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MICROECONOMIC DETERMINANTS OF INCOME INEQUALITY IN GHANA

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DECLARATION

I, MICHEL AMENAH ADURAYI, the author of this thesis, hereby declare that except for references to other studies which have been duly acknowledged, this thesis is the original research I did towards the Master of Philosophy degree in Economics in the Department of Economics, University of Ghana, under the guidance of my supervisors. This thesis has neither in part nor in whole been submitted for any academic award elsewhere. I bear sole responsibility for any shortcomings.

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ABSTRACT

The subject of inequality is relevant in economic discussions, considering its impact on development and growth. According to the Ghana Living Standard Survey (GLSS), Ghana's inequality measured by the Gini Coefficient grew from 0.42 in 2012/2013 to 0.45 in 2016/17. This increase in inequality could threaten national growth and poverty reduction initiatives, undermine social stability, and exacerbate political discontent within the nation. Hence, to curtail such events, it is prudent to understand the factors influencing inequality in Ghana. In line with that, this study aimed at investigating the microeconomic drivers of inequality in Ghana.

Using data from the sixth and seventh rounds of the GLSS, this study employed the Recentered Influence Function (RIF) model to investigate the factors affecting Ghana's Gini Coefficient. In addition, the study used the RIF -Oaxaca Blinder decomposition technique to determine the impact of household characteristics on inequality over time. The study found that for both rounds of the GLSS, household heads located in the Western, Volta, Brong Ahafo, Central and Upper East regions caused a decline in inequality compared to household heads in the capital region, Greater Accra. Also, a household head with secondary or primary levels of education resulted in a decrease in inequality relative to a household head with no education. In addition, household heads who receive remittances contributed to a reduction in inequality compared to their counterparts who do not receive remittances.

The study recommends that tackling the causes of inequality can be achieved through socioeconomic empowerment efforts such as educational policy initiatives. Thus, pursuing educational policies focused on improving the accessibility and quality of education will have a favourable effect on reducing inequality. Furthermore, a framework for accelerating regional

development in Ghana should be created to promote growth. Localized growth initiatives should be developed and implemented by MMDAs (Metropolitan, Municipal and District Assemblies). These initiatives would engender growth within the various regions in Ghana and contribute to reducing inequality. Finally, the government should create an enabling environment for robust transfer systems that would facilitate the smooth transfer of remittances.

DEDICATION

This thesis is dedicated to my parents, Joseph Adurayi Amenah and Vida Laadi Amenah, my sister, Anastasia Amenah and my love, Emmanuella Naa Oforly-Okor Annan.

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My greatest gratitude goes to God Almighty for divinely guarding and guiding me throughout this work. Second, I owe my mother (Vida Laadi Amenah) a debt of gratitude for her patience, knowledge, care, and support in pursuing my project.

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LIST OF ABBREVIATIONS

CHNS	China Health and Nutrition Survey
FEM	Fixed-Effect Model
GDP	Gross Domestic Product
GLSS	Ghana Living Standards Survey
GMM	General methods of moments
GSS	Ghana Statistical Service
HBSs	Household Budget Surveys
IFAD	International Fund for Agricultural Development
IFs	Influence Functions
LSMSs	Living Standards Measurement Study Surveys
MDGs	Millennium Development Goals
MMCs	Multiple Indicator Cluster Surveys
MMDAs	Metropolitan, Municipal and District Assemblies
OLS	Ordinary Least Squares
REM	Random-Effect Model
RIF	Recentered Influence Functions
RIF-OB	Recentered Influence Functions - Oaxaca-Blinder
SDGs	Sustainable Development Goals
SSA	Sub-Saharan Africa
UK	United Kingdom
UNDP	United Nation
UNICEF	United Nations International Children's Education Fund

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

Inequality has greatly focused on economic literature due to its dynamic relationship with economic growth in the past three decades. Studies have shown that inequality is not only an outcome of development but also a determinant of growth (Shin, 2012); consequently, studies on the link between income distribution dynamics and economic growth have been on economists' radars for decades. Pioneers like Karl Marx (1887) believed that capital accumulation by a few, coupled with unabated competition in the labour supply market, would foster an uneven income distribution. In addition, Kuznets (1955) proposed, based on Lewis' (1954) dual-sector theory, that the gradual transition of labour and capital from less productive to more productive sectors will initially generate and eventually repress inequality.

Most studies on income distribution have been skewed toward understanding the role of macroeconomic variables in income distribution (Iyigun et al., 2004, Ravindra, 2017; Berisha et al., 2020). Unfortunately, concerns about statistical endogeneity and omitted variable bias on macro-econometric analysis of cross-country studies of income inequality were common among early studies of income distributions at the macro-level (Bourguignon et al., 2002).

Nevertheless, the advancement of econometric analysis is gradually providing solutions to these problems. The popularity of macro analysis of income distribution has somewhat caused a relegation of the relevance of individual or household characteristics in determining income inequality. This is evident in the limited amount of literature on the microanalysis of inequality

relative to macroanalysis. However, the relevance of household characteristics cannot be overemphasised because the extent of income distribution in a country is mainly influenced by individual factors (Souza, 2013). These characteristics form integral parts of any microanalysis of the income distribution. Hence, there is a need to investigate the role of household characteristics in income distribution.

Traditional approaches to the microeconomic determinants of income inequality stress the differences in opportunity, ability, and chance as significant determinants of the variation in income distribution (Mincer, 1974). However, due to the measurement challenges associated with these variables, the analysis of the income distribution tended to be less quantitative. Over time, the modernisation of economies has engendered the availability of relevant data from labour force surveys, household surveys, and population censuses (Kimhi, 2004). Hence, a robust quantitative analysis of the variation of income inequality can be conducted based on micro-data surveys.

Earlier microeconomic approaches, which are still extant, were based on the decomposition of inequality measures by subgroups (Bourguignon, 1979; Shorrocks, 1980). These researchers sought to investigate how changes in a scalar measurement of inequality are decomposed into changes in the mean and population weights of households or individual groups. Due to the esoteric nature of this approach, it has gained little relevance in policy decision-making. More importantly, this method did not make it clear how different factors affected the overall change in inequality.

Recent methodologies have been introduced to curtail these shortcomings. Fields (2002) developed a regression-based technique that relies on the information contained in income-generating equations to decompose a country's income inequality level. With this decomposition, relative shares are attributed to each explanatory variable. These shares are independent of the

metric of income inequality adopted. In recent years, Firpo, Fortin, and Lemieux (2009) introduced the use of recentered influence functions as a means of analysing the impact that changes in the distribution of explanatory variables X have on the unconditional distribution of Y. Furthermore, Firpo, Fortin, and Lemieux (2018) introduced the application of recentered influence function regressions for the Gini coefficients, with emphasis on the generalisation of the Oaxaca-Blinder decomposition.

From the micro-perspective, various household characteristics determine the population's income distribution. People's socio-demographic structure, which consists of the locality of households or individuals, age, education, and ownership of physical and financial assets, plays a crucial role in distributing income among groups and populations. In addition, the returns to investments in factors of production by households accentuate inequality. The disparity in income distribution can be partially attributed to differences in human capital investments, such as the amount of time spent in education and the amount of training received on the job. Also, community characteristics such as access to quality social amenities explain the variation in income among groups (Danquah & Ohemeng, 2017).

Inequality in Sub-Saharan Africa (SSA) experienced a slight nosedive between 1991 and 2011. 3.4 percentage points, reducing the average unweighted Gini for SSA over that period. However, the sub-region houses 10 out of 19 unequal countries globally (Bhorat et al., 2017). This sheds some light that a macro analysis of income inequality may not be impervious to generalisations, which may not reflect the true nature of income distribution at the national level. These authors classified the factors that determine income distribution into three categories. These categories are the concentration of physical and human resources, the highly dualistic economic structure, and

the restricted distributive capacity of the state. Two of these can be connected to the micro-dynamics of income inequality. Thus, the concentration of physical and human capital among households plays a pivotal role in determining inequality. Also, the dualistic economic structure, which determines the mobility of household labour and how it affects their wages, sheds some light on how income is distributed.

The development of database systems such as Multiple Indicator Cluster Surveys (MMCSs), Household Budget Surveys (HBSs) and Living Standards Measurement Study Surveys (LSMSs) used to measure inequality has improved the micro inquiry into income distribution in Africa. These systems have given researchers a tool to investigate inequality trends, levels, and determinants. Okatch et al. (2013) employed the Household Income and Expenditure Survey of 2002/03 to analyse the determinants of income inequality in Botswana. They found that education (secondary school), training, the number of children, and working adults contributed significantly to inequality in Botswana (Okatch et al., 2013). Ssewanyana et al. (2004) found that income distribution in Africa helps households in higher-income groups that own physical and human assets.

Similarly, researchers have attempted to investigate the microeconomic analysis of inequality in Ghana. This development can be attributed to the paradoxical relationship between the country's growth rate and inequality. Ghana's growth rate has experienced some improvement over the last two decades. The country was ranked as one of the fastest-growing economies in the world in 2011. Even with these developmental prospects, the anticipated reduction in income inequality seems to be dim. Based on the Ghana Living Standards Survey (GLSS), income inequality in Ghana is This development can be linked to the country's growth rate and inequality having a

paradoxical relationship. Ghana's growth rate has slowed slightly in the last two decades. In 2011, the country was ranked as one of the world's fastest-growing economies. Even with these developing prospects, it appears as though the predicted reduction in income disparity is a distant possibility (Ghana Statistical Service (GSS), 2014). Also, the World Bank says that between 2012 and 2014, Ghana's Gini coefficient went up from 42.4 to 43.5. The Gini coefficient increased from 41.9 to 42.3 per cent in 2005/2006 (GSS, 2014). Furthermore, estimates from the World Bank show that Ghana's Gini coefficient between the period 2012 to 2014 increased from 42.4 to 43.5.

Interestingly, most studies on Ghana's inequality aim at analysing the trends and extent of inequality within the regional blocks (Coulombe & Wodon, 2007; Aryeetey et al., 2009; Osei-Assibey, 2015; Novignon, 2017). However, just a few studies have attempted to elucidate the impact of household variables on income distribution in Ghana. Danquah and Ohemeng (2017) demonstrated the significance of variables such as location, lack of education, private and formal activities, and National Health Insurance coverage in determining the disparity between Ghana's north and south. They discovered that the urban dummy contributed 41.3% to the disparity in the north and 29% in the south. Additionally, they discovered that the 20–34 age group contributes the most to the disparity in the north but contributes the least to inequality in the south. Their research was based on the sixth wave of the Ghana Living Standards Survey, so their analysis of the factors was limited to a certain point in time.

The effects of changes in micro-economic variables on income inequality are very relevant for policy development. The socio-demographic characteristics of any given population evolve. This evolution can have significant effects on income distribution; thus, any thorough examination of the microeconomic determinants should take into account its long-term impact. A survey of

existing literature implies that studies on how changes in microeconomic variables contribute to inequality in Ghana are limited. To address this gap, this study aims to unearth how differences in household and individual characteristics contribute to changes in income inequality over time.

1.2 Problem Statement

Ghana's growth rate has increased significantly over time, from around 3.3 per cent in the early 1990s to 8.5 per cent in 2017. According to Aryeetey and Feeny (2017), the country experienced its highest growth rate of 14 per cent in 2011, mainly owing to oil revenues. During that period, Ghana was considered one of the fastest-growing economies in Africa. In addition, Ghana's poverty rate decreased significantly from 56.5% in 1992 to 24.2% in 2013 (Cooke et al., 2016). Despite this trend, economic growth and reductions in poverty have not been distributed evenly across the nation's population.

Current estimates from the GLSS indicate that the Gini coefficient increased from 0.423 in 2012/2013 (GLSS 6) to 0.458 in 2016/2017(GLSS 7). This suggests that, despite the country's expansion throughout time, some groups are being left behind. Thus, economic growth is not evenly distributed among subgroups of the population, such as regions and urban/rural localities, a development that could jeopardize national growth and poverty reduction efforts, weaken social stability, and aggravate political unrest within the country. Also, higher levels of inequality hinder the growth of already weak institutions since the individuals wielding higher income and power would find it in their best interest to resist the socially efficient distribution of resources as they may be worse off if such policies are effectively implemented (Todaro & Smith, 2015).

The explanation for a non-trickledown effect of growth may be linked to the nature and causes of economic inequality (Fofack & Zeufack, 1999). Hence, researchers have sought to investigate the

trends and causes of inequality in Ghana from both a macro and micro perspective to understand this phenomenon. This present study acknowledges that a more disaggregated analysis of the socio-economic drivers of inequality is necessary to evaluate its implications on individual welfare, with a focus on the microeconomic dimension. Existing studies have established a relationship between socio-economic drivers such as gender, education and dependency ratios, and inequality in Ghana (Danquah & Ohemeng, 2017; Owoo & Osei, 2019; Afful et al., 2019). Most of these studies utilized regression-based techniques with the log of expenditure as the dependent variable against the socio-economic characteristics of households, and many questions remain unexplored. For instance, Annim et al. (2012) examined the relationship between household characteristics and income inequality within the country, using data from the first to the fifth round of the GLSS.

With regards to methodology, this paper seeks to use a regression-based decomposition technique based on the Recentered Influence Function of the Gini index. Influence functions (IFs) are statistical tools for examining the robustness of distributional statistics (Cowell and Flachaire 2007). Furthermore, it employs the Oaxaca-Blinder decomposition technique based on the Gini index to decompose the overall change in inequality over time. This type of decomposition produces two terms. The first term describes the change in inequality attributed to a change in the composition of the population by characteristics (characteristics or explained effect). Thus, how do changes in the socio-economic drivers of inequality account for the change in the Gini coefficient? The other is the change in inequality that can be attributed to the change in the relationship between these characteristics and inequality (coefficients or unexplained effect). Against this backdrop, this study examines Ghana's microeconomic determinants of income inequality.

