

**DETERMINANTS OF POVERTY IN SOUTH SUDAN: A CASE STUDY OF GREATER
BOR IN JONGLEI STATE**

BY:

MABIOR MICHAEL MAKUACH JOK

BA (ECONS), UBG

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DECLARATION

I declare that this is my original work and that it has not been submitted in any University for any degree award.

Sign: Date.....

CANDIDATE: MABIOR MICHAEL MAKUACH JOK

REG NO: X50/61369/2013

Approval

This Paper has been submitted for examination with our approval as University Supervisors.

Sign: Date.....

PROF. MANDA DAMIANO KULUNDU
SCHOOL OF ECONOMICS, UNIVERSITY OF NAIROBI

Sign:Date.....

DR. DIANA NJERI KIMANI
SCHOOL OF ECONOMICS, UNIVERSITY OF NAIROBI

DEDICATION

I dedicate this Research Study to my Late Dad, Makuach Jok Adhuong, the Late Grandfather Jeremiah MayenYai and Late Uncle James Mawut Gai Yai, who selflessly supported me throughout my education. May their souls rest in eternal peace!

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ABBREVIATIONS AND ACRONYMS

ADB	Asian Development Bank
BOSS	Bank of South Sudan
CDF	Constituency Development Fund
GDP	Gross Domestic Product
GNI	Gross National Income
FAO	Food and Agricultural Organization
FGT	Foster, Greer and Thorbecke
GOSS	Government of Southern Sudan
ICBPR	Institutional Capacity Building for Poverty Reduction and
GGP	Good Governance Project
ICSP	Interim Country Strategy Paper
IFAD	International Fund for Agricultural Development
MDGS	Millennium Development Goals
NBS	National Bureau of Statistics
NBHS	National Baseline Household Surveys
OLS	Ordinary Least Squares
SSA	Sub-Saharan Africa
SPSS	Statistical Package for Social Science
S5 th PHC	Sudan 5 th Population and Housing Census
UNDP	United Nations Development Programme

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ABSTRACT

The Government of South Sudan initiated different programmes to address poverty. These programmes include the Interim Country Strategy Paper 2011-2013 which the government adopted as an approach to fight poverty, the Institutional Capacity Building for Poverty Reduction and Good Governance Project, Constituency Development Fund (CDF), Vision 2040 and international support to reduce poverty in the country. However, little has been achieved in terms of improving the general welfare of the people in the country despite massive resources directed to this young Nation. Therefore, the core objective of this study was to examine the major factors which determine poverty through primary data collected from Greater Bor, in Jonglei State in Southern Sudan. Binary Logistic regression model was used in estimation. The following variables were considered: age of the head of the household, education levels, employment status, gender of the head of the household, household size, household residence, marital status, distance to the nearest health facility, sector of the economy, land ownership, status of the road networks, access to safe water and access to credit facilities. It was revealed at 95% confidence interval that education levels, gender of the head of the household, marital status and sector of economy employed significantly reduced the probability of being poor while age of the head of the household, household size, distance to the nearest health facility and the poor status of the road network significantly increased the probability of being poor. Based on the study finding, it is suggested that the government should consider giving cash transfers to the senior citizens who can no longer work to enable them acquire basic necessities to avoid succumbing to the pool of poverty, creation of department specifically tracking the fertility rates and creation of awareness on family planning issues to avoid large and unmanageable families, establishment of health care facilities near the people to avoid long distance in an effort of seeking health care thus avoiding losing working days through public private partnerships and lastly, there is a need for improving all major roads which acts as market linkages including feeder roads to ease accessibility and movements.

CHAPTER ONE: INTRODUCTION

1.1 Background

Poverty, the focus area of this research study is a social phenomenon that has been the subject of heated debate and research for several decades. According to Mack et al., (2009), and as cited in Musana (2013), poverty is a major problem in the world and every minute a person dies due to poverty related reasons. They argue that the poorest of the poor are found in less developed countries which experience high disease prevalence, infant mortality rates and maternal deaths, low literacy rates, malnutrition and retarded growth. They also emphasize that South Asia and Sub-Saharan Africa are the major examples of the most poverty stricken regions of the world. Despite institutions including the World Bank and United Nations launching various programs and projects such as the Millennium Development Goals (MDGs) to meet the needs of the world's poorest people and directing their activities towards poverty reduction, high levels still exist in the world. According to the World Bank (2009b), an estimated 1.29 billion people were living below \$1.25 a day in 2008. IFAD, (2001) asserts that although poverty is a dominant feature of life in all regions of the world and close to 1 billion live in abject poverty in rural areas of the world, in the developing world, 36 per cent of the total population in more than 110 countries is poor people living in rural areas according to International Fund for Agricultural Development, (IFAD, 2001). The determinants of the phenomena remain a subject of heated debate or controversy, which dates back to as early as 18th century (IFAD, 2001).

This research study will only focus on South Sudan in general, and Greater Bor in Jonglei State will be the case study, by focusing on non-monetary poverty. The researcher will use people's perceptions to identify the poor and CBN approach to construct food and overall poverty lines for analyzing the determinants of poverty.

South Sudan is improving on creating policies for poverty reduction and eradication but it is not most likely to meet the first Millennium Development Goal, which is to Eradicate Extreme Poverty and Hunger, by the year 2015. The economy of South Sudan is one of the world's most underdeveloped with the country having little existing infrastructure, and the highest maternal mortality, and female illiteracy rates in the world as of 2011.

South Sudan is faced with the altered demographics of a post conflict country. The population of women is significantly higher than men with the ratio of men to women of 20 to 39. The population is extremely young, with 52 per cent below the age of 18 years and 72 per cent below 30 years according to National Bureau of Statistics (NBS, 2012). For 72 per cent of households in the country, the main source of income is agriculture (crop farming and animal husbandry). Among the poorest people, 84 per cent depend on agriculture as their main source of income. Even among the wealthiest people, 57 per cent depend on agriculture (World Bank, 2011). Over 53 per cent of the working population is unpaid family workers and only 12 per cent are paid employees (NBS, 2012).

Poverty in South Sudan is deep rooted in the rural than in the urban areas with the poverty headcount in rural areas at 55.4 per cent and yet more than 84 per cent of the total population lives in the rural areas.

Compared with Low Income, Low Middle Income and Sub-Saharan African countries, South Sudan remains the poorest country as evidenced by 50.6 per cent of the population which was living below South Sudanese Pounds 72.9 per person per day in 2011. Although South Sudan's GNI per capita is greater than those of Low Income and Sub-Saharan African countries, the law of vital few applies where 80 per cent of the total income is in the hands of 20 per cent of the total population. This is as shown in the Table 1.0 showing South Sudan selected socio-economic indicators.

Table 1.1: South Sudan: Selected Socio- Economic Indicators.

Indicator	South Sudan	Low Income Countries	Low Middle Income Countries	Sub-Saharan Africa
Population				
Population (millions)	8.615	2352	2475	743
Gross National Income (GNI) per Capita (in \$)	1050	585	1923	746
Population density (person per square km)	13	83	63	31
Incidence of Poverty				
National Average	50.6	-	-	41.1
Urban average	24.4	-	-	-
Rural average	55.4	-	-	-
Demographic Indicators				
Total fertility (births per women)	6.2	3.6	2.1	5.3
Crude birth rate (per 1000 people)	46	29	16	40
Crude death rate (per 1000 people)	11	10	7	17
Life expectancy	59	59	71	47
Education				
Adult literacy rate	16	50	93	53
Female	40	71	85	70
Male	48	78	93	66
Net primary enrolment (%)	59	87	99	86
Students per teacher	52	42	22	48
Health Status				
Under five mortality rate (per 1000)	135	114	39	163
Infant mortality rate (per 1000)	102	75	31	96
Underweight children under five years (%)	34	-	13	30
Maternal maternity rate (per 100,000 live births)	2054	684	163	921
HIV/AIDS	3.1			
Access to Improved Water and Sanitation				
% of population with access to improved water	31	75	82	56
% of population with access to improved sanitation	15	38	57	37

Source: World Bank 2011

As seen from the above table, poverty in South Sudan is still very high as depicted by the population below the poverty line, low literacy rate, low health status, poor access to improved water and sanitation.

1.2. Statement of the Problem

Poverty is one of the stylized facts of Sub-Saharan Africa according to Schoumaker (2004). It is a wide-spread phenomenon in South Sudan, but it has got the least attention and consequently there has not been a full-fledged poverty study to date. The government of South Sudan initiated different programmes to address poverty. These programmes include the Interim Country Strategy Paper 2011-2013 which the government adopted as an approach to fight poverty, the Institutional Capacity Building for Poverty Reduction and Good Governance Project (ICBPRGGP), Constituency Development Fund (CDF), Vision 2040 and international support to reduce poverty in the country.

Despite massive international support directed to post war South Sudan, and the government's concerted efforts to mitigate poverty, it continues to be on the increase. This is because the measures taken to deal with it have done little due to multiple causes from prolonged civil conflict, mismanagement of resources, abuse of power, and rampant corruption coupled with the failure to identify the real underlying determinants of the problem.

