flush to: pit latrine	-0.11753 (0.093945)	0.8891138 (0.0835275)	-0.0243763 (0.0194077)
Other Facilities	0.0189566 (0.089293)	1.019137 (0.0910018)	0.003891 (0.0183458)
Constant	0.5093431* (0.3050684)	1.664198* (0.5076941)	
Mean dependent var	0.616	SD dependent var	0.487
Pseudo r-squared	0.115	Number of obs	5909
Chi-square	903.668	Prob > chi2	0.000
Akaike crit. (AIC)	7033.759	Bayesian crit. (BIC)	7247.655

Note: Standard errors in parenthesis. *** p<.01, ** p<.05, * p<.1

The coefficients of the logit model in Table 5 display the anticipated change in the log-odds of a household poverty for each additional unit in the explanatory variables, *ceteris paribus* i.e., assuming nothing else changes in the household. For example, Table 5 shows a positive coefficient for the size of the household, indicating that each additional household member raises the log odds of the household being in poverty by 0.356, *ceteris paribus*. The odds ratios show the odds of the household being in poverty for each additional unit in the independent variables. The result shows that the odds of the household being poor increase about 1.428 times for each additional member of the household. Marginal effects show the probability or percentage point changes of a household being poor that result from a unit change in the independent variables. Thus, the likelihood of a household being in poverty rises by about 7 percent with every additional increase in the size of the household. This indicates that each additional member in a household comes with needs, making the household spend or consume more than it did before its size has increased. This positive relationship between household size and poverty is statistically significant at the 1 percent level, which implies it is a significant determinant of household poverty in Somalia. This finding is in line with several other studies (Shirazi 1995; Rodriguez 2000; Geda et al. 2001; Okurut et al. 2002; Ramaele 2008; Deressa & Sharma 2014; Otieno 2015; Mohamoud & Bulut 2020 and Mohamed 2020) reviewed in the literature.

The marginal effects estimate for the variable gender of the household head (male) is -0.02966. This means that female-headed households are more likely to be poor than their male

counterparts. In other words, the probability of household poverty falls by about 3 percent for households headed by males versus females. This could be that female household heads are less educated (the variable that captured the literacy level of the household heads in the data shows that 59 percent of female household heads are illiterate and the male illiterates are 41 percent), most are unemployed or work on less paying jobs, and due to that are less economically empowered than their male counterparts. This result is consistent with that of Deressa & Sharma (2014); Biyase & Zwane (2018) Geda et al. (2001); Mohamoud & Bulut (2020) and Mohamed (2020). Household heads that cannot read and write are more likely to be poor. In other words, the probability of being poor for households headed by literates is about 4 percent less than that of their counterparts. This shows the importance of education because if the literacy level significantly matters for the household's poverty status, education levels such as primary, secondary, and tertiary will make a great difference for the household's economic status. This result matches that of Ramaele (2008) Mohamoud & Bulut (2020) and Mohamed (2020).

Unlike the findings of Rodriguez 2000; Geda et al. 2001; Otieno 2015; Mohamoud & Bulut 2020 and Mohamed 2020, the results of the analysis of the logit model suggest that the likelihood of a household being poor falls by about 6.39 percent for households residing in a rural area versus an urban area. On the other hand, the probability decreases by about 6.59 percent for households residing in a nomadic area compared to urban residents.

Households that do not have access to public transport are about 4.6 percent poorer than their counterparts. This shows the importance of transport infrastructure because the availability of transport to the poor lowers the time and the cost of getting services such as health, education, other needed services as well as delivering their products to market places. This finding matches that of Mohamoud & Bulut (2020) and Mohamed (2020). Unlike the findings of Geda et al. (2001), the results of the binomial model indicate that the chance of a household being poor falls for households that rely on sources of income from agriculture, fishing and hunting and small business versus salaried labor –and this is statistically significant. To some extent, this might be related to the finding that household poverty is lower in rural households than urban residents since people living in rural areas are mainly engaged in agricultural activities. Furthermore, the results of the analysis show that the likelihood of a household being poor falls by 5.5 percent for households with at least one active member compared to their counterparts. This finding is consistent with that of Mohamoud & Bulut (2020) and Mohamed (2020).