1.3 Research Questions

The study aims to address the following research questions:

1. What is the trend of income inequality in Ghana over time?
2. What are the microeconomic determinants of income inequality in Ghana?
3. How do changes in household characteristics contribute to changes in income inequality in Ghana over time?

1.4 Objectives of the Study

The objectives of this research study are to

1. Examine the trend of income inequality in Ghana.
2. Identify and estimate the microeconomic determinants of income inequality in Ghana.
3. Identify how much changes in household characteristics contribute to changes in income inequality in Ghana.

1.5 Justification of the study

The disparity in income and wealth can lead to a rise in social tensions as well as crime and violence (Chaudhuri & Ravallion, 2006). As a result, understanding the causes of inequality is critical for policymakers in order to avert their negative effects. It would allow policymakers to determine whether or not to take action. It would be useful for policymakers to understand the determinants of income inequality in order to determine whether existing inequalities are the result

of inherent characteristics, such as location and ethnicity, or variables that can be altered through policy, such as expanding access to education.

This study seeks to identify specific socio-economic characteristics that influence the determination of Inequality in Ghana over time. This would equip the government and policymakers with some understanding of the influencers of inequality on the micro-level over time. Hence, enabling them to develop specific tools tailored to facilitate rising Inequality in Ghana. This study is essential for academics because it contributes to the knowledge base of Inequality in Ghana and its underlying socio-economic factors. The focus also gives future researchers a point of reference and suggests more areas of study for research; thus, research findings would lead to literature and shape the foundation for more socio-economic studies.

1.6 Organization of study

The study consists of six chapters. The first chapter is the study's introduction, which provides an overview of the study. The chapter provides the research objectives and questions and outlines the justification for the study.

Chapter two presents an overview of income inequality in Ghana. This chapter presents a delineation of the income inequality trends in Ghana over the years. Chapter three adds a review of literature related to income inequality. It provides both a theoretical and empirical study of the literature.

Chapter four explains the methodology adopted in the study, the source of data, the model's specification for the research and the techniques utilised in the study. The estimation results of the

model are presented and discussed in chapter five. The sixth chapter presents a summary of the study and examines its policy implications.

CHAPTER TWO

OVERVIEW OF INEQUALITY IN GHANA

2.1 Introduction

This chapter provides details regarding the general picture of inequality in Ghana. It is broken up into three different sections. Inequality is broken down into its component concepts in the first section. The second section examines the different measurements of inequality. The final section depicts the pattern of disparity between regions, genders, and locales.

2.2 Conceptualization of Inequality

In this section, there will be a review of inequality. This is to provide a clear understanding of the concepts within their context and use in this study.

2.2.1 Inequality

Income inequality is a conception of two major economic and developmental concepts: income and inequality. Inequality is a multidimensional phenomenon (including wealth, income, consumption, and opportunity aspects) that can be measured in a variety of ways. According to Cowell (1995), inequality represents a fundamental departure from the idea of equality, which holds that two or more numbers are of equal size. Typically, income is also generally considered a proxy for well-being, and an extensive study of economic literature in developing has put much focus on income inequality.

The unequal distribution of wealth among people is referred to as income inequality. More than just a disparity in income, income inequality affects people's rights and freedoms (UNICEF, 2013). Most kinds of inequality (such as social and opportunity) stem from income disparity, which in

turn affects marginalized groups, particularly those with disabilities, gender, race, or ethnicity (Kabeer, 2010). Research reveals that the many kinds of inequality are interconnected. As an example, a lack of equal possibilities for success in life might lead to a lack of equal opportunities for success in life (UNDP, 2013). Poverty reduction efforts and SDG progress are being stifled by income disparity, making it imperative that the issue be addressed.

According to Fosu (2017), unequal income distribution hinders the ability of economic growth in developing countries to alleviate poverty. This is especially true in countries where poverty rates are high, to begin with. Inequalities can have an effect on economic growth and stability due to the fact that those who are economically disadvantaged and socially marginalized are typically excluded from the political process (Ncube et al., 2014; Okojie & Shimeles, 2006). Because of the unequal distribution of income, conflicts and political instability may also occur. These conflicts have a negative impact on people's well-being, deter investment, and slow economic growth (Anyanwu, 2016).

Inequality may not be an issue insofar as it encourages people to strive, compete, save, and invest in their futures. Although educational rewards and wage differentiation are linked to greater income inequality, they can promote the accumulation of human capital and economic growth. Economic inequality, according to Lazear and Rosen (1981), has a positive effect on growth by encouraging innovation and entrepreneurship as well as allowing at least a few individuals to amass the minimal number of resources necessary to establish firms and obtain a high-quality education (Barro, 2000).

The factors that affect income distribution have been debated by researchers. Because income distribution results from both micro and macroeconomic difficulties, there has been no consensus

on how to address this issue. The reasons for economic disparity within and between countries must be analyzed in order to design methods to reduce inequality. There are three main reasons that contribute to inequality: political, economic, and demographic (Milanovic, 2016). These forces include, among other things, advancements in technology, civil strife and war, domestic investment and education, globalization, and economic progress.

It is surprising, given how important it is to reduce income inequality, that so little is known about the factors that influence the degree of income disparity, and even less is known about the factors that influence changes in the distribution of income either within or between countries. This information would be extremely useful for the sake of policy because it would assist policymakers in determining whether or not to take action. Knowledge of the factors that influence income inequality can help us determine whether existing inequalities stem from factors that cannot be changed (such as a person's ethnicity or where they live), as opposed to factors that can be changed (such as access to education) through policy, for example.

High social costs can be associated with long-term and sustained levels of inequality, particularly inequality of opportunity. As a result of long-standing disparities in outcomes, individuals' educational and career options can be severely limited. Rent-based inequity does not produce the "correct" incentives, either (Stiglitz, 2012). An incentive exists for those who want to get favourable treatment and protection, which leads to misallocation of resources, corruption, and nepotism that has a negative impact on society and the economy. Social cohesiveness and confidence in the future can be undermined by citizens who lose faith in the institutions that govern them.

2.2.2 Consumption inequality

The following fundamental arguments on micro-level inequality have been put forth by researchers from across the globe: the United States (Cutler & Katz 1992; Slesnick 1991; Slesnick 2001); the United Kingdom (Blundell & Preston 1996, 1998); Canada (Pendakur 1998, 2001); Europe (Zaidi and de Vos, 2001); and Australia (Barrett, Crossley, & Worswick, 2000). At the household level, consumption decisions are made for any given period of time (let's assume a year) based on the household's past income and consumption patterns, their anticipated income and consumption trends, and the conditions of the credit market, which include interest rates and other factors that affect the value of saving for future consumption.

The basic account of how individuals make consumption decisions, known as the life-cycle hypothesis developed by Modigliani and Brumberg (1955) and the permanent income hypothesis developed by Friedman (1957), imply that households that are risk-averse prefer a smooth consumption flow over a variable consumption flow. Therefore, it is in the best interest of households to have their expenditures constitute a constant proportion of their permanent or lifetime income rather than their current income. It is possible that a person's living situation can be gleaned from only a glimpse, thanks to the substantial volatility of their current income from year to year. The degree to which individual households are able to achieve a smooth consumption flow is directly related to the instruments that are available for moving resources across time and natural conditions. For the purpose of acting as a cushion against fluctuations in the income of various kinds, savings can be accumulated over time. Access to credit and insurance markets, as well as inter- and intra-personal transfer systems, are all additional strategies that can be utilized to smooth consumer spending.

Several studies, such as Annim et al. (2012) and Cooke et al. (2016), have shed light on the north-south divide in Ghana as a spatial component of the country's inequality problem. According to the findings of this study, the rate of consumption inequality and poverty in the northern region of Ghana is significantly higher than in the southern region.

2.2.3 Household Expenditure and inequality

Consumption expenditures by households are a significant component of gross domestic product (GDP). Consumption expenditure accounts for more than 60% of GDP on average in all nations. When emerging nations are considered separately, consumer expenditures may account for as much as 68% to 70% of GDP. (OECD, 2015) Reduced consumption spending can have an immediate negative effect on the economy, resulting in slower economic growth. Particularly, as consumption declines, demand for products and services declines, resulting in price declines, a phenomenon known as deflation.

In principle, if this were the case, consumption would decrease even more as consumers waited for reduced prices and delayed spending, creating a negative cycle. The following decreases in output would cause companies to recruit fewer workers, and those who remained unemployed would require unemployment benefits. However, government income will suffer as consumption-based taxes decline, making it more difficult for them to satisfy this new requirement. If consumption declines for two consecutive quarters, the economy is said to be in recession. (Eurostats, 2016)

On the other hand, if household spending increases considerably and consumer demand exceeds what companies can offer, this might increase prices or inflation (Eurostats, 2016). As with the last example, consumers would consider future pricing, which would be greater in this instance,

and spend more now. As aggregate demand grows, prices climb even higher, resulting in another spiral. These dangers motivate central banks to pursue their objective of price stability.

2.3 Measurement of inequality

Inequality in income, which is the most commonly used measure of inequality of outcomes, is typically measured by the market (gross) and net (after tax and transfers from social insurance programs) Gini, in addition to tracking changes in the income shares of the population (for example, by decile or quintile). This is done in order to account for the fact that income inequality is the most prevalent measure of inequality of outcomes. The assets held by the wealthiest individuals provide a perspective that is complementary to that of economic inequality. Inequality of opportunities is typically measured by tracking the outcomes of areas such as health, education, and human development according to socioeconomic group or by analyzing access to fundamental services and opportunities. (Dabla-Norris et al., 2015)

The relationship between growth and poverty reduction, the impact of growth on inequality, and the effect of growth on growth have dominated the academic literature. In contrast, fewer attempts have been made to understand the factors that influence income distribution. A segment of the literature on inequality has sought to establish a theoretical justification for why inequality occurs and persists. Inequality is a condition in which distinct individuals have varying degrees of income or consumption. The major emphasis of income inequality is the relative position of different individuals within the income distribution. Essentially, it provides a statistical overview of the income distribution. The functional distribution of income takes into account the allocation across groups in society that own various sources of production, i.e. the proportion of income going to employees, landowners, and capital owners, respectively. On the other hand, the personal income

distribution is concerned with the national distribution of income without excessive regard for production inputs.

There are various available income distribution indicators. The disparity between the distribution's mean and median values is one of the most glaring. Typical indices of income inequality include the Lorenz curve, the Gini coefficient, the Theil index, and the Atkinson index, among others. Moreover, the income quintile share ratio is a common method for quantifying income inequality, which divides the population into quantiles and then analyses the proportion of resources in each group across time. Some studies, such as Yitzhaki's (1979), use combined measures of income inequality to capture the concept of relative deprivation by calculating the product of the Gini coefficient and the mean income (Stiglitz et al., 2009).

The World Bank (2005) specifies six criteria that must be met to obtain an accurate measure of income inequality:

i. Mean independence: the measure must not change if incomes double.

ii. Population size independence: the measure must not change with the population.

iii. Symmetry: if incomes are switched, the measure must not change.

iv. Pigou-Dalton Transfer sensitivity: this criterion states that when income is transferred from the rich to the poor, the measure of inequality must decline.

v. Decomposability: according to this principle, the inequality measure may be broken into different dimensions such as population groups or sources of income.

vi. Statistical testability: it should be possible to test whether the changes in the index are significant over time.

There are numerous methods for calculating inequality indices. The Hoover index represents the total income that would have to be transferred to achieve complete equality. In other words, the index value approximates the proportion of total household income that must be shifted from families above the mean to those below the mean in order to establish income equality. Increased values indicate greater economic inequality and the need for additional redistribution in order to reach economic parity. It is the maximum vertical distance between the Lorenz curve and the 45-degree line signifying perfect income equality.

Atkinson's measure of inequality is the most commonly used inequality based on welfare. It is the fraction of total revenue that society must forego to achieve a more equitable distribution of income among its members. This metric is dependent on society's aversion to inequality, making it a theoretical parameter defined by researchers, with a higher value suggesting greater social utility or individuals' willingness to accept lower incomes in exchange for a more fair distribution. Significantly, the Atkinson index can be deconstructed into within-group and between-group inequality. In addition, unlike other indices, it may estimate the welfare consequences of various policies, allowing the researcher to include normative content (Bellù, 2006). However, the study will focus on the Gini Coefficient and Theil Entropy indices for assessing inequality.

2.3.1 Gini Coefficient

It is the most frequently cited metric of inequality; it quantifies the degree to which the distribution of an economy deviates from perfect equality. The index is determined by dividing the area below the 45-degree line by the area between the two curves (Lorenz curve and 45-degree line). A greater Gini coefficient signifies a more asymmetrical distribution. According to data from the World Bank, the worldwide Gini index fluctuated between 0.3 and 0.6 between 1981 and 2013. The

coefficient permits direct comparisons of the income distributions of populations of different sizes. The fundamental drawback of the Gini is that it cannot be easily decomposed or combined. In addition, it responds differently to income transfers between individuals at the extremes of the income distribution than it does to transfers in the middle. Moreover, radically dissimilar income distributions may share the same Gini coefficient.