In addition, there are a few studies carried out on poverty in South Sudan which have been used to inform the national policy makers and they only concentrated on the national level and dwelled on the poverty measurements, rates, and reduction and eradication policies. These studies include World Bank study on Poverty Profile for the Southern States of Sudan and the study by Adam, et al. (2011). While we know much about poverty measurements and poverty rates from those studies, our understanding of the determinants of poverty in South Sudan remains very limited. This is a serious shortcoming and a major problem that needs to be addressed to better the living conditions of the poor. Poverty reduction and eradication policies require a thorough understanding, and knowledge of the determinants of the phenomenon.

This study therefore aims at analyzing the determinants of poverty in South Sudan, with a case study of Greater Bor in Jonglei State. The study will add to the scarce literature on poverty in South Sudan, fill and bridge the existing knowledge gap.

1.3. Research Questions

The study seeks to answer the following research questions:

- i. What are the major determinants of poverty in South Sudan?
- ii. What policy recommendations are to be made to reduce poverty in South Sudan?

1.4. Objectives of the Study

The general objective of this study is to examine the determinants of poverty in South Sudan and the specific ones are:

- i. To identify the determinants of poverty in Greater Bor in Jonglei State.
- ii. To investigate the households' perceptions of own poverty status to identify the poor.
- iii. To draw up and provide policy recommendations based on the findings of this research study.

1.5. Scope of the Study

The study will try to grasp the households' perceptions of own poverty status, understanding of poverty situation, the determinants and to provide policy makers with an insight into the issues so that they can align their poverty eradication programmes to households needs for effective poverty alleviation. Greater Bor in Jonglei State was chosen for the research because of the increasing rate of poverty, low effort by the central government to provide development programmes and projects. Although the study will focus on the determinants of poverty in Greater Bor in Jonglei State, the conclusions derived shall be used to generalize the determinants of poverty in Jonglei State and South Sudan as a country.

1.6. The Significance and Justification of the Study

There is paucity of analytical studies on poverty situation and determinants in South Sudan at the state levels. However, any government intervention to reduce and eventually eliminate poverty requires a thorough understanding of its determinants.

Analyzing the determinants of poverty is very important for its reduction in the country where the largest part of population lives in abject poverty in general, and for Greater Bor, where most people are poor.

This study will contribute to an understanding of poverty from an academic standpoint, especially the determinants of poverty and assist in guiding policymakers in their quest to undertake policies targeting the state levels in the bid to reduce poverty. In addition, the study will contribute to the minimal available literature and data and will act as advocacy material for the poor in South Sudan. Finally, the findings and conclusions of the study may serve as a basis for further research on the subject in the future.

1.7. Organization of the Paper

This research paper is organized into five chapters. The first chapter deals with background, statement of the problem, research questions to be addressed, objectives of the study, scope of the study, significance and justification of the study, and organization of the paper. The second chapter dwells on the theoretical and empirical literatures pertinent to the objectives of the study. It concludes with the overview of the literature. While, chapter three exclusively deals with the research methodology pursued, chapter four dwells on the presentation and analysis of data. Finally, the findings, recommendations and conclusions will be presented in chapter five.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter focuses on the explanation, description and reviewing appropriate general literature of related authors that are relevant to the research work. It introduces the existing knowledge which had already been found out by some other researchers. It reviews the related literature on poverty in terms of definition, measurement, and determinants. The first section of this chapter explores the meaning and measurement of poverty; the second section explores the theories of the causes of poverty, while the third section discusses the empirical literature on the determinants of poverty. Following this is a final section which concludes this chapter with the overview of literature.

2.1 Theoretical Literature

This section explores the meaning and measurement of poverty. They are tackled in two subsections as seen below:

2.1.1 Poverty Definition and measurement

There are as many definitions of poverty as there are many researchers on this social evil. Defining poverty therefore depends on the context and views of the person giving the definition. Abumere (2004) affirmed this fact by asserting that there are possibly as many definitions of poverty as there are researchers in the field. According to Sen (1999), and as cited in Bradshaw (2006), poverty in its most general sense is lack of basic necessities such as food, shelter, medical care, and safety. Sen (1999) also argues that basic necessities are generally thought necessary based on shared values of human dignity but what is a necessity to one person is not uniformly a necessity to others.

UN (1998) and as cited in Gordon (2005), has a pervasive definition of poverty which involves inability of getting choices and opportunities, a violation of human dignity, lack of basic capacity to participate effectively in society, not having enough to feed and clothe a family, not having a school or clinic to go to, not having the land on which to grow one's food or a job to earn one's living, not having access to credit, insecurity, powerlessness and exclusion of individuals, households and communities. It means susceptibility to violence, and it often implies living in marginal or fragile environments, without access to clean water or sanitation.

According to World Bank (2005), Poverty is pronounced deprivation in well-being, and comprises many dimensions. It includes low incomes and the inability to acquire the basic goods and services necessary for survival with dignity. It also encompasses low levels of health and education, poor access to clean water and sanitation, inadequate physical security, lack of voice, and insufficient capacity and opportunity to better one's life.

The most commonly used measures in the literature on poverty are; headcount index, poverty gap index, squared poverty gap index. Besides these, Foster-Greer-Thorbecke index and others are also used as measures of poverty. Details of these measurements are given below.

2.1.1.1 Foster, Greer, and Thorbecke (FGT 1984) Measures

Kimalu et al., (2002) pointed out that one poverty measure that has been found manageable in presenting information on the poor is the FGT measure developed by Foster, Greer and Thorbecke in 1984.

This measure is used to quantify the three well-known elements of poverty: the level, depth and severity. These measures are also known as incidence, inequality and intensity of poverty, respectively. The FGT formula used to measure overall poverty is shown in equation 2.1.

$$P_{\alpha}(y; z) = \frac{1}{n} \sum_{i=1}^q \left(\frac{z - y_i}{z} \right)^{\alpha} \dots\dots\dots 2.1$$

Where,

P_{α} is a measure of absolute poverty,

α is the FGT parameter, which may be interpreted as a measure of poverty aversion,

$\alpha = 0, 1, 2$

y_i is the total expenditure/ income of household i , expressed in per adult equivalent ($i = 1 \dots n$),

z is the poverty line,

n is the total number of households in the sample, q is the total number of poor households and $z -$

y_i is shortfall of income of the i^{th} household.

2.1.1.2. Headcount Index (P₀)

P₀ measures the proportion of the population falling below the poverty line. It is the most commonly used measure of poverty. It is the ratio of the total number of poor people to the total population. It is calculated using the following formula:

$$\text{Poverty rate: } P_0 = \frac{Q}{N} \dots\dots\dots (2.2)$$

Where Q is the number of poor people and N is the total population.

2.1.1.3. Poverty Gap Index (P₁)

P₁ measures the extent to which the incomes of the poor lie below the poverty line. It measures the intensity of poverty by averaging the distance between the expenditure of the poor persons and the poverty line. It gives information about the depth of poverty. Poverty gap index is based on the difference between the poverty line and the poor individual’s income. Poverty gap is calculated for individuals below poverty line, that is, it could not be negative. It shows the total income required to lift the poor above the poverty line. The index can be calculated using the formula:

$$\text{Poverty gap index: } PG = \frac{1}{n} \sum_{i=1}^q \left(\frac{z - y_i}{z} \right)^\alpha \dots\dots\dots(2.3)$$

Where z is poverty line, y is income, i is individual and q is total number of poor people.

2.1.1.4. Squared Poverty Gap Index (P₂)

P₂ is an index that shows the severity of poverty by squaring the gap between the expenditure of the poor individual and the poverty line. It takes care of inequality among the poor by showing how poor the people are. It is important in assessing the impact of policies and programs aimed at reaching the poorest among the poor. It is calculated as:

$$P_2 = \frac{1}{N} \sum_{i=1}^N \left(\frac{z - y_i}{z} \right)^2 I(y_i < z) \dots\dots\dots (2.4)$$

Here, $I(\cdot)$ is an indicator function that takes on a value of 1 if the bracketed expression is true, and 0 otherwise. So if y_i is less than z , then $I(\cdot)$ equals 1 and the household would be counted as poor.

z is poverty line, N is total population and y_i is the total expenditure or income of household i

2.1.1.5 Sen Index

Besides the number of poor people, depth of poverty, the Sen Index also takes into account inequality among the poor. It is calculated as seen in equation 2.6 below:

$$\text{Sen Index, } P_S = PG_P + PG(1-G_P) \dots\dots\dots (2.5)$$

Where P is headcount rate; PG is the poverty gap index and G_P is Gini coefficient among the poor. If $G_P = 1$ then there is perfect inequality among the poor, the Sen Index is equal to the headcount rate. If $G_P = 0$ then there is perfect equality among the poor, the Sen Index equals the poverty gap ratio.

2.1.1.6. The Sen-Shorrocks-Thon Index.

The Sen Index has been modified by others, and one of the most compelling versions is the Sen-Shorrocks-Thon (SST) Index. This Index is defined as:

$$P_{SST} = POP^P_1(1 + G^P), \dots\dots\dots (2.6)$$

Equation 2.6 is the product of the headcount index, the poverty gap index, and a term with the Gini coefficient of the poverty gap ratios for the whole population. This Gini coefficient typically is close to 1, indicating great inequality in the incidence of poverty gaps.