Households that receive remittances are 13.7 percent less poor than those that do not receive remittances. This is because remittances may be used to pay for necessities like basic consumer items, children's education, health care, rent, and other household needs. According to a study by Mohamed (2021), household poverty levels in Somalia dramatically dropped as a result of remittances, and beneficiaries' per capita spending was higher than that of non-recipient households. Having electricity lowers the likelihood of household poverty by 19.33 percent. This suggests that with electricity streets are lit, work does not stop after sunset, children do school homework, phones are charged, business goes on, household members can continue to engage in productive activities, and standard of living improves. The findings for the electricity are consistent with that of Ramaele (2008) and the remittance results match that of Mohamoud & Bulut (2020) and Mohamed (2020). The likelihood of a household being poor rises when the drinking water source is a public tap by 5.2 percent and by about 9.2 percent when the drinking water of the household is from an unprotected well/spring/other compared to piped water sources. This may explain the fact that it takes time to fetch water from public taps or wells, which the household could perhaps have spent on doing other productive economic activities.

The finding for time taken to walk to the nearest health center indicates that this variable is a significant determinant of poverty, since the results show that household poverty rises with the distance of household's closest health center. This is in line with the findings of Ramaele (2008) and Awiti (2014) and could explain how the distance to a health center disincentivizes households in remote areas to check their health. For the type of toilet facility the household uses, the analysis shows that the likelihood of being in poverty rises by 10.3 percent for households that use open pit latrine facilities versus those that use facilities with flush/pour flush or piped sewer system.

The main significant determinants of household poverty found in the logit model are household size, time taken to walk to the nearest health center, access to transport, having electricity, having at least one economically active household member, receiving remittances, main sources of income from agriculture and small businesses, drinking from a piped water tap, using a toilet facility with a sewer system, and gender and literacy of the household head.

4.4.2 The Ordered Logit Model Results and Interpretation

Based on food and absolute poverty lines set in the SHFS-W2 data, the study ordered the sample in the analysis into three mutually exclusive categories; category 1 (non-poor households), category 2 (moderately-poor households) and category 3 (extremely-poor households) to estimate the ordered logit model, where poverty greatly affects households in category 3. Table 6 shows the coefficients of the estimated ordered logit model, odds ratio, and the marginal effects of the predictors. In addition, the predicted probabilities of falling into any of the three categories are shown in Table 8 in the annex. A household in Somalia has a 38.45 percent chance of not being poor, a likelihood of 16.94 percent of being moderately poor, and a probability of 44.61 percent of being extremely poor. With a likelihood ratio chi-square of 684.632 and a p-value of 0.0000, this model as a whole fits significantly better than a model with no regressors.

Table 6: The Results of The Ordered Logit Model

Explanatory Variables	Coef.	Odds Ratio	Marginal Effects		
			Non-Poor	Moderately-Poor	Extremely-Poor
Age of the hhh	-0.00440 (0.01170)	0.9956083 (0.0116482)	0.0009571 (0.0025441)	0.000024 (0.000064)	-0.000981 (0.0026077)
Age squared	0.000017 (0.000134)	1.000017 (0.0001304)	-3.70e-06 (0.0000284)	-9.28e-08 (7.11e-07)	3.80e-06 (0.0000291)
Household Size	0.255*** (0.01438)	1.2905*** (0.018552)	-0.055457*** (0.0029143)	-0.001390*** (0.0004195)	0.056847*** (0.0029271)
Gender of the Household					
Male	-0.1241** (0.055771)	0.883292** (0.0631414)	0.0269921** (0.0121204)	-0.0006798* (0.000368)	-0.027672** (0.0124253)
Hh is Literate					
Literate	-0.1497** (0.05955)	0.8609253** (0.0512661)	0.032617** (0.0129758)	-0.0008786** (0.0004481)	-0.0334955** (0.0133466)
Area of Residence					
Rural	-0.12068 (0.08481)	0.8863212 (0.0751708)	0.0262867 (0.0185311)	0.0004854* (0.0002792)	-0.026772 (0.018704)
IDP	-0.08370 (0.104244)	0.9197051 (0.0958736)	0.0181769 (0.0227432)	0.0004346 (0.0003758)	-0.0186114 (0.0230764)