2.3.2 Theil Entropy Measures

The values that make up the GE class of measures extend all the way from 0 (complete equality) to infinity (or one, if normalized). One of the distinguishing features of these metrics is that they can be decomposed into their component parts completely. This enables policymakers to break down inequality according to demographic groupings, sources of income, or other dimensions. In addition, researchers are able to supply a parameter that weights the distances that exist between incomes in various sections of the income distribution. When the value is less than a certain threshold, the measure is more sensitive to changes in the distribution's lower tail; when the value is greater than a certain threshold, the measure is more sensitive to changes in the distribution's upper tail (Atkinson and Bourguignon, 2015). The most common values are 0 (zero), 1 (one), and 2 (two). When it is equal to zero, the index is known as "Theil's L," which can also be written as "mean log deviation." When it is equal to 1, the index is known as "Theil's T," or more commonly just "Theil index." The index is referred to as the "coefficient of variation" when it reaches the value of 2. When there is a redistribution of income, the indices change in the same way that the Gini coefficient does; specifically, they change in proportion to the level of individual incomes that are affected by the redistribution and the size of the population (Bellù, 2006). The values that make up the GE class of measures extend all the way from 0 (complete equality) to infinity (or

one, if normalized). One of the distinguishing features of these metrics is that they can be decomposed into their component parts completely. This enables policymakers to break down inequality according to demographic groupings, sources of income, or other dimensions. In addition, researchers are able to supply a parameter that weights the distances that exist between incomes in various sections of the income distribution. When the value is less than a certain threshold, the measure is more sensitive to changes in the distribution's lower tail; when the value is greater than a certain threshold, the measure is more sensitive to changes in the distribution's upper tail (Atkinson and Bourguignon, 2015). The most common values are 0 (zero), 1 (one), and 2 (two). When it is equal to zero, the index is known as "Theil's L," which can also be written as "mean log deviation." When it is equal to 1, the index is known as "Theil's T," or more commonly just "Theil index." The index is referred to as the "coefficient of variation" when it reaches the value of 2. When there is a redistribution of income, the indices change in the same way that the Gini coefficient does; specifically, they change in proportion to the level of individual incomes that are affected by the redistribution and the size of the population (Bellù, 2006).

2.3.3 Regional Inequality

According to World Bank (2018), growth's impact on Ghana's poverty has slowed significantly throughout the years. Between 1991 and 1998, Ghana saw the greatest decline in poverty, at a rate of 2% each year. Between 2012 and 2016, the poverty rate decreased by an annual rate of only 0.2 per cent. The poverty growth elasticity (% reduction in poverty per percentage point increase in economic growth) has declined, from 1.18 between 1992 and 1998 to 0.07 between 2012 and 2016. This might result from agriculture's diminishing contribution, which employs the bulk of

impoverished households, limited prospects for increased productivity in the services sector, and a primarily capital-intensive industrial expansion. (World Bank, 2018).

In addition, there has been a long-term and growing disparity in the distribution of wealth in Ghana. The absolute number of poor has increased in the Volta, Northern, and Upper West regions, but poverty rates have remained stable. Poverty rates are still above 50% in the northern, upper east, and upper west regions. In addition, poverty rates have become much more skewed between districts in the same region. Across the Northern regions, eastern districts saw large decreases in poverty, while western districts saw an increase (The World Bank, 2018). Agriculture continues to be the primary source of employment in the three Northern regions, but the climate is inhospitable to cocoa and some other income crops. Farmers in these regions mostly practice rain-fed, traditional subsistence agriculture: they utilize few modern inputs, receive insufficient extension services, and lack access to irrigation. There is also a significant disparity in access to power, markets, and roads between impoverished and wealthy neighbourhoods. Additionally, unsustainable farming methods have decreased soil quality, increased erosion, and decreased agricultural production in these locations.

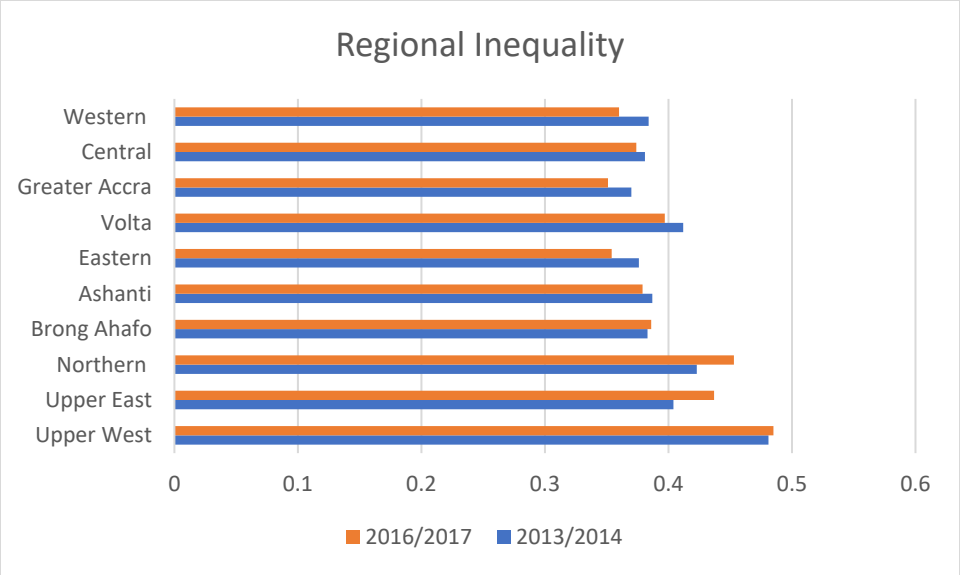

Figure 2.1 Trends in Regional Inequality

Source: Official report from the GLSS Poverty trends in Ghana report.

This data is shown graphically in Figure 2.1, which shows the Gini coefficient broken down by administrative area. Inequality in 2016/17 was highest in the Upper West Region (0.481), followed by the Northern Region (0.453) in second place. It can be seen that the regions found in the northern part of Ghana are experiencing high inequality relative to their southern counterparts. Between 2013/2014 and 2016/2017, these regions experienced a general increase in inequality. The situation is quite different for the southern regions; all the regions experienced a decline in inequality over the period.

Regional inequality warrants special consideration as Ghana works to achieve the Sustainable Development Goals (SDGs), particularly those related to poverty and hunger reduction. Attainment of the MDGs is compatible with the country's developmental objective of increasing Ghanaians' per capita income to US$1,000 by 2015 (Republic of Ghana, 2005). Several explanations for northern Ghana's poverty and underdevelopment in comparison to southern

Ghana have been advanced, including history, unfavourable climate and agricultural production circumstances, and post-independence political neglect (ODI and CEPA, 2005).

2.3.4 Urban-Rural Inequality

In examining inequality estimates for urban and rural regions, it was noticed that 2013 values are greater than 1992 values. By 2013, inequality was also greater in rural regions than in metropolitan areas. Inequality between Ghana's north and south has also grown, but at a slower pace than in 2006. The North's inequality continues to be greater than the South's. Since 2006, inequality has stayed stable in urban regions but grown in rural areas and the South. In 2013, the disparity between the north and south of the country accounted for an additional 10% of national inequality. Rural-urban disparities currently account for 17.6 per cent of Ghana's inequality. Naturally, inequality is compounded further by inequality within these groups, which, as noted previously, can be quite considerable. Ghana's greatest levels of inequality are now concentrated in specific regions, particularly in the north. The Upper West Region is currently the unequal region in Ghana, followed by the north in general and the Northern Region in particular.

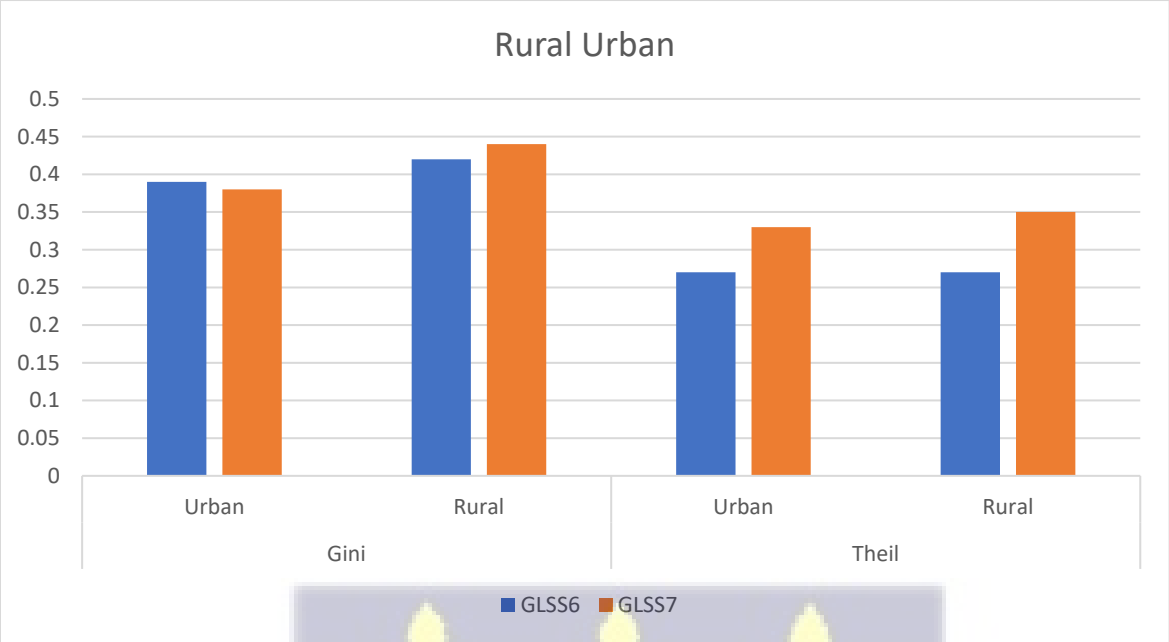

Figure 2.2 Urban-Rural Inequality

Source: Computed by authors from GLSS 6 and 7

Figure 2.2 presents a decomposition of Urban-rural inequality, as measured by the Gini Coefficient and Theil measure. It is seen from GLSS 6 report that the urban-rural inequality by the Gini coefficient suggests that urban represents 0.37 and 0.36 in GLSS 7. For rural inequality decomposed by the Gini measure, rural inequality from GLSS 6 report constitutes 0.41 and 0.44 from GLSS 7 report. Comparing GLSS 6 and 7 reports of rural-urban inequality using the Gini coefficient measure, an increase in inequality can be recorded for rural. Thus 0.41 in 2014 to 0.44 in 2017, whiles a decrease is seen in urban inequality. (From 0.37 in 2014 to 0.36).

For rural-urban inequality as measured by Theil measure, figure 2.2 shows urban inequality from GLSS 6 report to be 0.26 and rural inequality to be 0.26; whiles the result from GLSS 7 report reveals urban inequality to 0.33 and rural inequality to be 0.34. Comparing computed data from

GLSS 6 and 7 reports, results indicate an increase in both rural and urban inequality. Figure 2.2 reports an increase in rural inequality from 0.26 in 2014 to 0.34 in 2017, according to GLSS 6 and 7. Urban inequality also increased from 0.26 in 2014 to 0.33 in 2017.

According to GLSS 7 report on household income and expenditure, the average yearly household income in urban areas is GH46,902, which is higher than the national average of GH33,937. Among urban localities, households in Accra (GH63,027) earn more on average than those in other urban regions, while rural coastal households earn the most on average (GH27,875). The country's urban households earn an estimated total yearly income of GH185,509.35 million, accounting for 76.6 per cent of total national income, while rural families earn GH56,762.16 million, accounting for 23.4 per cent.

2.3.5 Gender Inequality

Gender inequality is an issue in Ghana that has garnered considerable attention in recent years as a hindrance to the country's progress. The issue has received greater attention because of the understanding that the country's holistic growth needs the utilization of both genders' human resources. Historically, gender inequality has harmed many women in their efforts to build and use their human capital. While several causes have been identified for the country's gender disparity, the most frequently mentioned explanation is culture, especially the country's patriarchal structure (Jayachandran, 2015). Gender disparity has been perpetuated in Ghana, as in other nations, over generations, via socialization agents such as the family, school, media, peer groups, and society. Ghana is rated 70th out of 135 nations on the Global Gender Index, with a score of 0.6811, according to IFAD, an organization dedicated to encouraging progress in rural areas in countries such as Ghana. When major dimensions of life like as economic participation, political

participation, and empowerment, are considered, the country ranks 17th in economic participation, 91st in political participation and empowerment, 104th in health and survival, and 111th in educational accomplishment (IFAD, 2017). This demonstrates that, despite the country's high economic participation rate, there is still significant gender disparity in the country.

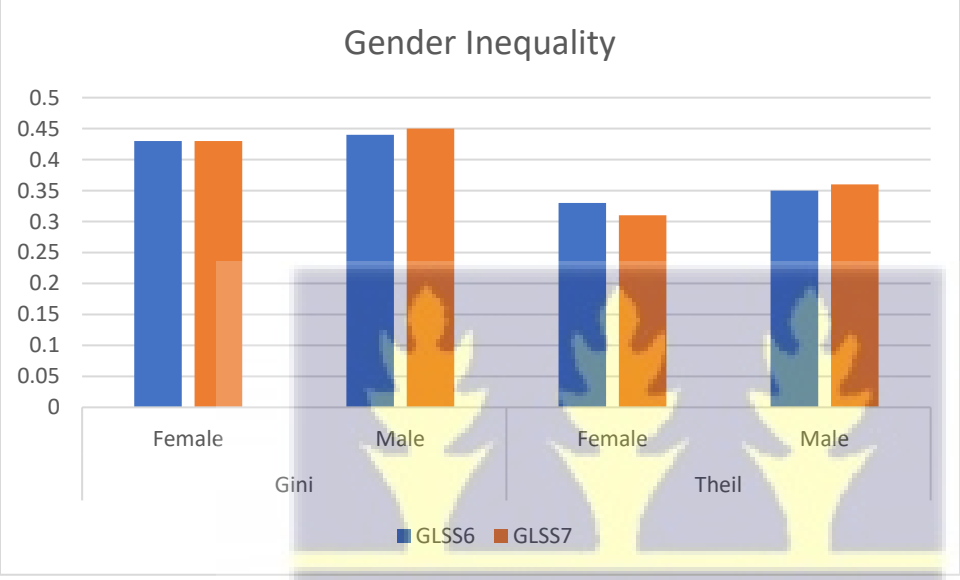

Figure 2.3 Gender Inequality

Source: Computed by Author from GLSS 6 &7

However, Figure 2.3 presents a decomposition of Gender inequality, as measured by the Gini Coefficient and Theil measure. Figure 3.3 presents data computed from GLSS 6 and 7. It is seen that from GLSS 6 and 7, inequality against females staggered at 0.42. Also, Inequality against men from GLSS 6 and 7 reports saw an increase from 0.42 to 0.45. Thus from 2014 to 2017, inequality against men increased from 0.42 to 0.45.