2.2 Theories of the Causes of Poverty

Recent literature on poverty acknowledges different theories that discuss the causes of poverty. These theories are classified in different ways as seen in Blank (2007), Bradshaw (2006) and outlined by Bradshaw (2005). Bradshaw (2006) has identified and grouped the theories of the causes of poverty in the following categories:

2.2.1 The Culture of Poverty Theories

These theories state that it is the characteristics of poor themselves, their values and culture that cause poverty. To these theories, poverty is created by the transmission over generations of a set of maladaptive beliefs, values and skills that are socially generated but individually held (Bradshaw, 2006). They hold the poor responsible for their fate because they are victims of their dysfunctional sub-culture or culture.

2.2.2 Economic, Social and Political Distortions Theories

These theories attribute poverty to the economic, political and social system which causes people to have limited opportunities and resources with which to achieve income and well being (Bradshaw, 2006). They argue that the economic system is structured in such a way that poor people fall behind regardless of how competent they may be.

2.2.3 Geographical Disparities Theories

These theories of poverty hold the view that rural poverty, ghetto poverty, urban disinvestment, southern poverty, third-world poverty, and other framings of the problem represent a spatial characterization of poverty that exists separate from other theories. While this geographically based theory of poverty builds on the other theory, it calls attention to the fact that people, institutions and cultures in certain areas lack the objective resources needed to generate well being and income, and that they lack the power to claim redistribution (Bradshaw, 2006).

2.2.4 Individual Deficiency Theories

These theories focus on the individuals as responsible for their poverty situation. In general individual deficiencies theories argue that poverty can be avoided by working harder and making better choices (Bradshaw, 2005).

2.2.5 Cumulative and Cyclical Interdependencies Theories

These theories are the most complex, but build on components of each of the other theories. They look at “the individual and their community as caught in a spiral of opportunity and problems, and as the problems dominate, they close other opportunities and create a cumulative set of problems that make effective response nearly impossible, according to Bradshaw (2005).

2.3 Empirical literature

2.3.1 The Determinants of Poverty

There is a lot of analytical work done on the determinants of poverty in different countries. These studies include those of Mwabu et al. (2000); Oyugi (2000); Alemayehu et al. (2001) and Mariara et al (2011), but none exists in South Sudan. Most available studies on determinants of poverty such as those of Mwabu et al (2000), and Alemayehu et.al (2001), center largely on household characteristics such as age; sex, education, health; asset ownership; and so on. These characteristics are assumed to represent opportunities and capabilities for a given household. They can capture the human and physical capital that determines how poor a typical household is. The studies on the determinants of poverty in Africa include those done by Malawi National Economic Council, (2001); Tilman (2001) in Mozambique; Hassan and Babu in Sudan; Mwabu et al. (2000), Geda et al (2005) and Alemayehu et.al (2001) in Kenya; Oduro and Aryee (2003) and Fofack (2002) in Burkina Faso; Bird and Shepherd (2003) in Zimbabwe; and Ajakaiye and Adeyeye (2002) in Nigeria. Many other studies on the determinants of poverty have been done outside Africa and include those done by Gorniak (2001) for Eastern Europe and Central Asia; Demir, S (2011) in Turkey; Amuedo- Dorantes (2004) for Chile; and Condouel (1998) in Uzbekistan.

Malawi National Economic Council, (2001) used the regression model to analyze the determinants of poverty and found age of the household, educational attainment, size of cultivable land and cropping pattern as major determinants of poverty. This study argues that households headed by older individuals in rural areas, tend to be poorer than those headed by younger ones.

Tilman (2001), using the levels regression analysis revealed that farm size, age and gender of the household head and assets appear to affect rural poverty in Mozambique. Households with higher cultivated land per capita have a higher per capita consumption while households with less land per capita have a lower one. Female-headed households were found to be compared to male-headed households. The study revealed that education and owning some livestock did not have strong effect on household welfare.

Hassan and Babu (1991), using logit regression analysis in Rahad Scheme in Sudan, identified that household size, share of off-farm earnings; asset and farming experience as important determinants of poverty.

Alemayehu et al., (2001) using the 1994 Welfare Monitoring Survey data in Kenya and used binomial logit to model the determinants of poverty. The results revealed that rural people are poorer than their counterparts in the urban areas. People living in households mainly engaged in agricultural activities are more likely to be poor and male-headed households are less likely to be poor. The effects of level of education are most influential, while the impact of employment and the number of animals owned is insignificant. Total holding of land does not seem to be important in this study.

Oduro and Aryee (2003) analyzed the 1998 household survey in Burkina Faso and their study indicated that 45.3 percent of Burkina's population fell below the poverty line and poverty in Burkina Faso is predominantly a rural phenomenon. Fofack (2002), using a probit model with binary outcomes over two reference periods (1994 and 1998) found that age dependency ratio, education level of household head, household assets and female literacy are significant determinants of rural poverty in Burkina Faso. These determinants are found to be significant and relatively stable over time with low asymptotic standard errors. Age dependency ratio followed by asset ownership and level of education remains the strongest predictors of rural poverty, with the largest marginal effect on the probability of being poor. While the age dependency ratio is negatively associated with welfare, asset ownership structure and education are positively associated.

Studies by Amuedo- Dorantes (2004) for Chile and Geda et al., (2005) for Kenya, shed light on the factors that can contribute to one's poverty status. These studies look at the characteristics of the household as a whole or that of the household head as possible determinants of poverty. They argue that household level determinants of poverty generally rely on the household level data. Age, gender of the household head and educational level are generally found to be some of the most important determinants of poverty.

Bird and Shepherd (2003) conducted a research on chronic poverty in Zimbabwe's rural areas. Their study revealed that 20 per cent of the poor heads of households had schooling beyond primary. Another cause of poverty according to their study is the death of the male head of household. The death of working class parents leaves behind orphans who have no one to fend for. Many poor families according to the study are the child headed households. Children who head families can not sufficiently fend for their younger brothers and sisters. They may end up selling the property that was left behind by their parent in order to settle for food and other basics. The remaining children end up living poverty stricken lives.

Kabubo-Mariara, and Kiriti, (2002), in their analysis of the impact of macroeconomic reform on poverty argue that poverty declines with remarkable improvements in macroeconomic policies but increases with deteriorations. This agrees with Demery and Squire (1996) findings that an improvement in macroeconomic policy reduces poverty while deterioration increases it. They also assert that institutional bottlenecks that hinder economic reform are a measure cause of poverty. These include addressing corruption and other malpractices by the government (Kabubo-Mariara and Kiriti. 2002).

Manda et al (2001), in their study of poverty emphasize different determinants like economic growth , income inequality, inequality in access to productive resources such as land, natural shocks (droughts, floods and fire), rural-urban migration, poor implementation of development programmes, lack of effective social security policies and safety nets, and heavy disease burden (Manda et. al 2001)

Ajakaiye and Adeyeye (2002), point out that the causes of poverty include low economic growth performance, macroeconomic shocks and policy failure, age and education of different household members, number of income earners, household composition and size, assets owned by the household, access to basic social services, gender, ethnicity of head, location variable (rural or urban), sector of employment and remittances to household, labour market deficiencies, migration, unemployment and underemployment, poor infrastructure, human resources, ill health/diseases, debt burden, poor governance, environmental degradation, crime and violence, among others..

Oyugi (2000), in her study of determinants of poverty in Kenya, found that sector specific employment is an important factor in predicting poverty status of households, with the formal sector employment being associated with less poverty, in comparison with agricultural sector employment.

2. 4 Overview of Literature

An overview shows that most of the studies have been done in other countries such as Kenya, Burkina Faso, Chile, Zimbabwe, Nigeria, among others. Most of the poverty literature analyzed in this research study agrees on the main determinants of poverty. These determinants include education level, household size, place of residence, gender of household, wealth status, number of earners in the household, asset ownership, among others. There also seems to be a close relationship between urban poverty and rural poverty because many of the determinants of poverty are the same in both cases. From the reviewed literature, there is a literature gap on poverty and particularly on the determinants of poverty in South Sudan as little has been done on the poverty in South Sudan. Therefore, because of this knowledge gap, this study seeks to bridge that literature gap by analyzing the determinants of poverty and investigating the perceptions of the poor people concerning poverty in South Sudan with a case study of Greater Bor in Jonglei State.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction and Theoretical Framework

This chapter deals with the methodology that will be used in this study. It presents the data source and instruments, research design, area of study, sample size and sampling techniques, data analysis, and model specification.

3.1 Data Source and Instruments

White (2002), argues that using quantitative and qualitative approaches together yields synergy. Poverty being complex, multidimensional and an outcome of multitude of determinants, neither quantitative nor qualitative methods alone could capture the salient features in a comprehensive way. To achieve the objectives of this study, both quantitative and qualitative data were used. The study used primary data of which the main source was the household. Structured questionnaires were used to collect information on various aspects such as age of household, education level, employment status, gender of household head, household size, household residence, marital status, and healthcare, sector of economy, land size, road, water, and number of livestock.

Secondary data were used to corroborate the empirical findings of the study. The most important information and secondary data were collected from the South Sudan National Bureau of statistics, Sudan's Fifth Population and Housing Census, and Southern Sudan Centre for Census, Statistics and Evaluation (SSCCSE), existing literature in previous research paper finding and internet.

3.2 Research Design

The type of research design appropriate for this study is survey design because it utilizes both quantitative and qualitative analyses.