Nomads	-0.12936 (0.129612)	0.878659 (0.1138845)	0.0281976 (0.028416)	0.0004847* (0.0002686)	-0.0286823 (0.0285156)
Access to Transport					
Yes	-0.2060*** (0.0558057)	0.813833*** (0.0685717)	0.044651*** (0.0120218)	-0.0011976** (0.0004849)	-0.045849*** (0.0123671)
Main source of income					
Remittances	0.178286 (0.1126619)	1.195167 (0.1346497)	-0.0380012 (0.0236313)	-0.0021022 (0.0018195)	0.0401034 (0.0253965)
Agriculture, Fishing and Hunting	-0.7267*** (0.268544)	0.483481*** (0.1298359)	0.162980*** (0.0601176)	-0.0117837 (0.0097517)	-0.151196*** (0.0505566)
Small Family Business	-0.13664* (0.0703525)	0.8722826* (0.0613673)	0.0299966* (0.0154695)	0.000245 (0.0003015)	-0.0302416* (0.0154962)
Other Sources	0.04065 (0.0760861)	1.041489 (0.0792428)	-0.0087903 (0.016444)	-0.000303 (0.0005988)	0.0090933 (0.0170373)
Household has at least one active member					
Yes	-0.2292*** (0.0714733)	0.79517*** (0.0568334)	0.049159*** (0.0150719)	-0.0022589** (0.0010824)	-0.051418*** (0.0160829)
Remittances					
Received	-0.5591*** (0.0724706)	0.571709*** (0.0414321)	0.125319*** (0.0163979)	-0.0032776** (0.00153)	-0.122041*** (0.0151867)
Household has electricity					
Yes	-0.67095*** (0.0717745)	0.511223*** (0.0366928)	0.143930*** (0.0147966)	-0.008023*** (0.0016816)	-0.151953*** (0.0160148)
Drinking water source					
Public tap	0.26196** (0.1165948)	1.299474** (0.0897239)	-0.0572289** (0.0257086)	0.0004536 (0.000779)	0.0576825** (0.0252122)
Borehole, protected well/spring, or rainwater	-0.05941 (0.085126)	0.9423205 (0.0802156)	0.0127656 (0.018306)	0.0004793 (0.0006321)	-0.0132449 (0.0189277)

Tanker-truck, bottled water	0.32249 (0.1304126)	1.380561** (0.180045)	-0.0662** (0.02584)	-0.0063216 (0.0036151)	0.0726** (0.02936)
Unprotected well/spring/other	0.3896*** (0.088904)	1.476390*** (0.0602162)	-0.085779*** (0.0195209)	0.0008711*** (0.001018)	0.084908*** (0.0188545)
Time taken to walk to the nearest health center					
Between 5 and 10 minutes	0.2603** (0.1036956)	1.229122** (0.0797525)	-0.0543192** (0.0212316)	0.004396** (0.0023053)	0.0587152** (0.0234116)
Between 10 and 30 minutes	0.26513** (0.102218)	1.30360** (0.0784122)	-0.055368*** (0.0208957)	0.0044386* (0.0023021)	0.059806*** (0.0230859)
30 minutes to an hour	0.30137*** (0.111101)	1.351709*** (0.0821933)	-0.063195*** (0.0229219)	0.0047082** (0.002309)	0.067903*** (0.0250096)
Between 1 and 2 hours	0.50074*** (0.1270712)	1.6499418** (0.0770155)	-0.107082*** (0.0267781)	0.004706*** (0.002308)	0.111788*** (0.028127)
Between 2 and 5 hours	0.5161*** (0.168668)	1.675481*** (0.06748)	-0.200758*** (0.036585)	0.0031043 (0.0046596)	0.197654*** (0.0344641)
Between 5 and 10 hours	0.510233*** (0.275513)	1.665680*** (0.1108746)	-0.199435*** (0.0612589)	0.002926 (0.008038)	0.196509*** (0.0547844)
Between 10 hours and a day	0.57931* (0.421395)	1.784806* (0.189476)	-0.1743567* (0.0947841)	0.0000986 (0.0101302)	0.1744553* (0.085649)
More than 1 day	0.66392** (0.101628)	1.942392** (0.076756)	-0.520308** (0.1347997)	0.0929067 (0.0548887)	0.4274013** (0.0814516)
Type of household's toilet facility					
Pit latrine without slab/open	0.25544* (0.111391)	1.291027** (0.1394208)	-0.0542058** (0.0235209)	0.0036435* (0.0019709)	0.0578494** (0.0252886)
Flush/pour flush to: pit latrine	-0.105827 (0.084694)	0.8995803 (0.0763271)	0.0232899 (0.0185704)	0.0002856 (0.0004229)	-0.0235755 (0.0188887)
Other Facilities	-0.000369 (0.079999)	0.9996312 (0.0797533)	0.0000805 (0.0174482)	2.26e-06 (0.0004901)	-0.0000827 (0.0178899)
Cut1	-0.312352 (0.267259)	-0.312352 (0.267259)			
Cut2	0.447075 (0.267305)	0.447075 (0.267305)			