Figure 2.3 also presents a Theil measure for gender inequality. Inequality against females decreases from 0.33 to 0.31, according to GLSS 6 and 7 reports. Inequality against men saw a minute increase from 0.35 to 0.36. Thus, inequality against men increased from 2014 to 2017.

2.4 Conclusion

Income inequality is a term that refers to the discrepancy in the distribution of income and resources amongst individuals. Income inequality frequently results in other types of inequalities (social, opportunity) that are disproportionately experienced by marginalized groups owing to disability, gender, race, or ethnic origin (Kabeer, 2010). According to Fosu (2017), uneven income distribution erodes economic growth's ability to alleviate poverty in emerging nations.

Additionally, inequality can stifle economic progress. Inequality of income may be connected to aggregate consumption and economic growth. According to Decancq et al. (2015), income distribution is a societal problem regardless of its effect on other variables, and as such, it is critical to assess it in order to guide policy. This chapter discussed inequality and its impact on economic progress. Measures of inequality were demonstrated, with a particular emphasis on the Gini Coefficient and the Theil entropy measure. Additionally, changes in regional, rural, and urban areas and gender were examined using the Gini coefficient and Theil entropy measures from the GLSS 6 and 7 reports, and the results are discussed.

CHAPTER THREE

LITERATURE REVIEW

3.1 Introduction

As presented in the introduction to the study, examining the microeconomic determinants of inequality is essential for formulating and implementing policies that affect income inequality directly or indirectly. This chapter reviews the theoretical and empirical literature on income inequality's microeconomic drivers.

3.2 Theoretical Review

Fundamentally, one of the most important factors in determining income is labour supply. As a result, to explain income inequality and its determinants, labour and non-labour income differentials must be accounted for. In addition, human capital theories, labour market discrimination, compensating wage differentials and efficiency wages, Becker's new household economic theory, and the dual sector framework give a solid foundation for studying microeconomic factors of income inequality. To put these theories into context, this study looks at them.

3.2.1 Human Capital Theories

Mincer (1958, 1974), Becker (1962), and Schultz (1960) were among the first to recognize the relevance of human capital in determining worker productivity and, as a result, labour income. This fact has been proven by modern studies, which link it to the growth and development of societies as a result of increased productivity. Human capital can come from a variety of places; education, on-the-job training, health, and information are the four key sources identified by Becker. Individuals' physical and mental abilities are claimed to improve as a result of all of them, resulting in increased productivity and pay. Individuals or families engage in such investing

activities within the restrictions of genetic endowment, parental wealth, and educational and market options.

The human capital approach is the basic theory that neoclassical economists use to explain how different people's earnings change over time (Becker, 1964; Mincer, 1974). This human capital theoretical setup looks at how skills are developed from two different points of view. On the one hand, this approach, which is based on a limited maximization process, looks at the choices that each student makes about their education. People can spend as many years as they want to get an education, as long as the return on this investment is higher than the return on any other financial investment.

The quantity of this investment determines a worker's earning profile, which is influenced by two factors: individual ability and background attributes such as gender, family background, and income. Becker, on the other hand, began his examination of skill formation in organizations through various training typologies, assuming a completely competitive labour market (on-the-job, off-the-job). He introduced the crucial distinction between specific and general training, demonstrating that, while it may be convenient for employers to contribute to specific training investment, the onus of general training falls entirely on the shoulders of employees, as the risk of free-riding by other employers can render general training investment ineffective.

Recent advances in human capital theory have shown that abandoning the assumption of perfect competition, whether in the labour or product markets, can create the conditions for employers to fund general training investments. As a result, training becomes less quantitative and less individualistic. Income inequality emerges from a process of skill formation from both perspectives. In the case of individual educational choices, inequality is determined by the amount of time spent in school, which is determined by both background and individual traits; in the case

of corporate training, inequality is determined by decisions made by both employers and employees.

According to Carneiro and Heckman (2003), developing human capital is a dynamic process. The abilities you acquire at one period of your life influence both your approach to learning and the tools you use at the next step. Families, schools, and enterprises all contribute to a person's human capital development over the course of their lifetime. However, most discussions of skill creation emphasize schools as the primary source of abilities and skills, even though a substantial body of research indicates that families and businesses are equally significant suppliers of talents and skills. Since income from employment is by far the largest portion of an individual's total income, the human capital theory applies most directly to income from employment.

3.2.2 Dual Labour Market

Lewis (1954) was the first to propose a dual-sector model, consisting of a subsistence agricultural sector with low wages and low productivity and a modern "capitalist" sector with better average pay and higher productivity that could attract workers from rural areas. The existence of an "infinite" labour force would explain the existence of subsistence wages. According to Lewis (1954), the primary sources of this infinite labour supply are "subsistence agriculture, casual labour, minor trade, domestic work, wives and daughters of the household, and population expansion."

Bigsten and Levin (2000) demonstrate, utilizing the dual-dual framework, that "population shifts between socioeconomic groups are a significant factor in explaining changes in poverty," implying that these shifts may also be significant in accounting for income differences over time, even when changes in poverty and inequality are not in the same direction.

3.2.4 Becker's Household Economic Theory

Becker (1993) demonstrated that self-interest is only one of many values and preferences that influence human behaviour. A Beckerman family, according to Chiappori (1992), consists of only two persons, each of whom has distinct preferences. Becker (1981) agrees that conflicts exist between family members, but due to the methodology he uses to investigate material behaviour, he is unable to include this dimension in his research. According to Becker, the distribution problem within a household is solved by 'caring,' which comprises the rotten kid-theorem and altruism.

Becker (1981) proposes a novel bargaining or decision-making norm in which the household maximizes the utility function of only one person, which is also the utility function of the altruistic member. However, this concept poses two fundamental concerns. To begin, how are individual preferences gathered, and how will the collective decision be made? Second, how is resource allocation determined? Becker gets around these problems by assuming that the family only generates and consumes one type of aggregate consumption good (Chiappori 1992).

Becker's theory, by adding the concept of a consumer's time as a limited resource into the decision-making process, is arguably the most significant addition. While product and service availability may increase, time availability does not. As a result, unmet needs persist, and as resources become more abundant, time becomes more valuable (Becker, 1993). Becker (1993) splits time into two categories: labour time and consumption time, meaning that he considers the consumer to be either an external worker or a household consumer.

Becker's model does not distinguish between the various uses of time in a family and, as a result, does not distinguish between different household activities. It is hard to comprehend the household division of work and its ramifications without first understanding how time is spent inside a home.

Domestic work, likewise, continues to be undervalued. As a result, Becker's model works best when investigating market labour and market commodities (Ruuskanen, 1994). The principles of the firm theory are explicitly used in Becker's idea of the home production function (comparative advantage, specialization, human capital, etc.). In the early 1960s, economists began to see the family as a little enterprise, according to Becker (1965). Households combine capital goods, raw resources, and labour to clean, feed, reproduce, and generate other valuable commodities as a unit of production.'

In the home production function, time is combined with market goods and services to produce so-called basic commodities or nonmarket items (see, for example, Bergstrom 1997). According to Becker, children, health, pleasure, sleeping, and attending a play are essential commodities. A household selects the optimal combination of these commodities, i.e., the combination that maximizes the utility function of the household. Home production is limited in part due to time and financial constraints. Revenue is spent on goods, either directly through the purchase of goods or indirectly through the loss of income (by spending time at home rather than at work). The consumption variable chosen determines how much revenue is earned or abandoned; the less leisure, the more money income is earned, and the more leisure, the less money income is earned. Time can be turned into market commodities by dedicating more time to labour than consumption (non-work time). When real wage rates fall, time spent at work reduces, and when real wage rates rise, time spent at work increases accordingly, raising the relative price of non-work time. A rise in wages increases the opportunity cost of time spent on consumption, causing the prices of more time-intensive commodities to rise faster than those of less time-intensive commodities (Becker 1965), reducing consumption of more expensive commodities in favour of less expensive ones.

Capital and technology improvements, according to Becker, have boosted the productivity of spent time, such as through supermarkets and telephones

Non-work time, which includes domestic labour, is measured by Becker as 'foregone' or 'lost' income. This could imply that domestic labour or even production is done at the expense of market revenue. For commodities that contribute indirectly to revenue, time is less expensive. These commodities, which include sleep, food, and other necessities, are referred to as productive consumption (Becker, 1965). Any attempt to explain how household members use their time and how to wage employment and home goods production to achieve equal marginal income must start with disparate experiences and investments in human capital (Becker, 1991). Household members' time is allocated in such a way that individuals who are more efficient at market activities spend less time on consuming activities than other members.

3.3 Empirical Review

Various studies have been conducted to understand better the significance of household characteristics in explaining income inequality. Most of these studies emphasise the importance of socioeconomic features that contribute to the worsening or alleviation of income inequality.

Malton (1979), Collier et al. (1986), and Reardon et al. (1992) find that the relatively poor earn less from non-agricultural sources than the relatively wealthy. These studies were conducted in Northern Nigeria, rural Tanzania, and Burkina Faso, respectively. Malton's findings are consistent with those of Collier et al. (1986) and Reardon et al. (1992). According to Reardon and Taylor (1996), non-farm income in Burkina Faso exacerbates inequality and fails to protect poor households from agro-climatic risks because poor households do not have access to it. This makes it impossible for non-farm income to protect poor households from agro-climatic risks. Senadza

(2011) used data from the 2006 Ghana Living Standards Survey (GLSS) to demonstrate that income from non-farm sources contributed to an increase in the overall disparity in income. This lends credence to the idea that one's line of work is a significant contributor to the variance in income.

To investigate inequality in Ghana, Novignon (2017) used a household decomposition technique. The goal of the study was to break down income disparity into its numerous family income components and assess the marginal effects of changes in each on Ghana's total income inequality. The investigation utilized data from the fifth and sixth waves of the Ghana Living Standards Surveys. The Gini coefficient was generated and analyzed for a variety of structured income kinds. In 2013, the poll revealed that urban inequality was bigger than rural inequality, whereas the opposite was true in 2006. Moreover, the income component decomposition study revealed that wage employment dominated household income in rural and urban areas, but to a greater extent in urban areas.

Kimhi (2007) used a technique based on regression to decompose family income by a source in order to suggest that non-farm income is an equalizing source of income among farm households in Georgia. This conclusion was reached based on multiple approaches to the decomposition of family income. It has been found that the ownership of land by households has a marginally significant positive effect on income inequality. (Kimhi, 2007). The effects of education, land ownership and farm assets had a negative influence on income disparity; however, the effect of family size had a positive influence.

In a similar manner, Leibbrandt et al. (2000) investigated the marginal effect that a number of different aspects of household income have on inequality in South Africa. The authors conducted an analysis and estimation of the Gini coefficients for a variety of income components.

Additionally, the marginal effects of a variety of income components, including happiness and inequality, were investigated. According to the findings of the study, South Africa's wage income is both a significant contributor to the country's overall revenue and a major contributor to the country's inequality. Furthermore, it was discovered that wage income had the greatest marginal influence on both inequality and total well-being.

According to Albertini (2008), among the different components, trends in income inequality, disparities and changes in family characteristics have received very little attention. The study studied the association between family demographic and economic characteristics and income disparity using Bank of Italy data. It examined how recent changes in family forms have affected economic inequality in Italy and in what direction (growing vs containing) (increasing vs containing). According to the study, Italian families' ability to equalize income has declined in recent decades, and recent changes in family structures have had no noticeable effect. On the other hand, economic gaps across families play an increasingly crucial role in determining income inequality.

Nashchold (2009) conducted research in rural Pakistan to investigate the microeconomic factors that contribute to income disparity. Due to the lack of quantitative evidence regarding the characteristics of households that determine the level of income inequality and how it fluctuates, the study found that it is frequently unclear what policy can alter the distribution of income. This is despite the fact that addressing inequality is important for the reduction of poverty. However, the study also found that it is frequently unclear what policy can alter the distribution of income. In order to discover these characteristics, it was essential to develop a regression-based inequality decomposition technique and apply it to panel data from rural Pakistan. This was done so that the characteristics could be uncovered. The findings suggest that understanding the magnitude of

inequality requires an understanding of land ownership, but not the progression of inequality over time. On the other hand, attaining a higher level of education is associated with a variety of changes but not a concomitant decline in inequality. Both are affected by the geographic location of the household, which reveals significant regional differences in market access.

According to the location of the household, Abdelkhalek et al. (2010) investigated the microeconomic determinants that influence family savings behaviour in Morocco. The descriptive data may lead one to believe that savings patterns in urban and rural areas are comparable; however, the findings of the econometric analysis challenge this assumption. In metropolitan areas, the level of savings is significantly influenced by current income; however, in rural areas, the literacy level of the household's primary breadwinner is much more important. On the other hand, the data run counter to the life cycle assumption. Only in urban areas does household size have a significant negative effect, and even at the highest income levels, women who are the primary breadwinners in their families save more money than men do. The findings demonstrated that families in urban and rural areas save money in distinct ways.