According to Smith, (1975), survey methods are adapted to collect generalized information from almost any known human population because they are extremely efficient in terms of providing large amounts of data at relatively low cost in a short period of time.

Therefore, adapting this design enabled the researcher to capture the gist of the respondents' views in their own words. This research study employed a cross-sectional design or social survey design because it was appropriate as it took less time.

3.3 Sample Size and Sampling Technique

Greater Bor has three counties: Bor South, Duk, and Twic East counties. In this study, household was the major unit of analysis. The household survey was conducted on a total of 200 households because the research felt 200 households will give representative results.

The study population consisted of families living in Greater Bor. Using a simple random sampling, 200 families living in urban and rural areas were interviewed. The questionnaire included questions about demographic characteristics of the household head such as age, gender, education level, employment status and the sector of employment. Family data such as household size, residence, average monthly income and average monthly consumption expenditures were also included and respondents were asked whether they considered themselves as poor or non-poor.

However, the method of sampling applied in this study was probability sampling, which ensures sampling units a known, non-zero and equal chance of being included and hence representativeness. Selection of the households for the survey was based on simple random sampling, which is sampling draw of every n^{th} element from a list. Of the 200 households included in this sample, 125 were male headed and 75 women headed. 90 respondents were interviewed from Bor County with 15 from Jalle, 15 from Baidit, 15 from Makuach, 15 from Anyidi, 15 from Kolnyang and 15 from Bor payams. 50 respondents came from Duk County with 10 respondents from Ageer, Pageleng, Payuel, Padiet, and Dongchok payams. The remaining 60 respondents came from Twic East County with 12 from each of the five payams of Pakeer, Ajuong, Nyuak, Kongor and Lith. Table 3.1 shows the composition of the sample.

Table 3.1 Composition of Sample

County	M. Headed	Percentage	Female Headed	Percentage	Total	Percentage
Bor	60	67	30	33	90	100
Duk	30	60	20	40	50	100
Twic	35	58	25	42	60	100
Total	125	63	75	37	200	100

Source: Author's own calculations

3.4 The Study Area

Jonglei State is the largest state in South Sudan, covering a surface area of approximately 125000km², with a population of 1.3 million in 11 counties of Bor, Twic East, Duk, Akobo, Ayod, Fangak, Nyirol, Pibor, Pigi, Pochalla and Uror. Females account for 46 per cent and Males are 54 per cent, while children under 18 years represent 51 per cent according to Sudan 5th Population and Housing Census (2008).

It is located in the east of the country and borders Ethiopia to the east, Eastern Equatoria and Central Equatoria to the south, and Unity State and Lakes State to the west. To the north lies Upper Nile State.

The population is ethnically diverse, comprised of six Nilotic ethnic groups: the Dinka, Nuer, Murlei, Anyuak, Kachipo and Jie. It had been the centre of politics dating back to the failed project of Jonglei Canal and the mutiny of Anya-nya II and again in 1983 when the second civil war between the Government of Sudan (GoS) and the Sudan People's Liberation Movement/Army (SPLM/A) started in Bor, the capital of Jonglei State. The state still has a very high rate of poverty with 80 per cent of the population living under poverty line and 91 per cent of the population is rural.

It is also the most underdeveloped, and volatile state, characterized by sporadic violent clashes between its various ethnic groups due to traditional differences and competition over scarce resources such as food, water and land for grazing cattle. Approximately, 39 per cent of the population is facing food insecurity while 30 per cent faces severe food insecurity, since 2008. The vast majority of the population lives in traditional, thatched-roof houses with scanty access to safe water and sanitation, education and other necessities according to Food and Agricultural Organization, (2010). Most counties depend on agriculture including agro-pastoralism and pastoralism which provide 80 per cent of domestic employment.

The study area, Greater Bor is the former Bor District which is a former administrative district in Jonglei State. It is now divided into Bor South County, Duk County and Twic East County. Its total population is 372,043 according to S5thPHC of 2008.

3.5 Poverty Measurement

In measuring poverty, there are many different types of poverty lines. One of the main distinctions is between relative poverty line, where the line is defined relative to some measure of welfare for the entire population, and absolute poverty line, where the line is defined in absolute terms as the minimum cost of a reference living standard. Relative poverty lines are typically used in developed countries while absolute poverty lines are typically used in low or middle income countries.

In this study, our focus is on the absolute poverty. In setting absolute poverty lines, four approaches are involved as discussed below.

3.5.1 Cost of Basic Needs (CBN) Approach

This approach aims at computing the cost of basic needs whose common indicators include food, shelter, clothing, basic education, health status and transport among others. The cost of basic needs has some major weaknesses according to Ravallion et al (1996). This is due to the fact that the poverty line it generates can be interpreted as Laspeyres cost- of -living numbers, so that utility compensated substitution effects in assumption are ignored. Secondly, there is the problem of getting non-food 'basic needs' and in valuing their costs at local prices. Because of these problems, cost of basic needs is inappropriate when the aim is to achieve consistency.

Nevertheless, there are arguments in favor of the cost of basic needs approach. The most compelling one is that the method aims to control for differences in purchasing power over basic consumption needs, while other methods such as the Food Energy Intake Method do not. Therefore, in this study, CBN will be used to estimate the absolute poverty lines in Greater Bor.

In estimation of CBN, three steps are considered. The first step is to select the minimum food basket necessary for decent living. In second step, the food basket is priced or valued and its cost denoted by Z_f . In the third step an analogous estimate of the required non-food expenditure as Z_{nf} is computed and added to Z_f to obtain the total CBN poverty line. CBN approach uses the following equation.

$$Z = C_o + O_{co} \dots\dots\dots 3.1$$

Where, Z is the poverty line

C_o is the minimum cost of food

O_{co} is the minimum cost of non-food items

3.5.2 The Food Energy Intake Method.

This method is based on the observation of the typical level of expenditure or income for which households obtain the food needed to meet basic energy requirements. This level of expenditure will include non-food as well as food items, since even poor households consume other goods such as clothing and shelter, which are included in the level identified.

3.5.3 Subjective Method.

This method is based on the subjective judgment of people on what constitutes a socially acceptable minimum standard of living. Household perceptions about their daily lives allow them to express their own socioeconomic status.

In this study, poverty is measured, not in relation to a standard or pre-defined threshold of income or expenditure, but through the perception that households have about their own socioeconomic situation. The household self-assesses herself whether poor or non-poor. In other

words, the notion of subjective poverty admits that poverty lines are derived from essentially subjective judgments of what constitutes an acceptable level by the population of a given society.

Households' perceptions have advantage of allowing everyone or every household to appreciate his or her own level of well-being or the difficulties encountered in life.

Leaving the care of household to qualify him/herself as poor or non-poor is a good way to avoid the normative dimension of objective indicators.

However, perceptions are hardly reliable and sometimes even biased because of cultural, territorial and socio-economic considerations.

In this study, we analyze the determinants of poverty in Greater Bor of Jonglei State based on the classification made by the population itself according to the characteristics of the households and used logistic model for the analysis.

3.5.4 Rapid Approach Method

A lot of time is spent when one conducts a comprehensive socio-economic survey especially if one is to capture income and consumption expenditure information. Moreover, calculating consumption and income from raw data is difficult. Thus, some writers argue that there are far better ways to access poverty. A technique known as rapid appraisal has gained currency in the last few years and has become a popular alternative to more comprehensive surveys based on statistical sampling (Ravallion 1996). The method involves using very short interviews and direct observation to obtain a set of objective and subjective indicators of welfare. Some of these include focus groups and community interviews as well as less formal individuals or household level interviews.

However, predictions from such surveys according to Ravallion (1996) are unlikely to be highly correlated with actual standards of living. As such, anybody using such methods has to trade off between accuracy of research and potential cost saving. The concept of poverty is often mixed with other concepts like inequality and ill-being. In addition, the difficult condition of particular groups might go unnoticed because social norms and practices devalue the well-being of these groups.

3.6 Data Analysis

Both quantitative and qualitative methods of data analysis were employed. The study computed and obtained the overall poverty line of SSP2172 and used an econometric model to analyze the determinants of poverty. The binary regression model employed in this study was the logistic regression model. This model was used to analyze the potential determinants of poverty in terms of household's characteristics. The dependent variable of logistic regression model was the poverty status of the household, coded 1 if the per capita consumption of the household is below the poverty line and coded 0 otherwise. Logistic regression is recommended when modeling dichotomous responses because it allows the researcher to estimate probabilities of the response occurring. Its other advantages are that it is easy to interpret; it has flatter tails than probit model and relaxes the assumption of first order dominance embodied in the levels regression.

3.7 Model Specification (The Logistic Regression Model)

In this study, the econometric model used to identify the determinants of poverty was modeled as two decisions: either the individuals were poor or non-poor. The dependent variable was a binary responses and it takes a value of 1 if yes and 0 otherwise (discrete).

Following Oyugi (2000) and Alemayehu et al (2001), this research study employed logistic regression model to explain why some households are poor while others are not. This model is easy to interpret and have flatter tails than probit model as earlier stated in this paper. We can directly estimate the probability of an event occurring using logistic regression model.