Mean dependent var
Pseudo r-squared

2.062 SD dependent var
0.056 Number of obs

0.909
5909

Chi-square	684.632	Prob > chi2	0.000
Akaike crit. (AIC)	11534.733	Bayesian crit. (BIC)	11755.313

Note: Standard errors in parenthesis. *** p<.01, ** p<.05, * p<.1

The coefficients for the ordered logit model give the anticipated change in the level of the outcome variable in the ordered log-odds scale for every additional unit in the independent variable, assuming no other factor in the model changes. For instance, one additional increase in the household size increases the ordered log-odds of being in a higher poverty category by 0.255, assuming nothing else changes in the household. The odds ratio tells us the expected change in the odds of the household poverty level or category when the corresponding predictor variable increases by one unit, assuming no other factor in the household changes. The odds ratio of the household size signals that for each additional household member, the odds of the household being in the extreme-poverty versus moderate and non-poor poverty category are 1.2905 times greater. The marginal effect gives the increase or decrease in the likelihood of a household being in lowest to highest poverty category given a unit increase in the corresponding explanatory variable. Thus, the marginal effect of household size shows that with each additional household member, the likelihood of the household being non-poor falls by 5.54571 percentage points. This is because each additional member in a household comes with needs and wants, making the household spend or consume more than it did before its size increased. Similarly, the likelihood of the household being in moderate poverty decreases by about 0.14 percent with every additional household member. Whereas the likelihood of the household being in extreme poverty rises by 5.684474 percent with every additional increase in the household size. This result is similar to that of Geda et al. (2001); Ramaele (2008); and Epo (2010).

The likelihood of a male-headed-household being non-poor rises by 2.669921 percent in comparison to households headed by females; the probability of being in moderate poverty falls by 0.06798 percent and being in extreme poverty decreases by 2.7672 percent for these households compared to female-headed households. This finding agrees with that of Geda et al. (2001); Ramaele (2008); and Epo (2010). The analysis of the ordered logit model reveals that the likelihood of a household being non-poor rises by 3.2617 percentage points for households headed by literates versus non-literates, whereas the likelihood of being in moderate and extreme poverty falls by 0.08786 and 3.34955 percent respectively. Unlike the findings of Geda et al. (2001), the results for the area of residence suggest that the likelihood of a household being in

moderate poverty rises by 0.04854 percent for rural dwellers versus urban residents. In addition, the likelihood of a household being in moderate poverty rises by 0.04847 percent for nomadic residents compared to urban residents. As Table 6 shows, the likelihood of a household not being in poverty rises by 4.4651 percent for households that have access to public transport, whereas being in moderate poverty and extreme poverty falls by 0.11976 and 4.5849 percent respectively for these households compared to households that do not have access to public transport. The likelihood of being non-poor rises by 16.2980 percent for households with a main source of income from agriculture, fishing, and hunting compared to those that earn their main source of income from salaried labor. The results of the analysis of this model also suggest that the chance of being non-poor rises by 2.99966 percent and being in extreme poverty falls by 3.02416 percent for households that earn their main source of income from small family business compared to those that earn from salaried labor.

Households with at least one economically active member have a higher 4.9159 percentage points of being non-poor and a lower probability of being in moderate and extreme poverty by 0.22589 and 5.1418 percent respectively than their counterparts. Receiving remittances raises the chance of a household not being in poverty by 12.5319 percent and lowers the probability of being in moderate and extreme poverty by 0.32776 and 12.2041 percent respectively. Having electricity raises the likelihood of a household not being in poverty by 14.3930 percent and lowers the likelihood of being in moderate and extreme poverty by 0.8023 and 15.1953 percent respectively.

Households that access drinking water from public taps have a lower chance of not being in poverty and a higher probability of being in extreme poverty than those that get their drinking water from piped water. Similarly, households whose drinking water comes from unprotected well/spring/other have a lower chances of not being in poverty and a higher probability of being in moderate and extreme poverty than those that have piped water taps. The ordered logit model also demonstrates a significant inverse relationship between non-poverty and the household's distance to their nearest health center. In addition, it suggests a significant positive relationship between moderate and extreme poverty and the time it takes households to walk to their nearest health center. Finally, the results of the analysis of the ordered model show that the likelihood of not being in poverty is lower for households that use an open pit latrine toilet facility compared to those that use a facility with a piped sewer system. The chances of being in moderate and

extreme poverty also rise for households that use an open pit latrine toilet facility compared to those that use a facility with a piped sewer system.