Fang and Sakellariou (2013) argue that changes in family features and returns to these traits explain the narrowing of rural-urban disparities in Thailand (living standards) between 1990 and 2006. In Thailand, improving educational success in rural areas was critical to reducing inequality. Su and Heshmati (2013) assessed the drivers of income and the urban-rural income discrepancy to shed light on China's urban-rural income disparity problem. Using data from the China Health and Nutrition Survey (CHNS), this study concludes that education and employment are significant indicators of household income. At various income percentiles, these two factors have a variety of consequences. Education is given higher importance in urban areas, whereas specialized or university education is given a higher priority in rural areas. Agricultural activities offer

significantly lower returns than other activities across all occupational groups, and this is especially true for persons at the bottom of the income distribution. The authors discovered that the income gap between urban and rural areas widened between 2000 and 2004 but then narrowed between 2004 and 2009. Individual characteristics, most notably education level and type of work, account for most of the income gap.

Between 1993 and 2006, Thu Le and Booth (2014) examine how important household components are in determining inequality in Vietnam. They used a technique called recentered impact function-based unconditional quantile regression decomposition to conclude that the differences in expenditures between rural and urban areas are due to differences in observable family characteristics and the returns to these characteristics. Education, industrial structure, and the receipt of remittances were discovered to be the primary factors contributing to household inequality. Although remittances from home sources help lessen inequalities, remittances from abroad make the difference even larger.

Paweenawat and McNown (2014) provided tests and estimates of the human capital model of income inequality using data from Thailand from 1992 to 2011. The time period covered by the study was from 1992 to 2011. The model focuses on four primary aspects of income inequality: the mean levels of per capita income, differences in years of education, the number of children living in each home, and the household structure. Each of these factors, depending on the demographic groups and family structures that exist, contributes to the inequality of income that exists in Thailand. The U-shaped link between average per capita income and inequality is caused by differences in the gender of household heads, the structure of families, and access to financing. Even though the human capital model promotes education, the data suggest that other household

variables, such as the number of children and earners, may be more significant drivers of inequality. This is the case despite the fact that the human capital model encourages education.

In their research published in 2020, Munir and Kanwal investigate the relationship between educational inequality and income inequality as well as per capita income. In addition to this, they investigate the effects that gender inequality in education has on educational inequality, income inequality, and per capita income. The human capital model that Marin and Psacharopoulos (1976) developed was utilized in this study. This model calculates an individual's earnings as a function of the number of years spent in school or receiving some other form of education. The Gini coefficient is used to measure the degree of economic inequality, while the Gini index of educational inequality is used to measure the degree of educational disparity. The disparity in enrollment rates between males and females, expressed as a percentage of male enrollment, is one indicator of the gender gap that exists in the educational system. The countries of Bangladesh, India, Maldives, Nepal, Pakistan and Sri Lanka were included in the research, and researchers used both a fixed-effect model (FEM) and a random-effect model to estimate data from 1980 to 2010. (REM). According to the findings, income inequality is positively and significantly impacted by educational disparity as well as the average number of years spent in school. Education at the primary (elementary) and tertiary (advanced) levels help reduce income inequality, whereas education at the secondary level makes it worse. There is an inverse relationship between the educational gap and the average income per person. The unequal distribution of education between boys and girls at the elementary level contributes to economic inequality. On the other hand, income disparities narrow as students progress through the secondary and tertiary levels of education. The unequal distribution of education between boys and girls contributes to educational inequality, which in turn has a negative impact on per capita income. The gender gap in secondary

and tertiary education also has an effect. The Kuznets inverted U-shape theory between educational expansion and the educational gap does not hold in South Asian countries, whereas a weak U-shape link does hold true in these countries. It is necessary for the government to provide free education in economically disadvantaged communities and to support employment opportunities in order to eliminate economic and educational disparity.

The mismatch between the skills required by available jobs and the skills of available workers is a contributor to the existing income gap. Slonimczyk (2013) conducted a study of the salary distribution in the United States over the course of thirty years, beginning in 1973 and concluding in 2002. The study spans 1973–2002. Following the decomposition of education into necessary, deficit, and surplus qualifications using an extended earnings function, an OLS estimation is performed on the model to investigate skill mismatch. The findings suggest that the aforementioned aspects of skill mismatch are to blame for the income disparity as well as the Gini coefficient. One of the primary contributors to the widening income gap in the bottom half of the income distribution is the increasing importance of having an excessive number of qualifications. This is correct, particularly with regard to the United States of America. Therefore, raising the minimum required level of education to reduce the disparity and the amount of economic inequality would have the desired effect. In addition, the research demonstrates that there has been an increase in the rates of overqualification, whereas there has been a decrease in the number of workers with inadequate education.

Checchi and Van de Werfhorst (2014) examine the relationship between income inequality and the distribution of quantity and quality of education in order to evaluate the significance of educational policies. The primary indicator used to study education quantity is educational attainment, whereas the primary indicator used to study education quality is the performance of

students on standardized examinations. One of the primary indicators used to study education quality is the performance of students on standardized examinations. In addition, in order to investigate the impact that educational changes have had, the authors investigate the distribution of different income levels. People born between the years 1950 and 1981 are the primary subjects of this model, which uses data collected from countries that are members of the European Union (EU). In addition to the development of the model, we also provide estimations using OLS, IV, and GMM. These estimations include adjustments for both time-fixed and country-specific effects. The findings indicate that educational changes influence distributions of both the quantity and quality of education and that inequality in education contribute to economic inequality. Furthermore, the results show that educational changes influence distributions of both the quantity and quality of education. Therefore, educational policies are necessary components of any viable strategy for reducing the effects of inequalities in the distribution of income.

3.4 Overview of the Chapter

This section provided a literature review on inequality, with a particular emphasis on theories and previous research regarding the microeconomic factors that contribute to inequality. Human Capital Theories, Dual Labor Market Theory, and Becker's Household Economic Theory were some of the economic models that were discussed. The findings of previous research indicate that increasing income inequality can be traced back to the operation of micro factors. A person's level of education, gender, and income are just some of the factors that go into this calculation. Research on poverty and inequality has, up until this point, typically focused on the connection between economic growth and the alleviation of poverty, as well as the effects of economic growth on inequality and the effects of inequality on economic growth. The explanations of the factors that influence the distribution of income, on the other hand, have received a much smaller amount of

attention. One subfield of the study of inequality seeks to theorize the reasons behind the existence of inequality as well as its continued existence.

CHAPTER FOUR

METHODOLOGY

4.1 Introduction

This chapter is divided into three main parts. The first section throws more light on the source of the data for the study and the rationale for selecting the data for the analysis. The second section focuses on the methodology used for the study. The third section highlights the empirical models used in investigating the microeconomic determinants of income inequality in Ghana.

4.2 Source of Data

This study uses the Ghana Living Standard Survey (GLSS) to conduct its analysis. The GLSS is a nationwide survey aimed at collecting data on factors that influence the living conditions of the citizens of Ghana. It is a customized version of the World Bank's Living Standards Measurement Study (LSMS) which was initiated in 1980 (Ghana Statistical Service, 2019). The Ghana Living Standards Survey has been conducted since 1987. A total of six other surveys were conducted after 1987. The second to the seventh round of the survey was conducted in 1988, 1991/1992, 1998/1999, 2005/2006, 2012/2013 and 2016/2017. The surveys provide information on the demographic characteristics, educational dynamics, health, tourism, migration and remittance status of households. The questionnaire used for the sixth round of the GLSS was the same used for the seventh round, except that new sections on mortality, food security and data protection were included in the seventh round. This study used the sixth and seventh rounds of the GLSS. The rationale behind the usage of these two rounds of GLSS is as follows:

Firstly, Ghana's economic growth was at its highest level, with a growth rate of about 15% in 2015. This growth emanated mainly from the commercial production of oil. Ghana's economy at the

time was regarded as one of the fastest-growing economies. Concerns about the quality of this growth in terms of its distributions remain a matter of concern for policy. This study seeks to investigate the distributional effects of the growth post-2011 and explore the household characteristics that correlated with the distribution of income during those periods. Given the time period under investigation, it is appropriate to employ the sixth and seventh rounds of the GLSS. Secondly, the Ghana Statistical Service has updated the consumer price index used in the determination of the prices of goods and services for both the sixth and seventh rounds of GLSS. Hence the rounds of GLSS prior to the sixth round cannot be compared with either of these rounds.

The main variables used in the study include real expenditure per adult equivalent for each household, demographic characteristics of the households, educational status, employment status, ownership of assets and remittance status. The table below offers a description of the variables used.

Table 4.1: Description of Variables

VARIABLES	Description
Gender	Male Female
Age	18-40 41-60 61 and above
Household Size	0-5 6-10 11-15 16- max
Regions of Residence	The formal ten regions of Ghana
Location	Urban Rural
Highest Education	None

	Primary Secondary Post-Secondary
Employment Status	Employed Not Employed Inactive
Marital Status	Married Consensual Divorced Never Married Widowed Separated
Health Insurance	Yes No
Ownership	Yes No
Remittance	Yes No

4.3 Data Analysis

This section details the method employed to analyse the data for this study.

4.3.1 Recentered Influence Functions

Let us assume that v () is a function that estimates the Gini Coefficient of Y using all the information contained in Y, F_Y, and f_Y. To determine the effect of a change in the income distribution on the Gini-Coefficient, one need only compare the indices by exchanging the c.d.f. from the observed distribution F_Y to the ex-post distribution H_Y. This can also be written as:

$$\Delta\upsilon = \upsilon(H_Y) - \upsilon(F_Y) \qquad \text{eqn(1)}$$

Consequently, $\Delta\upsilon$ represents the change in Gini Coefficient caused by the shift in distribution from Fy to Gy. This adjustment can be as significant as implying that everyone in the population receives a fixed transfer (moving the function Fy() to the right) or as simple as adding a new individual (with random income), hence altering the ranks of everyone in the sample. The first scenario is a simplified illustration of how DiNardo, Fortin, and Lemieux (1996) analyzed changes in wage distribution. The second scenario is useful for comprehending the meaning of IFs and RIFs.

The thought experiment of adding a new individual to an existing sample can also be considered an example of data contamination in the original distribution. Equation (1) can be used to evaluate the effect of this thought experiment on the statistic v. Standardizing the change in the statistic relative to a measure that quantifies the change in distribution [(H_Y to F_Y)] quantifies the rate of change associated with the difference in the distribution of Y from F_Y to H_Y.

$$\Delta^{s}\upsilon = \frac{\Delta\upsilon}{\Delta(H_Y - F_Y)} = \frac{\upsilon(H_Y) - \upsilon(F_Y)}{\Delta(H_Y - F_Y)} \qquad \text{eqn(2)}$$

This approach can be expanded to calculate an infinitesimally small change from HY to FY in the distribution function. Based on this concept is the Gateaux derivative, a generalization of the directional derivative of a functional. The derivative is used to construct IFs, which can be used as measures of functional resistance to data outliers (Hampel, 1974) and facilitate the depiction of the distributional statistic's structure as a function of the available data.

Assume that the observation introduced in the sample has an income equal to yi. Because this is the only element of that distribution, its c.d.f., Gyi (y), can be characterized as follows:

$$Gyi\ (y) = 0\ \forall\ y < yi \quad \ldots\ldots eqn3$$

$$Gyi\ (y) = 1\ \forall\ y \geq yi \ldots\ldots eqn4$$

This indicates that the distribution Gy puts mass only at the value yi. With this definition, the distribution G_Y can be redefined as a combination of the distributions F_Y and Gyi :

$$H_Y = (1 - \varepsilon)F_Y + \varepsilon Gyi \ldots\ldots eqn5$$

ε is strictly less than one but more than zero. In other words, G_Y is the distribution that results when the initial distribution F_Y is modified in the direction of Hyi. This transition can also be viewed as pollution or perturbation of the distribution F_Y toward Gyi. Equation (2) also quantifies the degree of the change in distribution from F_Y to G_Y ().

Based on all the concepts explained, the influence function (IF) can be formally defined as follows;

$$\text{IF}\{y_i, \upsilon(F_Y)\} = \frac{\upsilon\{(1-\varepsilon)F_Y + \varepsilon G_{yi}\} - \upsilon(F_Y)}{\varepsilon} = \frac{\partial \upsilon(F_Y \rightarrow G_{yi})}{\partial \varepsilon} \qquad \text{eqn(4)}$$

The IF is a derivative that represents the rate of change of the Gini Coefficient due to a modest shift in the distribution of Fy. It is the effect that an observation yi has on the estimation of the Gini Coefficient. A limitation of the Influence function is that the IF will be unique for each contaminated point. Firpo, Fortin, and Lemieux (2009) presented the recentered version of the influence function to reduce this (Recentered Influence Functions). The formulation of the recentered influence functions using Gini is shown below.

$$\text{RIF}(y, Gini_Y) = 1 + \frac{2}{\mu_Y^2} R_Y - \frac{2}{\mu_Y}[y\{1 - F_Y(y)\}] \qquad \text{eqn(5)}$$

Where

$$R_Y = \int_0^1 GL_Y(p)dp \qquad \text{eqn(6)}$$

$$GL_Y(p) = \int_{-\infty}^{q_Y(p)} ydF_Y(y) \qquad \text{eqn(7)}$$

The RIF denotes the relative contribution of an observation (y_i) on constructing the Gini coefficient. Thus, it explains the influence of observation (y_i) on the estimation and approximation of the Gini Coefficient. A vital property of the RIF, which supersedes the IF, is its ability to recover the Gini coefficient using simple averages. This aids in the interpretation of RIF regressions.

The RIF function transforms y_i into a U-shaped form, indicating that a marginal growth in the population with exceptionally low or extremely high levels of real expenditure per adult equivalency results in a disproportional increase in inequality. However, a marginal increase in population around the mean consumption level has little to no effect on inequality. The precise values of the RIF function vary by index due to the indices' differing sensitivity to different areas of the expenditure distribution. Some indices will rise more rapidly in response to a minor population increase at the top or bottom of the distribution (Gradin, 2016, 2018).