For the case of a single independent variable, the logistic regression model can be written as:

$$\text{Prob (event)} = \frac{e^{\beta + \beta x}}{1 + e^{\beta + \beta x}} \text{----- (3.1)}$$

Or equivalently,

$$\text{Prob (event)} = \frac{1}{e^{-(\beta + \beta x)}} \text{----- (3.2)}$$

Where,

β_0 and β_1 are coefficients to be estimated from the data

X's are the independent/explanatory variables.

The set of the explanatory variables chosen in this study as possible determinants of poverty are: age of household head (in years), education level of household head (1 = primary or higher, 0 = otherwise), employment status of the household head (1 = employed, 0 = otherwise), gender of the household head (1 = male, 0 = female), household size (total number of members in the household); residence (1 = urban, 0 = rural), marital status of household head (1 = married, 0 = otherwise); healthcare (time taken to reach a health centre); sector of economy; land size (acreage of land owned by a household for crop and livestock farming); roads (time taken to reach the nearest public transport); water (time taken to reach the nearest water source), and credit facilities.

e is the base of the natural logarithms, approximately 2.718.

For more than one independent variable the model can be written as:

$$\text{Prob (event)} = \frac{e^z}{1 + e^z} \text{-----} \quad (3.3)$$

Equation (3.3) can also be written as:

$$\text{Prob (event)} = \frac{1}{1 + e^{-z}} \text{-----} \quad (3.4)$$

Where Z is the linear combination of independent variables written as

$$Z = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \beta_{10} X_{10} + \beta_{11} X_{12} + \beta_{13} X_{13} + \varepsilon, \text{-----} \quad (3.5)$$

Where:

Z = Poverty Status

X₁ = age of household head

X₂ = education level

X₃ = employment status

X₄ = gender of household head

X₅ = household size

X₆ = household residence

X₇ = marital status

X₈ = health care

X₉ = sector of economy

X₁₀ = land Ownership

X₁₁ = road

X₁₂ = water

X₁₃ = credit facilities

ε = error term

The probability of an event not occurring is estimated as:

$$\text{Prob (no event)} = 1 - \text{Prob (event)}$$

Rearrangement of the equation (3.5) facilitates the understanding and interpretation of the coefficients of the logistic regression model. The model can be re-written in terms of the log odds of an event occurring, which is called logit. The odds of an event occurring are defined as the ratio of the probability that it will occur to the probability that it will not. This can be estimated as:

$$\text{Log} \left[\frac{\text{Pro (event)}}{\text{Pro (no event)}} \right] = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_P X_P \dots \dots \dots (3.6)$$

The logistic coefficients in equation (3.6) can be interpreted as the change in the log odds associated with a unit change in the independent variable. Since it is easier to think of odds rather than log odds, the above equation can be re-written in terms of odds as:

$$\text{Log} \left[\frac{\text{Pro (event)}}{\text{Pro (no event)}} \right], = e^{\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_P X_P} = e^{\beta_0} e^{\beta_1 X_1} \dots e^{\beta_P X_P} \dots \dots \dots (3.7)$$

Then, e raised to the power β_i is the factor by which the odds change when the ith independent variable increases by one unit. If β_i is positive, the factor will be greater than 1, which means that the odds are increased. If β_i is negative, the factor will be less than 1, which means that the odds are decreased. When β_i is zero, the factor equals 1, which leaves the odds unchanged.

CHAPTER FOUR

RESULTS AND DISCUSSIONS

4.1 Introduction

This chapter presents the results from the primary data collected from households. The cross sectional data from greater Bor which has three counties: Bor South, Duk, and Twic East counties provide us with more details on the factors determining poverty in that region.

4.2 Descriptive Analysis

The study randomly selected/sampled and interviewed 200 respondents in the survey. Males who were also the heads of the households interviewed were 63 per cent while the females were 37 per cent. This indicates that there were more males than females. This suggests that in Greater Bor, households headed by males are more than females' which corresponds to the 2008 Census results which indicate that South Sudan has more males than females.

As pointed out in the literature review, household socio-economic characteristics are amongst the major determinants of poverty. In light of this, age of the household head, household type/residence, size, gender, marital status, education and health status, land holding, sector of the economy, road status and access to credit facilities are described below. In our study, we considered the mean which is the average value, standard deviation which is a measure of dispersion that shows how the observations are scattered around their respective means.

As can be seen from Table 4.1, on average, those who rated themselves as being poor were 87.6 per cent of the total population considered in this study. The average age was approximately 48 years with the youngest being 22 years and the oldest being 68 years. With a variance of 4 years, the respondents had spent an average of 6 years in school with one year being the minimum and 18 years representing the highest time spent in school. Further, it was observed that about 75 per cent of the household heads were illiterate, 10.5 per cent were found to have attended primary 1 to 3. The proportion of households that completed classes 4 to 7 stood at 5 per cent and 4.5 per cent completed primary education. Secondary school dropouts stood at 3 per cent and 1.5 per cent completed secondary school while 0.5 attended post graduate education.

Compared to the national illiteracy average of 84 per cent, the education level of household heads in Greater Bor of Jonglei State appears in a relatively better shape.

Table 4.1 Summary Statistics

VARIABLE	N	Mean	SD.	Min	Max
Poverty Status	200	0.876	0.153	0	1
Age of household head	200	47.71	8.223	22	68
Education level (complete years)	200	6.658	4.472	1	18
Employment status	200	0.208	0.134	0	1
Gender of household head	200	0.631	0.346	0	1
Household size	200	7.23	4.103	2	25
Household residence	200	0.775	0.230	0	1
Marital status	200	0.725	0.498	0	1
Distance to the nearest Health care facility	200	8.742	3.498	1	25
Sector of economy employed	200	0.743	0.119	0	1
Land Ownership	200	0.781	0.137	0	1
Status of Road Network	200	0.667	0.252	0	1
Access to safe water	200	0.236	0.124	0	1
Access to credit	200	0.292	0.163	0	1

Source: Author's computation based on the collected Data

On employment status, it was found that about 20.8 per cent of the respondents in Greater Bor are working with 79.2 per cent reported as not working.

On average, most respondents reported to be coming from a household with a typical membership of 7 people but varying from 2 members to 25 members. Relating with the sector of employment, it was found that 74.3 per cent were employed in the primary sector while 25.7 per cent were employed in the secondary sector. This implies that the vast majority of the respondents in Greater Bor are employed in agricultural sector which is predominantly mixed while only few of them have formal, casual employment, and business enterprise and other non-farm activities.

This means that most of the households earn their means of living exclusively from agriculture. Similarly, we explored accessibility to credit facilities in the region and found out that only 29.2 per cent of the respondents accessed credit services in the region to start business or do other investments while 70.8 per cent had no access to credit facilities.

The smallest household had 2 members while the largest 25 members. The large households were composed of nuclear family (father, mother and children) and other close relatives such as brothers, sisters and in-laws as well as other persons who live together in the same dwelling unit or separate dwelling units but make common provisions for food and regularly take their food from the same pot or share the same grain store.

The study also revealed that, about 77.5 per cent of the respondents resided in the rural areas while only 22.5 per cent stayed in the urban area of Greater Bor. On the other hand, we assessed marital status of the head of the households and found that 5 respondents were single, 145 respondents were married, 40 respondents were widowed, 9 respondents were divorced and the remaining respondent was separated. This suggests that most of the respondents of Greater Bor are married.

The study further showed that the average distance to the nearest health facility in Greater Bor was on average 8.7 Kilometers. The least distance reported was 1 kilometer while the highest distance travelled to the nearest health facility was 25 kilometers. This shows that there is difficulty in accessing health facilities or social amenities.

This was also observed when only 23.6 per cent of the respondents claimed to access safe water while 76.4 per cent had no access to safe water.

On the status of road network, only 33.3 per cent were found to have access to paved roads and to worsen the situation, 66.7 per cent of the respondents reported that the status of the road network in Greater Bor of Jonglei State was poor implying difficulties in movement from one point to another.

Finally, on Land ownership, approximately 78 per cent of the households in Greater Bor own land while only 22 per cent were found to be landless.

Most of these landless households may be those people who have relocated within the area and who fear to go back to their original areas due to absence of social amenities and other facilities. Among households that had land of their own, it was further revealed that 87 per cent were not cultivating their lands due to insecurity, and natural disasters such as flooding and drought.

4.3. Test for Multicollinearity

We adopted variance inflation factor to measure how much variation of an estimated coefficient may increase due to collinearity. It is suggested that variance inflation factors with values greater than ten and 1/VIF values less than 0.10, would imply presence of multicollinearity, which may give us spurious results if not corrected.

Table 4.2: Variance Inflation Factor (VIF)

VARIABLE	VIF	1/VIF
Household size	9.70	0.107
Household residence	6.92	0.108
Employment status	6.89	0.113
Education level	4.93	0.203
Age of household head	2.43	0.412
Gender of household head	1.84	0.545
Status of Road Network	1.57	0.638
Distance to the nearest Health care facility	1.46	0.687
Access to credit	1.16	0.861
Access to safe water	1.12	0.893
Marital status	1.07	0.936
Land Ownership	1.05	0.951
Sector of economy employed	1.02	0.982

Source: Author's computation

From Table 4.2 above, it is shown that all VIF values were below 10 and $1/\text{VIF}$ was more than 0.1 as expected. Therefore, we confirmed that there was no serious multicollinearity. Further we conducted Spearman's rank correlation matrix that is the linear relationship between the dependent variable and independent variables as it showed strength of association between the variables as well as be able to detect multicollinearity by identifying variables which are highly correlated and thus enabled us to either retain them if they were significant to our study or drop them.