The findings from the ordered logit model put a significant emphasis on the same factors that were found to determine poverty in the binomial model. However, the empirical results of the ordered logit model indicate a higher chances of moderate poverty for households residing in rural and nomadic areas compared to urban residents and there is also some difference between the determinants of the different poverty categories. Looking at the findings from the ordered logit model, the factors that are important in being in a non-poor household are a small household size, having electricity, access to transport, at least one economically active household member, literate-male household head, main sources of income from agriculture and small family business, receiving remittances, drinking from a piped water tap, living near a health center, and a toilet facility with a sewer system. The analysis of the ordered logit model suggests that the main factors that determine moderate household poverty in Somalia are: having an illiterate-female head of household, residing in a nomadic and/or a rural area, poor or unavailability of transport and electricity, not receiving remittances, spending more time to walk to the nearest health center, and having a toilet facility with open pit latrine system. For the extreme poverty, the main significant determinants in the ordered logit model are: a combination of having larger household sizes, illiterate-female household head, lack of electricity and transport, not having at least one economically active household member and not receiving remittances, main source of income from salaried labor, drinking from unprotected well and/or public tap, living very far away from a health center, and having a toilet facility with open pit latrine.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents a summary of the paper, conclusions, draws policy implications from the findings of the analysis, and suggests areas for further research.

5.2 Summary of the findings

The main and first objective of this paper was to assess the determinants of household poverty in Somalia. The study employed a logit and an ordered logit models in the analysis of SHFS-W2 data. The findings from the logit model indicate a significant positive relationship between household size, lack of at least one economically active household member, electricity, public transport, and remittance, having illiterate-female household-head, drinking water sources from public taps and/or an unprotected well/spring/other, living far away from a health center, using an open pit latrine facility and household poverty. The results of the logit model also associate household non-poverty with small household sizes, having at least one economically active household member, literate-male household-head, electricity, access to public transport, receiving remittance, main sources of income from agriculture and small family business, drinking from a piped water tap, living near a health center, and using a toilet facility with a sewer system.

The second objective of the study was to understand and explain why some households in the population are non-poor, poor, or live in extreme poverty. The findings from the non-poverty category of the ordered logit model signify that non-poor households have: smaller household sizes, electricity, access to transport, at least one economically active household member, literate-male household head, main sources of income from agriculture and small family business. They also receive remittances, drink water from a piped water tap, live near a health center, and use toilet facility with a sewer system. The results of the moderate poverty category of the ordered logit model lists having an illiterate-female head of household, residing in a nomadic and/ a rural area, unavailability of transport and electricity, not receiving remittance, spending more time walking to the nearest health center, and having a toilet facility with open pit latrine system as the main factors that determine moderate household poverty in Somalia. For the

extreme poverty category, the main significant determinants the ordered logit model suggests are a combination of having larger household sizes, illiterate-female household head, lack of electricity and transport, not having at least one economically active household member and not receiving remittances, main source of income from salaried labor, drinking from unprotected well and public tap, living very far away from a health center, and having a toilet facility with open pit latrine.

5.3 Conclusions

Based on the above findings of the logit model, the paper concludes that household poverty in Somalia is more pronounced in households headed by illiterate-females, do not have at least one economically active household member, lack electricity and public transport, do not receive remittances, drink water from public taps and/or an unprotected well/spring, live far away from a health center, and use an open pit latrine toilet facility. In addition, factors including literacy, electricity, access to transport, remittances, agriculture and small businesses, drinking from a water tap, and living near a health center were found to significantly lower household poverty in the country.

The findings from the ordered logit model put a significant emphasis on the same factors that were found to determine poverty in the logit model. However, there is some difference between the determinants of the different poverty categories. The model also indicates a higher chances of moderate poverty for households residing in rural and nomadic areas compared to urban residents. Looking at the numbers in the analysis of the ordered logit model, the study concludes a small household size, having electricity, access to transport, at least one economically active household member, literate and male household head, main sources of income from agriculture and small family business, receiving remittances, drinking from a piped water tap, living near a health center, and a toilet facility with a sewer system are the factors that are important in being in a non-poor household. From the analysis of the ordered logit model, the study concludes that the main factors that determine moderate poverty are being in a household headed by an illiterate-female, residing in a nomadic and/rural area, unavailability of transport and electricity, not receiving remittances, spending more time walking to the nearest health center, and having a toilet facility with open pit latrine system. For the extreme poverty, the study concludes that the main significant determinants the ordered logit model indicates are a combination of having

larger household sizes, illiterate-female household head, lack of electricity and transport, not having at least one economically active household member and not receiving remittance, main source of income from salaried labor, drinking from unprotected well and public tap, living very far away from a health center, and having a toilet facility with open pit latrine.