The connection between these individual contributions to inequality and household variables is represented by an NK matrix X (which includes a constant) that may be evaluated using the OLS technique.

$$RIF(y_i: Gini_Y) = \sum_{k=1}^{K} \underline{x_k}\beta_k + \varepsilon_i$$

β_k, k ≥ 2 correspond to the anticipated impact on inequality of a marginal change in the average value of the kth characteristic, $\underline{x_k}$, ceteris paribus, while β_1 corresponds to the expected value of inequality when x_k = 0, k ≥ 2. This implies that, in the case of dummy variables, β_k represents the marginal effect of a slight increase in the percentage of people with x_k = 1, and β_1 represents the anticipated value of inequality for the reference household (defined by the omitted categories).

4.3.2 RIF Decomposition (Oaxaca-Blinder Approach)

One of the goals of this study is to examine how changes in the socioeconomic characteristics of households impact the Gini Coefficient over time. The Oaxaca Blinder decomposition technique can analyse outcome differences between GLSS6 and GLSS7.

To apply the RIF-OB decomposition method, let's assume that a joint distributional function describes all relationships between the dependent variable Y and the exogenous variables X and the temporal variable T: $(F_{Y,X,T}(y_i\ x_i, T_i))$. Given that there are only two periods of study based on T, the joint probability function and cumulative distribution of Y conditional on T can be written as;

$$f^k_{Y,X}(y, x) = f^k_{YIX}(Y|X)\ f^k_X(X) \qquad (3)$$

$$F^k_Y(y) = \int F^k_{YIX}(Y|X)\, dF^k_X(X) \qquad (4)$$

where k denotes the density-dependent on T=k with k [0,1]. To calculate the difference between time 0 and time 1 for a Gini Statistic I, the cumulative conditional distribution of Y can be applied:

$$\Delta I = I^1(y) - I^0(y) \qquad (5)$$

The ΔI compares the differences in the average characteristics and the difference in coefficients. To identify more critical differences in compositional effect and coefficient effect, thereby accounting for the overall gap between ΔI, it is prudent to introduce a counterfactual scenario.

The counterfactual inequality index $I^{01}(y) = \underline{x}^{o'}\beta^1$ would represent the anticipated level of inequality in the final year if the characteristics stayed constant throughout time (superscripts 0 and 1 refer to the initial and final years, respectively). The change in inequality over time can be divided into two separate contributions using this counterfactual:

$$1^1(y) - 1^0(y) = \underline{x}^{1'}\beta^1 - \underline{x}^{0'}\beta^0 = \left(\underline{X}^{1'} - \underline{X}^{0'}\right)\beta^1 + \underline{X}^{0'}(\beta^1 - \beta^0). \qquad (6)$$

The coefficients effect $\underline{X}^{0'}\left(\beta^1 - \beta^0\right)$ Shows the anticipated change in inequality if average attributes stayed constant over time and only the coefficients (i.e., their influence on inequality) changed. The compositional impact, $\left(\underline{X}^{1'} - \underline{X}^{0'}\right)\beta^1$, is the anticipated change in inequality caused by changes in the average features, assessed using the coefficients calculated in the last year, β^1.

Thus, the individual contribution of each variable x_k To the characteristics and coefficients, effects may be quantified $W_k^{\Delta X} = (\underline{x}_k^1 - \underline{x}_k^o)\beta_k^1$, and $W_k^{\Delta\beta} = \underline{x}_k^0(\beta_k^1 - \beta_k^o)$Where the individual effects equal the aggregate impact. Similarly, the sums of the characteristics and their coefficient effects add up to the characteristic's overall contribution, $W_k^{\Delta X\beta} = W_k^{\Delta X} + W_k^{\Delta\beta}$.

On the other hand, the detailed coefficient effects show a well-known identification difficulty (Oaxaca and Ransom, 1999). Each dummy variable makes a distinct contribution based on which category is ignored, while a continuous variable makes a varied contribution depending on the scale chosen. Although Fortin et al. (2011) advise adjusting dummy coefficients to guarantee that

detailed effects stay consistent when the excluded group is altered, this study makes no such adjustment since all of these adjustments are ad hoc. As a result, the results should be interpreted according to the model's definition. This identification problem has no impact on the influence of individual features or the aggregate coefficients and characteristics. Alternatively, an alternate counterfactual, $1^{01}(y) = \underline{x}^{1'}\beta^0$, may be produced by changing the breakdown of characteristics and coefficients effects:

$$1^1(y) - 1^0(y) = \underline{x}^{1'}\beta^1 - \underline{x}^{0'}\beta^0 = \underline{X}^{1'}(\beta^1 - \beta^0) + (\underline{X}^{1'} - \underline{X}^{0'})\beta^0. \qquad (7)$$

The difference between this decomposition and Eqn (3) is that the influence of the coefficients is now assessed using the final average characteristics $\underline{X}^{1'}$ while the effect of the characteristics is evaluated using the starting coefficients β^0. Thus, this study may interpret the effect of the characteristics as the anticipated change in inequality if just the characteristics had changed over time (but not the coefficients), and the coefficients effect as the expected change in inequality after changing the coefficients in the final year (while keeping the final average characteristics).

4.4 Empirical Model

The study investigates how microeconomic factors influence income inequality in Ghana. In line with Danquah and Ohemeng (2017) and Owoo and Osei (2020), selected household characteristics were used to analyse the determinants of income inequality in Ghana. For both studies, expenditure was used as the primary variable in measuring inequality. In the case of Danquah and Ohemeng (2017), the data on income for the GLSS 6 is very scanty; however, the data on expenditure is available for all households. For Owoo and Osei (2020), the rationale for using consumption expenditure is that household consumption expenditure may be less affected by income variations

(Mala & Cervana, 2012). Based on these conclusions, this study adopted expenditure as the primary variable for measuring inequality. Since inequality is compared between two waves of the GLSS, the real expenditure per adult equivalent was computed to accommodate any differentials between the two waves. Equation 7 depicts the empirical model used for the study.

$$RIF(y_i: I) = \sum_{k=1}^{K} \quad \underline{x_k}\beta_k + \varepsilon_i \qquad (7)$$

$I(y_i)$ is the Gini coefficient constructed using the real expenditure per adult equivalent. $\underline{x_k}$ is the vector of the explanatory variables. The independent variables were selected following Danquah and Ohemeng (2017), Gardin and Tarp (2019) and Owoo and Osei (2020). These variables include the demographic characteristics of the households, including the household size, age, sex of the household head, educational level and employment status of the household head. Other factors such as the location of the household (Rural or Urban) and the region of the household (ten regions) were accounted for. The coverage of a household in any health insurance scheme was captured in the study. Lastly, asset ownership (land ownership) and remittance income were included to ascertain their impact on inequality.

4.5 Justification for variables

4.5.1 Demographic Characteristics

Gender: The gender of the head of the family is a binary variable, with 1 signifying male and 0 representing female. Owoo and Osei (2020) and Danquah and Ohemeng(2017) demonstrated the significance of gender in establishing inequality. According to Owoo and Osei (2020), male family

headship was connected with an increase in expenditure deviation from population means, indicating a rise in inequality.

Age: The study uses the age of the household's head to determine its effect on inequality. This variable is divided into three categories: 18 to 40 years, 41 to 60, and 60 and older. According to studies, older age groups reduce disparity while younger age groups increase inequality (see Owoo & Osei, 2020; Danquah & Ohemeng, 2017)

Marital Status: The marital status of a household's head influences inequality. Married family heads are more likely to have additional tasks than single household leaders. Similarly, other sorts of marital status may impact inequality in various ways; thus, this study aims to explore the impact of marital status on inequality.

Location: The location of household heads can affect the extent of inequality. Location is classified as either urban or rural. Inequality is increasing in urban areas relative to rural equivalents (Danquah & Ohemeng, 2017).

Region of Residence: The study investigates the effect of resident regions on inequality. The model includes all ten of Ghana's regions. Those who reside in administrative regions or the regional capital are more likely to contribute to inequity rises.

4.5.2 Other Independent Variables

Education: Education is a significant factor in determining inequality. This study divides educational attainment into four categories: None, Primary, Secondary, and Postsecondary. Depending on the level of education, access to education can either increase or reduce inequality

(Owoo & Osei, 2020; Danquah & Ohemeng, 2017). Therefore, this study aims to explore the effect of different degrees of education on inequality.

Employment Status: Employment Status is crucial in determining inequality. Employed household heads are more likely to contribute to an increase in inequality than their unemployed counterparts. Owoo and Osei (2020) discovered that employment had a negative effect on inequality in their contract study.

Ownership of assets: The possession of assets by heads of home can exacerbate inequality. Asset-owning households are more likely to have higher income and, consequently, greater spending capacity. Asset ownership is included in this study to determine its effect on inequality. The possession of assets by heads of home can exacerbate inequality. Asset-owning households are more likely to have greater income and, consequently, greater spending capacity. Asset ownership is included in this study to determine its effect on inequality.

Remittance: Household heads who receive both internal and external remittances have the potential to exacerbate inequality. In light of this, it is wise to investigate remittances' impact on Ghana's inequality.

4.5 Chapter Summary

The suitable methodology for the study is discussed in detail in this chapter. It explains the Recentered Influence function model, covering its intuition, mechanism, and role in helping achieve the research objectives. Furthermore, the chapters looked into the data used in the study, which was mainly derived from the Ghana Living Standards Survey (GLSS) (waves six and seven). The various variables needed for the study were elicited from that dataset. In addition, the

empirical model for the investigation was developed. This model formed the basis upon which the research objectives are being investigated.

CHAPTER FIVE

RESULTS AND DISCUSSION

5.1 Introduction

This chapter examines the socio-economic characteristics of inequality. It is divided into three main sections. The first section presents the descriptive statistics of the variables used in the study. The second part explains the empirical results from the RIF-regressions for both waves of the GLSS. The last section throws more light on the RIF-Oaxaca decomposition employed to decompose the change in inequality

5.2 Descriptive Statistics

The sixth and seventh waves of the GLSS are the primary data sources used for the study. Based on the literature, some demographic characteristics of household heads were selected. These characteristics include the sex and age of the household heads. The total number of households used for the study was 16,000(GLSS6) and 14,000(GLSS7). It can be seen from both rounds of the GLSS that there was a higher percentage of male household heads relative to female heads. Male households accounted for 71.8% of the total sample in 2012/2013 and more than 68.83% in 2016/2017.

The data for both rounds of the GLSS shows that the household heads were youthful. More than 40% of these household heads were found within the age brackets of 18-40 years in both rounds of the GLSS. In 2012/2013, more than 70% of the households had 1-6 members, whiles 24% of them had 6-10 members.[1] In 2016/2017, each category of household size had about 33% of the

[1]

total households sampled. Furthermore, the average household size was 4.3 members per household in 2012/2013 and 7.8 members in 2016/2017.

Most household heads were married in 2012/2013 and 2016/2017. It can be seen from Table 4.1 that more than 50% of the household heads were married. However, widowed heads were 11.22% in 2012/2013 and 12.83% in 2016/2017. In addition, 10.48% and 12.52% of the household heads were never married, whiles 8.64% and 8.99% were in a consensual union. (See table 1)

In 2012/2013, a high percentage of household heads with no educational background formed 31.67% of the total households sampled. The same can be said in 2016/2017; about 15% of household heads had primary education in both periods.[2] The percentage of heads with Secondary education was 42% and 41% in 2012/2013 and 2016/2017, respectively. Also, 11% and 12% of household heads had post-secondary education.

Table 5.1.1 Descriptive Statistics (Dependent Variable)[3]

Real per adult equivalence expenditure	Obs	Mean	Std. Dev.	Min	Max	Gini
2012/2013	16687	3418.833	3600.496	69.30	1087740.439	
2016/2017	14009	4494.108	4937.515	39.03	1996430.455	

[2]

[3] Table 5.1.1 offers a description of the Real per adult equivalence expenditure, which is used in the calculations of the RIF.

Table 5.1.2 Descriptive Statistics (Independent Variables)

VARIABLES	2012/2013 Percentage	2016/2017 Percentage
Gender		
Male	71.8%	68.83%
Female	28.20%	31.17%
Age		
0-40	43.9%	42.59%
41-60	37.48%	38.03%
61-above	18.54%	19.38%
Household Size		
0-6	72.13%	72.90%
6-10	24.76%	24.06%
11-15	2.83%	2.53%
16-max	0.29%	0.51%
Regions of Residence		
Greater Accra	11.48%	9.98%
Ashanti	11.85%	12.38%
Brong Ahafo	9.64%	9.41%
Central	9.58%	9.41%
Eastern	10.75%	9.96%
Northern	10.16%	10.06%
Upper East	8.66%	9.79%
Upper West	8.66%	9.79%
Volta	9.42%	9.79%
Western	10.28%	9.50%
Location		
Rural	55.61%	57.04%
Urban	44.39%	42.96%
Highest Education		
None	31.67%	31.31%
Primary	15.04%	15.04%
Secondary	42.39%	41.54%
Post-Secondary	10.90%	12.10%
Employment Status		
No	16.41%	40%
Yes	83.59%	60%
Marital Status		
Married	58.81%	55.10%
Consensual Union	8.64%	8.99%

Divorced	6.75%	6.18%
Never married	10.48%	12.52%
Widowed	11.39%	12.83%
Separated	3.92%	4.37%
Health Insurance		
No	36.50%	27.56%
Yes	63.50%	72.44%
Ownership		
No	38.43%	46.34%
Yes	61.57%	53.66%
Remittance		
No	67.68%	67.84%
Yes	32.32%	32.16%

There was a sharp decline in employed household heads in 2016/2017. Initially, about 80% of the household heads were employed in 2012/2013, but it was 60% in 2016/2017.