From the results, it was found that there was no serious multicollinearity since most correlation coefficients were below the absolute value of 0.5 (See Table 4.3). Also the significance level was accessed whereby it was found out that most of the relationships exhibited by the pairs of association were significant since their p values were less than 5 per cent significance level except the correlation coefficient between access to credit and access to safe water which had a p value of 12.7 per cent. Nevertheless, the study considered all variables in the correlation matrix since the various established pairs were less collinear. More details are shown in Table 4.3.

Table 4.3: Spearman Correlation Matrix

Variable	Age	Education	Employment status	Gender	Household size	Place of residence	Marital status	Distance to the nearest H.facility	Sector of economy employed	Land ownership	Road network	Access to safe water	Access to credit
Age	1.0000												
Education	0.1253 0.0000	1.0000											
Employment status	0.0344 0.0003	0.3181 0.0000	1.0000										
Gender	0.1525 0.0000	0.3413 0.0370	-0.1192 0.0000	1.0000									
Household size	-0.1253 0.0100	0.1485 0.0000	-0.4652 0.0000	-0.1521 0.0000	1.0000								
Place of residence	0.4231 0.0000	0.3024 0.0103	-0.2849 0.0445	0.2159 0.0000	0.2211 0.0000	1.0000							
Marital status	-0.1363 0.0044	0.4131 0.0000	0.2261 0.0225	0.1766 0.0000	-0.3377 0.0000	-0.1614 0.0000	1.0000						
Distance to the nearest H.facility	-0.3845 0.0005	0.4375 0.0000	-0.1889 0.0076	0.2156 0.0000	0.3686 0.0000	0.3166 0.0051	-0.0213 0.0000	1.0000					
Sector of the economy employed	0.0332 0.0007	-0.0687 0.0000	-0.1460 0.0000	0.2377 0.0000	-0.0388 0.0000	0.1842 0.0000	-0.1456 0.0000	0.2722 0.0000	1.0000				
Land ownership	0.0837 0.0000	0.0530 0.8466	-0.0597 0.0000	0.4820 0.0000	-0.2765 0.0000	0.0871 0.0000	-0.2808 0.0000	0.1008 0.0000	0.3836 0.0000	1.0000			
Road network	-0.4557 0.0000	-0.0171 0.0000	-0.2364 0.0000	0.4492 0.0000	-0.0072 0.0000	-0.0984 0.0000	-0.6123 0.0000	-0.0823 0.0000	0.3437 0.0000	0.3071 0.0000	1.0000		
Access to safe water	0.0073 0.0047	0.1072 0.0000	-0.0229 0.0057	0.0132 0.0012	-0.1074 0.0000	-0.2509 0.0000	0.0740 0.0000	0.0656 0.0000	0.0843 0.0000	0.0342 0.0000	-0.4475 0.0002	1.0000	
Access to credit	0.2298 0.0000	0.1435 0.0000	0.0242 0.0004	0.1743 0.0000	0.0993 0.0000	0.0071 0.0000	0.2008 0.0000	0.0114 0.0000	-0.3345 0.0000	0.1124 0.0000	-0.4904 0.0253	0.1176 0.1270	1.0000

Source: Author calculation based on collected Data¹

¹Data collected from households in Greater Bor in Jonglei State of South Sudan. Note that the figure in bold represents the significance levels measured at 5%

4.4 Poverty Lines

Following the justifications made in 3.5, Cost of Basic Needs, was the preferred approach employed in this study in setting poverty lines.

4.4.1 Food Poverty Line of Greater Bor

In constructing the food poverty line for Greater Bor, we followed and used the procedures described in Ravallion (1993). We first valued all the consumption information, including the consumption from own production and stocks. Local prices were used in valuing the consumption information. Consequently, we valued the food items using the prevailing local prices collected from three markets, namely, Marol, Hai Machuor and Langbaar.

Secondly, we rescaled consumption per household so as to take into account the household size and composition. We derived Adult Equivalent Units for each household, and used to calculate consumption per adult equivalent. Calorie based equivalence scale adapted from WHO (1999) was used to convert household members of different age and sex into equivalent male adults. Thirdly, since poverty lines are essential tools to allow comparison of welfare across households and regions, constructing a diet for the poor, which is identical for all households is an important step. For such purpose, the minimum food basket that gives 2200 Kcal per adult per month (the minimum calorie suggested by WHO required for an adult to perform daily duties) constructed for a cereal-based farming rural areas of South Sudan was adapted from WHO (1999), with some adjustments to fit the specific characteristic of the study area.

4.4.2 Absolute Poverty Line of Greater Bor

The total poverty line can be obtained by adjusting for non-food as discussed in Chapter Three. Therefore, using equation (3.1) in chapter three, food poverty and absolute poverty lines for Greater Bor were found to be SSP1737.6 and SSP2172 per person per month respectively.

Table 4.4 Food and Absolute Poverty Lines

Food poverty line in SSP per month per adult equivalent	Overall poverty line in SSP per month per adult equivalent
CBN	CBN
1737.6	2172

Source: Author's calculations

Table 4.4 shows that Greater Bor has a food poverty line of SSP1737.6 and the overall poverty line of SSP2172. This means that CBN poverty lines for Greater Bor are however lower than the nation rural poverty line of SSP2187. This is probably so because of differences in food baskets and prices.

4.5 Analysis of Poverty Measures

Poverty measures are indices that show the magnitude of poverty in a society. The FGT formula mentioned in depth in chapter two was applied so as to compute the incidence, depth and severity of poverty in Greater Bor.

4.5.1 The Magnitude of Food Poverty

Table 4.5: Magnitude of Food Poverty in Greater Bor of Jonglei State

Poverty Incidence (P_0)	Poverty Depth (P_1)	Poverty Severity (P_2)
0.549	0.3208	0.2307

Source: Author's computation

As depicted in table 4.5, about 54.9 percent of the households live in absolute food poverty. The incidence was found to be close to the national average of 55.4 per cent for rural areas of South Sudan (World Bank 2011).

The food poverty gap of Greater Bor was found to be 32.08 percent. Accordingly, the average consumption shortfall required to bring the poor to the food poverty line was found to be 32.08 percent of the food poverty line. This gap is significantly higher compared to the finding in rural Kenya. Food poverty severity of the study area was found to be 23.07 per cent was found to be significantly higher than the findings of Alemayehu et al (2001) for rural Kenya.

4.5.2. The Magnitude of Total Poverty

Table 4.6: Magnitude of Total Poverty in Greater Bor

Poverty Incidence (P_0)	Poverty Depth (P_1)	Poverty Severity (P_2)
0.55	0.3211	0.232

Source: Author's computation

Table 4.6 indicates that poverty incidence of Greater Bor was found to be 55 percent, which is higher than the corresponding national average of 50.6 per cent, but lower than the average headcount for rural areas of South Sudan corresponding to 55.4. Poverty gap for Greater Bor, 32.11 per cent, was found to be significantly higher than the rural Kenya of 20 per cent. Poverty severity index of Greater Bor was found to be 23.2 percent, which exceeded significantly that of rural Kenya average of 10 per cent.

4.6. Results: Determinants of Poverty

In estimation as illustrated in the previous chapter, we employed the Binary Logistic model to unearth the major determinants of poverty in Jonglei state, Southern Sudan. Considering an assumption that in the logistic model, all of the detected values indicates the likelihood of poverty are created by continuous unseen variables, implies that to be in a poor state could not be as a result of chance but dependent on many other unobservable characteristics.

Therefore, we further employed Maximum Likelihood Estimation² (MLE) to establish the role of various independent variables on poverty. The coefficients of the logit model are not identified without the assumptions made about the mean and variance of the random error term; they are arbitrary in the sense that once the identifying assumptions change, the values of the estimated coefficients also change. We therefore made interpretations on the probability of observing the independent variable. This was done using the average marginal effects.

From the estimated coefficients as presented in Table 4.7 below it was found that the age of the household head, education level, gender of the head of the household, household size, marital status, distance to the nearest health facility and sector of the economy employed were found to be statistically significant factors determining poverty in Greater Bor, Jonglei state, but, employment status, household residence, land ownership, status of the road network, access to safe water and access to credit were found to be statistically insignificant factors. However, in

²Note that in order to apply this technique, we made an assumption that the distribution of the stochastic error terms to be standard logistic distribution as well as assumed that the variance of the error terms to be $\frac{\pi^2}{3}$.

order to determine the changes in probability associated with each of the modeled factors, interpretation followed average marginal effects (AME).

Table 4.7 Estimated coefficients of the logistic model

Explanatory Variables	Coefficient	Z-Statistic
Age of household head	1.3823**	3.59
Education level	-2.1314*	-2.15
Employment status	-1.3518	-1.92
Gender of household head	-2.3971*	-2.11
Household size	1.6725**	3.24
Household residence	1.2394	1.79
Marital status	-1.3755*	-1.98
Distance to the nearest Health care facility	0.4299**	3.89
Sector of economy employed	-0.5654**	-4.37
Land Ownership	1.008	1.02
Status of Road Network	1.209*	2.01
Access to safe water	-1.42	-1.09
Access to credit	-0.853	-0.93
Number of observations = 200		
LR chi2(6) = 11.15		
Prob > chi2 = 0.0011		
Pseudo R2 = 0.1374		

*Significant coefficients at 5% significance level

**Significant coefficients at 1% significance level

According to Table 4.7 above, all the variables used in the model (independent variables) explained the probability of being poor. This implies that the variables used in this study fit the model well.