Therefore, from the finding of all categories of the ordered logit model, the paper concludes literacy of the household head, small household size, access to public transport, having electricity and at least one economically active household member, agriculture and small family business as main sources of income, receiving remittances, drinking from a piped water tap, living near a health center, and having a toilet facility with a sewer system are some of the characteristics found to significantly lower household poverty in Somalia.

5.4 Policy Implications

Several policy implications can be derived from this study that can serve as a check list to the Federal Government of Somalia (FGS), other local and international organizations, and NGOs working to reduce poverty in Somalia and have a direct bearing on both the 2020-2024 NDP and the Sustainable Development Goals (SDGs). The results of the analysis of the estimated models show that poverty affects households with different characteristics differently. Therefore, the study firstly recommends specific poverty reduction efforts that uniquely address the needs and issues different households face. Disaggregating poverty information is a good place to start from because it can clarify more about who faces which types of issues and what intervention different households need.

Since the findings show that household poverty in Somalia is more pronounced in households headed by an illiterate-female, the study recommends strategies that promote female education. This will play a critical role in lowering poverty levels of these households. Strategies that promote female education will also initiate a necessary long-term social change and may have an effect on household size, which is a significant household poverty factor in Somalia.

Lack of electricity connectivity, public transport and a close health center, and drinking water from public taps and/or an unprotected wells are important factors associated with poverty. Therefore, there is an urgent need to increase electricity connectivity, avail clean drinking water taps, basic health, and build road infrastructure for households in remote and deepest states of poverty. The availability of clean drinking water and electricity will have a direct impact in

empowering these households to start small businesses that run beyond sunset and access to transport will give them the ability to deliver and acquire other needed services such as health and education with less time. Furthermore, such a policy could have an impact on number of economically active members a household has, which is another important household poverty determinant in Somalia.

Finally, the findings of the study point out that main sources of income from agriculture and small family business significantly lower household poverty. Somalia's agricultural sector contributes approximately 75 percent to the country's GDP (World Bank, 2018). Thus, FGS, other local and international organizations, and NGOs working to reduce poverty in Somalia should invest in the agricultural sector. Such policies will not only improve the lives of the households whose main source of income is from agriculture but will also contribute to the economic growth of the country.

In addition, there is also an urgent need to invest in small businesses. A World Bank (2020) data on the ease of doing business in all countries around the globe ranks Somalia last in number 190. Thus, the government should ease the regulatory environment of doing business in the country, create an economic freedom environment for small entrepreneurs, and make access of financial and other resources inclusive for small businesses. Such policies will give small actors in the economy, including peasant farmers and entrepreneurs the freedom to choose which crop to plant, how and where to start a new business venture, and whom to sell it to – which will in turn enhance agricultural productivity, ensure food security, and raise the production level in the economy.

5.5 Areas for further research.

This paper made the attempt to assess the national determinants of household poverty in Somalia using a binomial and an ordered logit models in the analysis of the SHFS-W2 data. Thus, the study recommends investigating the determinants of poverty using separate models that fit data for rural and urban areas and/or rural, urban, nomadic areas and IDPs.

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ANNEX

Table 7: Poverty Line and Poverty Measures

	Food Poverty Line	Absolute Poverty Line
Poverty Line in USD	1.019232	1.402267
Poverty Headcount Index (%)	43.39	61.55
Poverty Gap Index (%)	19.08	26.14
Poverty Severity Index (%)	14.28	18.25

Note: These poverty lines are based on 2011 PPP 1.90 USD in 2017 USD Somalia as indicated in the SHFS-W2 Data

Table 8: Predicted Probabilities of Being in a Non-Poor, Moderately-Poor, or Extremely-Poor Household

Probability of being		
Non-Poor	Moderately-Poor	Extremely-Poor
0.38453113	0.16940001	0.44606886

Source: Author's computation from SHFS-W2 Data