Based on table 5.1.1, the dependent variable, the Gini Coefficient, which was computed by using the real per adult equivalence expenditure, stood at 0.439 in 2013/2017 and 0.455 in 2016/2017. In addition, the average level of real per adult equivalence expenditure was GH 3,418.833 and GH4,494.108 in 2012/2013 and 2016/2017.

5.3 RIF-Regression

This section presents the results of the RIF-Regression. The results are presented under the headings effect of demographic traits on inequality, the effect of regional location on inequality, remittances on inequality, and the effect of assets on inequality.

5.3.1 Impact of Demographic Characteristics on Inequality

The gender of the household head plays a pivotal role in determining inequality. Men are more likely than women to have more opportunities and be more engaged in the Ghanaian labour market, and their incomes are higher than women (Baah-Boateng, 2012). In addition to differences in

employment between these two groups, the ownership of assets helps explain the impact of male and female heads on inequality. Kpoor (2019), in his study, demonstrated that male-headed households have greater asset endowment and better livelihood outcomes than female-headed ones indicating that they are better off than their female counterpart.

Similarly, Doss et al. (2011) establish that as compared to women, men tend to have more significant assets. Based on GLSS, in 2016/2017, 45% of the male household heads owned land for various purposes relative to 30% of the female household heads. Despite all these, the RIF regression revealed that male household heads contributed to reducing inequality by 0.002 and 0.024 in 2012/2013 and 2016/2017, respectively. This contradicts Owoo and Osei (2020), who found that male household heads increase inequality. This disparity in results can be linked to the distribution of expenditure among male household heads being more uniform, which positively impacts inequality.

Larger household sizes caused an increase in inequality relative to smaller household sizes. Inequality increased by 0.013 for households with sizes ranging from 6 to 10 relative to households ranging from 1 to 5. Similarly, household sizes ranging from 11-15 members and 16 members and above caused an increase in inequality by 0.034 and 0.12 during the 2012/2013 period. Large household sizes can engender financial burdens on the family; hence, it is not surprising that larger household sizes cause increases in inequality.

Urban households have a positive effect on inequality when compared to rural households.

As shown in Table 2, inequality decreased by 0.043 points in both periods (2012/2013 and 2016/2017). This is puzzling given that urban households are assumed wealthier than rural households. As a logical consequence, urban households are projected to exacerbate inequality. In line with this, Danquah and Ohemeng (2017) discovered that the urban dummy played a significant

role in explaining the growth in inequality between Ghana's northern and southern regions. In contrast, the RIF-regression estimates indicate that urban areas in Ghana contribute to the lowering of inequality in Ghana. This may be because rural areas typically experience greater inequality than urban areas. Indeed, a comparison of inequality levels in both locations demonstrates that inequality is higher in rural areas than in urban areas for both periods. Thus, inequality in urban regions was 0.39 in 2012/2013, whereas inequality in rural areas was 0.42. This increased inequality in rural areas can be linked to the fact that most households are concentrated in agricultural production instead of the fewer households engaged in more lucrative non-farm activities. Hence, while urban areas tend to have higher expenditure levels, they are more evenly distributed than rural areas, resulting in an overall drop in inequality.

Furthermore, household heads who have never married relative to the married ones caused an increase in inequality by 0.05. Given that these heads are responsible for a small number of household members (approximately two members per household) coupled with over 40% spending a real per adult equivalence total expenditure of more than Gh5000, it is not surprising that inequality increases. A glance at the expenditure composition of the marital status of heads reveals that about 80% of married heads spent less than Gh5000 in 2012/2013 (see appendix, table 4&5). Hence, heads who have never married will widen inequality, as seen in the RIF regressions. This finding is in line with Owoo and Osei (2020); between 2009 and 2014, married household heads contributed to the reduction of inequality relative to unmarried heads.

However, in 2016/2017, household heads in a consensual union, divorced, separated, and widowed, caused a decline in overall inequality relative to the married heads. This can be attributed to inequality among married household heads being relatively higher than for household heads with different marital statuses. Inequality stood at 0.47 for married heads, whiles heads who were

divorced, separated, widowed or have a consensual union had their level of inequality ranging from 0.44 to 0.46[4]. In addition, married household heads seem to be below the average in terms of employment; about 21% of married heads were employed, while heads in a consensual union or had never married had more than 30% of them employed. For educational level, about 35% of married heads had secondary education, which was lower than the average of 45% for the subgroup.[5] Thus, apart from the fact that married heads performed poorly in terms of their employability and educational attainment, their expenditure distribution was relatively uneven. Hence, the contribution of the other forms of marital status to inequality is positive relative to the married status of household heads.

It is difficult to ignore the importance of education in determining inequality. The educational level of the head of a household can determine the level of welfare of that household (Abaidoo, 2021). It is believed that household heads with higher education perform better in terms of finances than those without education. This can result in unequal income and resources available to these distinct groups of heads, thereby engendering inequality. Danquah and Ohemeng (2017) found that household heads with no education were among the significant determinants of inequality in 2012/2013.

Similarly, it can be seen from the RIF-Regressions that heads with primary education as their highest level of education caused a decrease in inequality by 0.04 relative to heads with no education. Comparing heads with no education and those with primary qualifications reveals no significant difference, thus holding all else constant; the opportunities open to heads with primary education may be somewhat similar to heads without education. Hence the average level of

[4] See figure 1 in the appendix
[5] See figure 2 in the appendix.

expenditure for both groups of headships may not differ much. Based on the GLSS 6, the average income level for heads with no education was GHC 2,299, while heads with primary education were GHC 2,835. Regardless of these little differences, heads with primary education reduce overall inequality relative to heads without education. This is because inequality among heads with no education is higher than among heads with primary education. It is natural for heads who lack education to have limited opportunities. However, certain household heads within the same category may have access to opportunities that may boost their ability to spend, increasing the subgroup's inequality gap. In both periods of study, inequality within heads with the same level of education was relatively higher than in the other subgroups. Inequality was 0.42 and 0.45 in 2012/2013 and 2016/2017, respectively, for heads with no education.[6]

Similarly, a comparison of household heads who have secondary education school level certification relative to those who do not have any education reveals that inequality decreased by 0.01 and 0.06 in 2012/2013 and 2016/2017, respectively. More than 40% of household heads in both waves of the GLSS had secondary education. These heads are likelier to be better off than their counterparts with no educational level. However, it can be seen that inequality within the subgroup was low relative to the other group of heads (See image 5 in the appendix, inequality was below 0.4 for both waves). This is a contributory factor to the reduction of inequality.

In contrast, heads with post-secondary education caused a significant increase in inequality relative to heads with no education. This is expected since the heads with post-secondary education are better placed in employment opportunities and are more likely to have better welfare status than heads with no education. The negative effect of this group of household heads on inequality is based on the fact that this group is relatively more minor compared to other groups, yet their

[6] See figure 5 in the appendix.

expenditure is one the higher. The average expenditure of heads with post-secondary education is GHC 5,991, while that of heads without education is GHC 2,299. Hence, these household heads caused an increase in inequality by 0.12 and 0.13 in 2012/2013 and 2016/2017, respectively. Using Greater Accra as the point of reference, the RIF-Regressions revealed that some regions, such as the Eastern, Central and Ashanti regions, caused reductions in inequality. The Greater Accra region is the capital city of Ghana; it houses most of the headquarters of governmental institutions and other private institutions. The region holds better prospects in terms of opportunities than the other nine (9) regions. Hence, it is unsurprising that the other regions reduced overall inequality relative to the Greater Accra Region, except for the Upper West region.

There is a disparity in the distribution of resources among the various regions in Ghana. The number of urban cities in each region engenders some level of inequality among the regions in Ghana. According to Aryeetey et al. (2009), Ghana's regional development discrepancies have their roots in the country's colonial history, but post-colonial development plans and strategies have worsened them. According to the results of their study, inequalities exist between regions (inter-regional), but they are more pronounced within regions (intra-regional).

5.3.3 Impact of Remittance on Inequality

The inflow of remittances at the start of the 21st century remained one of the topical developmental issues for deliberation. Based on the RIF-Regressions, households receiving remittances (Internal and international) caused a decline in inequality in 2016/2017. The impact of remittance on poverty seems clear as it causes a reduction in the level, depth and severity of poverty in Ghana (Adams et al., 2008). However, its redistributive effects remain equivocal. Whiles Kosza and Loyola (2018) found that remittances caused a reduction in inequality in Mexico, Adams et al. (2008) showed that households with internal and external remittances caused the Gini coefficient to rise by 4 per

cent and 17.4 per cent, respectively.

5.3.4 Impact of Assets on Inequality

The findings from the RIF-Regression reflect that ownership of assets, in this case of lands, plays an exciting role in influencing inequality in Ghana. In both rounds of the GLSS, ownership of lands amongst the various households resulted in a significant increase in inequality. Moyo (2014) discovered that Swaziland's lower Gini coefficient than other southern African countries is due to the country's lower land ownership concentration. This indicates that land ownership, when not distributed equally, can have adverse effects on inequality. This is expected since landowners are likelier to wield more resources than non-landowners.

Table 5.2 (RIF-Regressions)

	2012/2013		2016/2017	
VARIABLES	**Estimate**	**SE**	**Estimate**	**SE**
Gender: Base(female)				
Male	-.0026993	.009	-.0249132**	.0101702
Age				
41-60	.0016502	.0075728	.0081763	.0096824
61-max	.0075728	.010044	.0029494	.0121841
Household Size: Base (1-5)				
6-10	.0137416*	.0077373	-.005411	.008637
11-15	.0347691*	.0193212	-.0030305	.0086647
16-max	.1151748**	.0577283		
Regions of Residence: Base:(Greater Accra)				
Ashanti	-.0669036***	.0132151	-.0917121***	.0153264
Brong Ahafo	-.067236***	.0144919	-.0986618***	.0167233
Central	-.0741407***	.0139985	-.1194505***	.0165193
Eastern	-.0907767 ***	.0140067	-.1138826***	.0164133
Northern	.0044346	.0149898	-.0169885	.0175874
Upper East	-.0217434	.0156822	.0010282	.0180113
Upper West	.0817915***	.0160099	.0592549***	.0184939
Volta	-.0549747***	.0146233	-.0774625***	.016637
Western	-.0818613***	.0138269	-.1354481***	.0166281
Location: Base (Rural)				
Urban	-.0431596***	0.00777	-.0432605***	.0086655
Highest Education: Base (No Education)				
Primary	-0.0177*	0.00937	-0.0433957***	0.01167
Secondary	-.0193361**	0.0123	-.06555***	.0122224
Post-Secondary	.1258425***	0.0156	.1152032***	.0142364
Employment Status: Base (Unemployed)				
Employed	.0285187**	.0184238	-.0018049	.007949
Inactive	.0384734	.0216715	----------	----------
Marital Status: Base (Married)				
Consensual	-.0045227*	.0116534	-.0598375***	.0134278
Divorced	.0085271*	.0137663	.0134278***	.0160936
Never married	.0577414***	.0114357	.0082129	.0124427
Widowed	.0172963**	.0124873	-.0403713***	.0136936
Separated	-.0128274**	.016891	-.0388939**	.0184289
Health Insurance: Base (No)				
Yes	.0031642	.0065613	-.03345***	.0083773
Ownership of Asset	.0067891**	.0082207	.0425616***	.0088371
Remittance	-.0155311*	.0067138	-.018966**	.0079506
Constant	.4481599***	.0263913	.5573204***	.0234732
Observations	16,684		13,734	
R-squared	3%		6%	

5.4 RIF-OB Decomposition

As indicated in the methodology, the RIF-OB decomposition technique reveals how the microeconomic variables account for the overall change in the inequality between two periods, in this case, between 2013 and 2017. The decomposition technique produces two results: the compositional characteristics and coefficient effects. The compositional effects explain how the socio-economic variables influence inequality when the structure of these variables changes over time; for instance, how will inequality be affected if the average household head's age changes within the periods of study. On the other hand, the coefficient effects illustrate the effects of these socioeconomic variables on inequality when the composition remains the same.

Based on RIF-Decomposition Table (Table 5.3), the overall change in inequality between 2013 and 2017 was 0.0157. The compositional effects accounted for a total increase in inequality of 0.0127, whiles the coefficient effects resulted in an overall decline in inequality of 0.028.

The change in the composition of household heads' educational attainment accounted for an inequality increase of 0.00912. There was no significant change in educational attainment among households (see Appendix 1). This reemphasised the role of education in worsening the inequality gap. The RIF-regressions revealed that education could aggravate or reduce inequality depending on the level of education in a given period. It is seen that household heads with a higher level of education caused an increase in inequality in 2012/2013 and 2016/2017(See Table.2), whiles those with lower levels caused a decline. However, due to the slight compositional change (the main change was an increase in post-secondary attainment from 10% to 12%) in education attainment between 2012/2013 and 2016/2017, inequality increased by 0.009. The coefficient effects revealed that inequality increased by 0.041 between 2013 and 2017. This shows that if the structure of

educational attainment among household heads remained the same, inequality would rise. Juxtaposing the magnitude of change for both effects, the coefficient effects experienced a relatively higher increase.