The study found age of the household head, household size, sector of the economy and distance to the nearest health care facility to be statistically significant at 1% significance level. On the other hand, education levels, gender of the household head, marital status and status of the road network were shown to be statistically significant at 5% significance level.

In order to make interpretation of the model on the likelihood of being poor, the study conducted average marginal effects of coefficients as indicated in Table 4.8 below;

Table 4.8 Average Marginal Effects of the Logistic Regression

Variables	Coefficient	Z-Statistic
Age of household head	0.0472**	7.39
Education level	-0.0691*	-2.42
Employment status	-0.0196	-0.92
Gender of household head	-0.0344*	-2.11
Household size	0.0318**	3.22
Household residence	0.0141	1.69
Marital status	-0.0683*	-2.08
Distance to the nearest Health care facility	0.0515**	2.88
Sector of economy employed	-0.0109**	-3.64
Land Ownership	0.0817	0.32
Status of Road Network	0.0242*	2.11
Access to safe water	-0.0117	-1.77

Access to credit	-0.0452	-0.82
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*Significant coefficients at 5% significance level

**Significant coefficients at 1% significance level

4.7. Discussion of the Study Results

From the findings, and as indicated by Table 4.8, it was revealed that age of the head of the household had a positive and significant relationship with poverty. Additional years of the head of the household, increases the probability of being poor by 4.72 per cent. This means that households headed by an old household head are more likely to enter into the ditch of poverty compared to households headed by middle aged household heads. These findings concurred with the findings obtained by Tilman (2001) where age of the respondent had a significant effect on rural poverty. Also, studies by Amuedo- Dorantes (2004) for Chile and Geda et al., (2005) for Kenya, found out that age was the most important determinant of poverty. This result may be attributed to the fact that as an individual advances in age, the energy to work gets low and eventually retires in case of employed people. This leads to fewer options for continued income. This implies that such individuals are at risk for rising costs of living leading them to economic quagmires and finally potentially placed at lower levels of socio-economic status leading them to impoverished poverty.

Education levels also were assessed through exploring complete years spent in school and it was found that the negative and significant relationship revealed implied that extra years spent in school can lead to a reduction in the probability of being poor. An additional year spent in school led to a decline in the likelihood of being poor by 6.9 per cent holding other factors constant. This was in line with the study finding obtained by Fofack (2002) who found out that education level of household head is one of the determinants of rural poverty in Burkina Faso. Just like our study findings, they revealed that educated household head had better welfare compared to uneducated household head. These results may imply that educated individuals are more likely to be employed and thus may be at higher income groups, thus reducing the likelihood of being poor.

Gender of the head of the household was found to be statistically and negatively related to the poverty status in Greater Bor. The average marginal effect of -0.034 implies that the probability

of being in a poverty status was likely to be lower by 3.4 per cent if head of the household was of male gender holding other factors constant. Tilman (2001) also concurred with this as his studies revealed that gender of the household head affect rural poverty in Mozambique.

These findings may be as a result of the deterministic nature of male figures especially in engaging in risky activities in the process of earning a living for his household members, something a female counterpart could not try in the risky state in South Sudan.

In this study, household size was found to be statistically significant in determining poverty in Greater Bor. It portrayed a positive relationship with poverty status. The results may be due to the fact that each of the individual in a household competes for the little resources available for the entire household. This pushes the whole household into catastrophic poverty. The study found out that, as household size increased, the probability of being in a poverty status increased by 3.18% holding other factors constant. The study further revealed that the probability of being poor was lower for married couples compared to those who are not married. The average marginal effect of -0.0683 implied that the likelihood of being poor was 6.83 per cent lower holding other factors constant. Similar study results were obtained by Hassan and Babu (1991) and Ajakaiye and Adayeye (2002), who found out household size as one of the important determinants of poverty. The study further revealed that the probability of being poor was lower for married people compared to those who are not married. The average marginal effect of -0.0683 implied that the likelihood of being poor was 6.8 per cent lower holding other factors constant. Married people are more likely to support each other and planning for resources is done before spending thus achieving the maximum output compared to other categories.

Social amenities in any area are best placed to explain the resource distribution and the issues of equity. The study explored accessibility of health care facilities in Greater Bor, Jonglei state whereby a positive and statistically significant relationship was established with being poor. The average marginal effect of 0.0515 implied that an additional distance to the nearest health care facility in Greater Bor increases the likelihood of being poor by 5.15 per cent holding other factors constant. This is in line with the findings obtained by Ajakaiye and Adeyeye (2002) who pointed out that the causes of poverty involved lack of access to basic social services. The study results implies that distance to the nearest health facilities discourages consumption of essential

health inputs leading to worse health outputs which greatly and negatively impacts on the general productivity of an individual thus necessitating poverty.

Sector of the economy where one works in or is employed in determined greatly on whether one was going to be in a poor state or not. The negative and statistical relationship was established. Upon estimation, it was revealed that those individuals who were engaged in the primary sector of the economy, such as agricultural sector, were less likely to be poor compared to those who were in the secondary sector such as service industry. The study found that if an individual was in the primary sector, the probability of being in a poor state was reduced by 1.09 per cent holding other factors constant, compared to working in the secondary sector. Oyugi (2000) conflicted with our finding upon establishing that sector specific employment is an important factor in predicting poverty status of households, with the formal sector employment being associated with less poverty, in comparison with agricultural sector employment. This study results may be attributed to the instability in the service industry usually referred to as formal sector as the country is still in transitional government where the requirement for better pay in the secondary sector is associated with increased educational levels. Most of the people in working age brackets are not suitable for the higher offices to offer formal services or knowledgeable enough to handle challenges associated with secondary sector as a whole for example investing in the transport industry due to poor infrastructure among other key reasons.

Finally, the study results revealed that the probability of being poor increased with poor road network. The average marginal effects computed of 0.0242 implied that the probability of being poor increased by 2.4 percent, holding other factors constant compared to state of better roads networks. Ajakaiye and Adeyeye (2002) in establishing causes of poverty found out that poor infrastructure development increases poverty. The study results synchs well with the theory of production. The theory postulates a positive relationship between total output and capital investment, in this case, infrastructure or road network. Poor road network has increased probability of poverty since most of the locals would not be at a position of availing the agricultural produce to the market thus, affecting the primary sector and consequently secondary sector.

Poverty is a global concern even in the 21st century. Mostly in developing countries, poverty has had an immense impact on population growth which ultimately has an adverse effect, not only on the economy but also the world economy and general sustainability.

In conclusion, the explored factors determining the poverty status in Greater Bor of Jonglei state in South Sudan have been clearly articulated. The study examined a total of thirteen factors based on the literature reviewed and upon empirical estimation, only eight turned out to be statistically significant determinants. In the next chapter, the study utilizes these factors in developing the policy interventions in controlling the likely effects in the general welfare of the population.

4.8 Limitation of the Study

The study of poverty in South Sudan is still unique even after her independence. The welfare information which is essential for poverty analysis is not available at both government and non-governmental institutions levels. Furthermore, undertaking this study through the formation of questionnaire for data collection was difficult, given the fact that most inhabitants of South Sudan are not educated. Getting relevant statistical details from the National Bureau of Statistics also provided serious hurdles as most information needed for this study are not compiled at all. Other factors which made the data collection difficult were related to non-sampling errors which include: illiteracy of the population; lack of household income and expenditure information as accounts on them are not kept by the households; incorrect statement of expenditure on account of memory bias; wide variation in the mode of purchase of consumption goods from different markets. There was also lack of availability of calorie content and so proxy calorie was used in this study.

However, given the above limitations, there must be some flaws in the results but adequate verifications were made to authenticate the accuracy of the data and the results from the study are valid on the account of adequate verifications.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter summarizes the findings of the study in relation to the determinants of poverty in Greater Bor, Jonglei State. The chapter further makes comprehensive conclusions highlighting the established determinants increasing poverty and later policy recommendations are drawn based on those factors. Further areas of research are captured later as a way of filling the gaps.

5.2 Summary of the Study Findings

This study was conducted with an understanding that any government intervention to reduce or eliminate poverty requires a clear knowledge of its major determinants. Therefore, estimation of the determinants of poverty is very important in its mitigation in the country where the largest part of population lives in dismal poverty.

The study shows that the age of the household head, education level, gender of the head of the household, household size, marital status, distance to the nearest health facility, sector of the economy, and status of the road network were statistically significant at 5 per cent level. However, at the same confidence interval, employment status, household residence, land ownership, access to safe water and access to credit were not statistically significant.

5.3 Conclusions of the Study Results

In order to carry out this study, its basis was motivated by the fact that there were few studies carried out on poverty situation in South Sudan meant to inform the national policy makers and if studies existed, they only concentrated at the national level and focused only on the poverty measurements, rates, and reduction and eradication policies without proper estimation.

5.4 Policy Recommendations

As stated in this paper, there has been massive international support which has been directed to South Sudan after the end of the war meant to reclaim her independence. Despite the government's concerted efforts to alleviate poverty, little has been achieved.

This is because the measures taken may not be appropriate due to failure of understanding the real factors associated with this social challenge.

Therefore, based on the study findings, there is a need to consider the rural population whereby the government or the state has to find a way of introducing rural credit facilities and cash transfers to enable them access their basic facilities like what happens in some parts of Kenya. This will shield this population whose living conditions deteriorate from entering the ditch of poverty.

Household size is associated with the number of members in the same household. From the analysis, mostly larger households with low level of education and unemployed members were more likely to be poor. Thus, there is need for the government to create awareness on the importance of having desirable number of children by an individual based on the ability to provide for them. This awareness can be initiated by the government through the country population department upon identifying areas where such patterns are likely to be experienced. This may reduce the state of poverty.

Poverty was associated with the distance travelled to seek treatment by the people of Greater Bor in Jonglei state. The government should bring health facilities near households by building one where the distance is large. This can be achieved by involving foreign donors who want to assist humanity together with the private sectors. Policies need to be reviewed to allow reduction of tax to those private investors who want to invest in health care industry.

Finally, the government through the relevant ministry should map out all those roads which are critical especially roads linking up with the market in the States and improve them.

5.5 Areas for Further Study

The economic growth of any country depends greatly on the wellness and healthiness of its people. From the literature reviewed, it was shown that poverty is a global challenge and joint efforts by other states, the country as a whole, and the neighboring countries are necessary in reducing or eliminating this social challenge.

In this study, we mainly considered determinants of poverty in Greater Bor, Jonglei State in South Sudan. However, similar studies are necessary in exploring major factors of poverty in

other States in South Sudan to enable joint effort by the Government of South Sudan given that the country acquired independence not long ago and more is desired.

This would enable efficient resource allocation and establishment of relevant ministries/departments to focus on improving the health status of the people of Greater Bor and South Sudan as a whole.

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APPENDICES
ANNEX 1: INTRODUCTION LETTER

Dear Respondent,

I am an MA (Economics) student from the University of Nairobi-Kenya, carrying out research on —**The Determinants of Poverty in South Sudan: A case of Greater Bor in Jonglei State**” as a partial fulfillment for the requirement of an award of a Masters of Arts Degree in Economics of the University of Nairobi.

Please extend your assistance to this study by answering the following questions according to your personal observations and feelings. The information you give will be treated confidentially and used solely for the purpose of this study. There is no right or wrong answer.

Your cooperation is highly appreciated.

Thank you,

Mabior Michael Makuach Jok

BA (ECONS), UBG

X50/61369/2013

- i. Have you understand the above information?
 - a) Yes.
 - b) No.
- ii. Do you agree to participate in this study?
 - a) Yes.
 - b) No.
- iii. If No, Please may we know the Reason: _____

ANNEX 2: QUESTIONNAIRE

Kindly tick (√) on the appropriate choice wherever necessary.

1. Gender
 - a) Male ()
 - b) Female ()
2. Age: years.
3. Marital Status
 - a) Single ()
 - b) Married ()
 - c) Widowed ()
 - d) Divorced ()
 - e) Separated ()
4. What is the size of your household?
5. Are you employed (do you earn income)?
 - a) Yes ()
 - b) (b) No ()
6. If **Yes** to question (5) above, what is the nature of your occupation?
 - a) Farming ()
 - b) Formal employment ()
 - c) Casual employment ()
 - d) Business enterprise ()
 - e) Herding ()
 - f) Other () Specify.....
7. If **No** to question (5) above, what is your occupation?
.....
.....
8. What is your monthly wage income? S. Sudanese pounds.
9. Do you have other sources of income?
 - a) Yes ()
 - b) b) No ()

10. If Yes to question (9) above, what are these sources?

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.....

.....

11. What is your non-wage total income per annum?

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12. Is the total monthly income of your household:

- a) Higher? ()
- b) Lower? ()
- c) More the same figure? ()
- d) Less the same figure? ()

13. Which net household income per month in SSP would be the absolute minimum for your household? That is to say, that you would not be able to make ends meet if you earned less”

14. Concerning your family’s food consumption over the past one month, which of the following is true?

- a) Less than adequate
- b) Just adequate
- c) More than adequate

NB: Adequate" means no more nor less than what you consider to be the minimum consumption needs of your family.

15. “Please imagine a six steps ladder (where the first step, stand the poorest people, and on the highest step, the sixth, stand the rich), on which step would you consider you and your household to be today?”

- a) First step ()
- b) Second step ()
- c) Third step ()
- d) Fourth step ()
- e) Fifth Step ()
- f) Sixth step ()

16. Would you say that your household is at present:

- a) Wealthy? ()
- b) Very comfortable? ()
- c) Reasonably comfortable? ()
- d) Just getting along? ()
- e) Poor? ()
- f) Very poor? ()

17. Overall, how satisfied (content, happy) are you with your life? Are you:

- a) Very unsatisfied?
- b) Unsatisfied? ()
- c) Neither unsatisfied nor satisfied? ()
- d) Satisfied? ()
- e) Very satisfied? ()

18. What was your total expenditure last year?

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19. What basket of goods do your household consume:

- a) Daily?
- b) Weekly?
- c) Monthly?

20. What did you spend on purchased food last month for your household?.....

21. What is the total value of non-purchased food consumed in your household last month?.....

22. Have there been any shortages of food for more than 1 month during the past 12 months?

- a) Yes ()
- b) No ()

23. If your answer to question (22) is **Yes**, what strategies did the household adopt to deal with the problem?

- a) Cutting down the number of meals ()
- b) Cutting down the quantity of food in each meal ()

- c) Borrowed from others ()
 - d) Looked for food aid ()
 - e) Sending children to the labor market ()
 - f) Selling livestock ()
 - g) Selling household durables ()
 - h) Others (Specify) ()
24. Have you ever attended school?
- a) Yes ()
 - b) No ()
25. If **Yes** to question (24) above, what is the level of education?
years.
26. Does your household have access to clean drinking water?
- a) No ()
 - b) Yes ()
27. What is the distance from your home to the nearest source of water? kms.
28. Access to market:kms from the nearest surrounding market andkms from the Jonglei State's capital, Bor Town market.
29. What is the condition of road in this state?
- a) Poor ()
 - b) Good ()
30. Have you ever received food aid?
- a) Yes ()
 - b) b). No ()
31. If yes, from whom?

32. Indicate whether you own the following assets:
- a) Goats Number.....
 - b) Sheep..... Number.....
 - c) Cattle Number
33. Do you own land in Jonglei State?
- a) Yes ()

b) No ()

34. If your answer to question (33) above is **Yes**, do you cultivate it?

a) Yes ()

b) No ()

35. If your answer to question (34) above is **No**, give the reasons.

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.....
.....

36. If your answer to question (33) is **No**, what are the reasons?

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.....
.....

37. Is this state (Jonglei) poor or non-poor? Why?

38. If poor, to what extent?

a) Moderately poor ()

b) Very poor ()

39. Do you have access to rural credits?

a) Yes ()

b) No ()

40. If your answer to question (39) is “**Yes**”, how much did you obtain in the last 2 years?.....SSP

41. If your answer to question (39) is “**Yes**”, what are the sources of these rural credits?

a) Formal ()

b) Non Formal with high interest rate ()

c) Non Formal with no interest rate ()

42. If you do not have access to rural credit, what are the reasons?

a) Absence of Micro Finance services ()

b) Savings requirement ()

c) Marginalized to get organized in to groups for group collateral ()

- d) For fear of defaulters in the group ()
 - e) For fear of risk of not paying back ()
 - f) Do not want to take credit ()
 - g) Do not know what to do with the credit ()
 - h) Too old to work with and pay back the credit ()
 - i) Others (specify) ()
43. During the last 12 months, was there an occasion in which one or more of your household members fall seriously ill?
- a) Yes ()
 - b) No ()
44. If your answer to question (43) is “**Yes**”, how many members of the family fall ill?
- a) One ()
 - b) Two ()
 - c) Three ()
 - d) Four ()
 - e) Five and above ()
45. If your answer to question (43) is “**Yes**”, did the person take medical treatment?
- a) Yes ()
 - b) No ()
46. If your answer to question (45) is “**No**”, what are the reasons?
- a) Too high cost of treatment ()
 - b) Too high transportation cost ()
 - c) Absence or low quality of health facilities ()
 - d) No one to escort ()
47. What was the status of living condition of the household in the last 10 years?
- a) Improved ()
 - b) Deteriorate ()
 - c) Unchanged ()
48. What are the reasons for the condition of the household’s living standard in question (48) above?
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49. In your opinion what do you think are the manifestations of poverty?

a	Insufficient food/Hunger	e	Being vulnerable to different problems
b	Bare minimum clothing and shelter	f	Voicelessness in the community
c	Not being able to send children to school	g	Others (Specify)
d	Inability to take sick family members to clinics		

50. In your opinion what are the major determinants of poverty?

a	Large family size	g	Inadequate use of agricultural input
b	Old age of the household head	h	Lack of access to credit service
c	Households headed by women	i	Having no income source other than agriculture
d	Illiteracy/low level of Education	j	Lack of health and water facilities
e	Landlessness/ Small plot	k	Other (specify)
f	Poor road network		

Thank you very much!!!