Table 5.3 (RIF-OB Decomposition)[7]

Variables	(1) Overall	(2) Characteristics effects	(3) Coefficient effects
Sex		0.00107***	-0.0273
		(0.000301)	(0.0195)
Age		2.82e-05	-0.00657
		(0.000106)	(0.00461)
Household Size		0.00101	0.00646***
		(0.00310)	(0.00200)
Region		-0.000182	-0.00111
		(0.000158)	(0.00888)
Location		-0.000698***	0.0289*
		(0.000267)	(0.0151)
Education		0.00912***	0.0411***
		(0.000880)	(0.00788)
Marital		-0.00314***	0.000974
		(0.000669)	(0.0103)
Employment		0.000910	0.00280
		(0.00708)	(0.00971)
Health Insurance		0.00455	0.0221*
		(0.00407)	(0.0130)
Remittance		-1.59e-05	0.00130
		(0.000130)	(0.00306)
2012/2013(Gini)	0.439***		
	(0.00313)		
2016/2017(Gini)	0.455***		
	(0.00360)		
Difference	-0.0157***		
	(0.00477)		
Compositional effects	0.0127		
	(0.00923)		
Coefficient effects	-0.0283**		
	(0.0115)		

[7]Table 5.3 delineates the RIF-OB Decomposition. The table illustrates the characteristics and coefficient effects of the various socio-economic variables. In addition, the overall characteristics and coefficient effect are calculated.

Constant	-0.0971**
	(0.0392)

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Furthermore, the change in the composition of the marital status of household heads causes a decrease in inequality. The significant changes in the composition were the increase in the percentage of married and widowed heads. Married heads are likely to wield more income and expenditure. This is a result of the positive implications of the complementary power of married couples. On the other hand, the coefficient effects of the marital status of the household heads contributed negatively to inequality; thus, inequality increased by 0.000974.

Health-insurance coverage of household heads increased inequality between the two time periods. Based on the GLSS 6&7, more than 50% of households had health coverage.[8] Household heads with health insurance will likely ensure that most of their household members will be covered by the scheme. This would reduce the financial burden on the household and, by extension, create room for other pertinent expenditures.

5.5 Chapter Summary

This chapter presents the results and discussions the objectives of the study based on the data obtained and analyzed. It can be seen from both rounds of the GLSS that there was a higher percentage of male household heads relative to female heads. The gender of the household head plays a pivotal role in determining inequality. Men are more likely than women to have more opportunities and be more engaged in the Ghanaian labour market. Larger household sizes caused

[8] See Appendix Table.1

an increase in inequality relative to smaller household sizes. Inequality increased by 0.013 for households with sizes ranging from 6 to 10 relative to households ranging from 1 to 5. Large household sizes can engender financial burdens on the family; hence it is not surprising that larger house sizes cause increases in inequality. Further, while inequalities exist between areas (inter-regional), they are more significant inside regions. Remittances and asset ownership were also significant tools to address inequality.

CHAPTER SIX

CONCLUSION AND POLICY RECOMMENDATION

6.1 Summary and Conclusion

The general purpose of this study was to identify the microeconomic determinants of income inequality in Ghana. In doing so, the study's objectives were to determine the level of income inequality in Ghana, identify and estimate the microeconomic determinants of income inequality in Ghana, and identify how much changes in household characteristics contribute to income inequality in Ghana. The study reviewed the concepts of inequality with a specific discussion of consumption and household inequality. The study also employed the human capital theories, compensating wage differentials theory, the theory of efficiency wages, dual labour market theory and Becker's Household Economic Theory. These theories emphasise the role of micro-economic factors and individual demographics in affecting the income level of individuals in an economy, thus, contributing to inequality.

The literature review also shows that growing income inequality mainly originates from the changing social conditions as part of economic upheaval. These social factors include, among others, the percentage of participation in the labour force of men and women and the proportion of female-headed households. The Gini Coefficient and Theil Entropy Measures were discussed as inequality measures.

The source of data for the study was the Ghana Living Standard Survey (GLSS). The GLSS is a nationwide survey designed to collect data on issues affecting the living standards of Ghanaians. It is a modified version of the 1980 World Bank Living Standards Measurement Study (LSMS).

The survey collects data on demographics, education, health, tourism, migration, and remittances. This study used the sixth and seventh rounds of the GLSS. The reason for the selection of both rounds is mainly to examine the distributional consequences of post-2011 growth and the household factors that influenced income distribution. Given the time frame, the GLSS sixth and seventh rounds are appropriate. The significant variables of the study include real expenditure per adult equivalent per household, demographic factors, educational status, job status, asset ownership, and remittance status.

The study used Recentered Influence Functions (RIF) and RIF Decomposition (Oaxaca-Blinder Approach) to analyse the data. The study also interpreted the effect of the characteristics as the anticipated change in inequality if just the characteristics had changed over time and the coefficients effect as the anticipated change in inequality after changing the coefficients in the final year. The study adopted expenditure as the primary variable for generating the Gini Coefficient. The real expenditure per adult equivalent was computed to accommodate differentials between the two waves. These variables include household demographic such as household size, age, and sex of household head. The study also examined the household head's educational and work status. The economic opportunity of households was accounted for by the household's location (rural or urban) and region (ten regions). The study included 16,000 (GLSS6) and 14,000 households (GLSS7).

Both rounds of the GLSS showed a higher percentage of male household heads than female household heads. In 2012/2013, male families made up 71.8% of the overall sample and 68.83 per cent in 2016/2017. The GLSS data shows that household heads were young in both rounds. In both rounds of the GLSS, almost 40% of these household heads were aged 0-40. Also, between 2013

and 2017, the average household size changed dramatically. In 2012/2013, almost 70% of households had 1-6 individuals, while 24% had 6-10 members. In 2012/13 and 2016/17, most household heads married. Between 2012/2013 and 2016/2017, roughly 15% of household heads had primary education and 42% had secondary. Educating family heads promotes growth and reduces poverty. Educated parents are less likely to be poor. In both rounds of the GLSS, male household heads outnumbered female household heads. The household head's gender helps determines inequality.

RIF regression shows that urban areas in Ghana assist reduce inequality. Perhaps rural areas have more disparity than urban locations. When comparing the two regions, rural inequality is higher than urban inequality for both periods. In 2012/13, urban and rural inequalities were 0.39 and 0.42, respectively, whiles in 2016/2017, the same locations stood at 0.38 and 0.44, respectively. The relatively higher rate of inequality in rural areas can be linked to the fact that most rural households are involved in agriculture.

In contrast, only a handful are involved in more lucrative non-farm businesses. Furthermore, never-married heads relative to married heads increased inequality. Divorced, separated, or widowed household heads reduced total inequality in 2016/2017 relative to married heads.

Inequality is affected by education. Household heads with post-secondary education caused a significant increase in inequality relative to heads with no education. This is expected since the heads with post-secondary education are better placed in employment opportunities and are more likely to have better welfare status than heads with no education. Higher education is associated with better financial outcomes for household heads in these groups

In addition, RIF-Regressions show that remittance-receiving households reduced inequality in 2012/2013 and 2016/2017. Internal and foreign remittances are included. In both rounds of the GLSS, land ownership among households increased inequality. This is predicted as landowners have more resources and can afford more investment. In both rounds of the GLSS, ownership of lands amongst the various households resulted in a significant increase in inequality.

The overall change in inequality from 2013 to 2017 was 0.0157. The compositional effects increased inequality by 0.0127, while the coefficient effects decreased inequality by 0.028. By decomposing the RIF-OB data, we can see how much the microeconomic variables account for the overall change in inequality between 2013 and 2017. Education, marital status and location were significant variables in determining the increase in inequality over time.

6.2 Policy Recommendations

In Ghana, it is undeniable that income and wealth are becoming increasingly concentrated and that existing levels of inequality are hurting many citizens' economic possibilities and well-being. Inequality has recently received much more attention from economists, politicians, and public members. The implementation of policies can reduce inequality.

A framework for accelerating development in Ghana must be created to reduce the impact of the urban-rural divide on inequality and promote local development. Local poverty reduction initiatives should be developed and implemented by MMDAs (Metropolitan, Municipal and District Assemblies), which should be equipped and strengthened.

Increased funding for MMDAs is also needed so municipalities can prioritise their own goals in their local plans. These local plans should focus on pro-poor strategies and incorporate direct strategies that eliminate community inequalities.

The role of education in reducing inequality cannot be overemphasized; the government must ensure that education at all levels is prioritized. Specifically, efforts to improve educational quality at all levels of the educational sector should be the focus of educational policies. The current drive to close the gap in secondary school attainment is a good initiative. Based on the findings, household heads with secondary school education, which constituted over 40%, caused a reduction in inequality for both periods. This is an indication that an increase in secondary school enrolment is more likely to cause a reduction in inequality. In addition to the enrolment, the educational process and system quality should be enhanced. Quality education can influence the reduction of inequality. Quality education is more likely to create graduates capable of excelling in their chosen careers. This achievement translates into the graduates' ability to control more wealth and resources. Since enrollment is high, there is a greater likelihood of an even distribution of income among that set of graduates, hence reducing inequality. In summary, increasing secondary school enrollment can lead to a reduction in inequality, but improving the quality of education in secondary schools will significantly impact reducing inequality.

Robust transfer systems, such as those seen in many European nations, tend to be highly effective in reducing inequality, as evidenced by these countries recording some of the world's lowest Gini coefficients. As illustrated in the RIF-Regression, remittance caused a reduction in inequality. Hence, policies should be designed to encourage the smooth transfer of remittances in Ghana.

Policies such as the e-levy should be re-evaluated to ascertain their impact on the volume of remittances.

Land litigation is a major hindrance to land ownership in Ghana. This process discourages households from owning land, given the risk of losing the land in the long run. To avert this and reduce inequality, the government should introduce land reforms and policies that would build up confidence in acquiring land. The land commission's current initiative to digitize land records should be efficiently enforced.

6.2 Limitations

Since data on income levels for surveys are usually unreliable and incomplete, this study utilised expenditure as a proxy for measuring inequality. Ideally, income should be utilised. Also, other silent variables, such as social capital, which plays a vital role in determining inequality, were not included in the study to the unavailability of data.

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APPENDIX

Inequality levels based on marital status

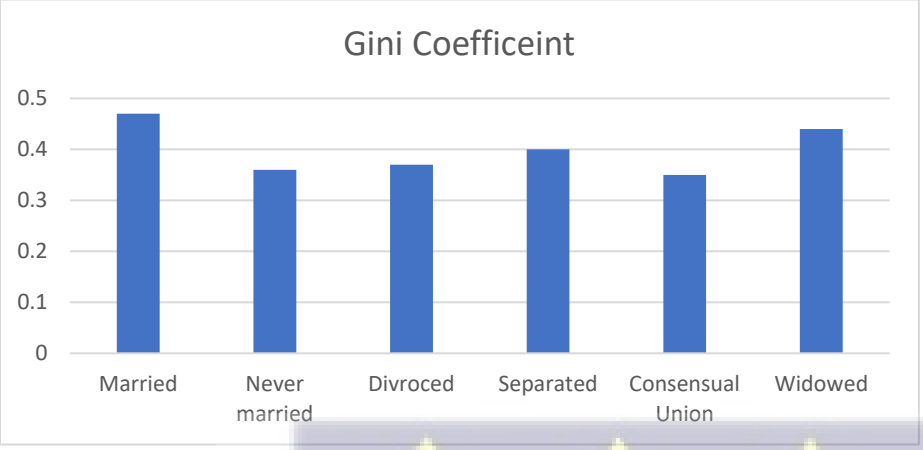

Figure 1: Inequality levels based on marital status

Employment status based on marital status

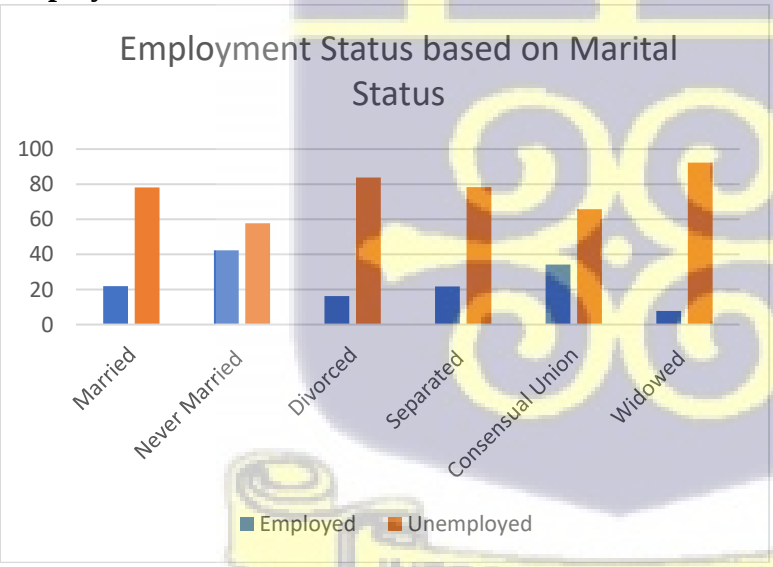

Figure 2: Employment status based on marital status

Educational level based on marital status

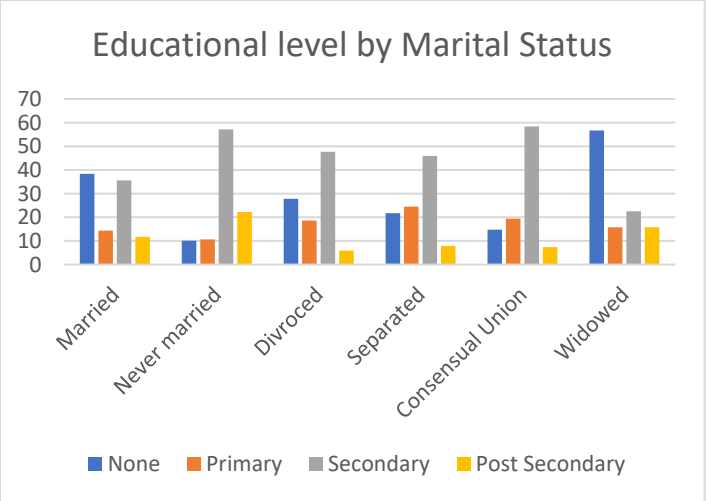

Figure 3: Educational level based on marital status

Ownership of Land-based on marital Status

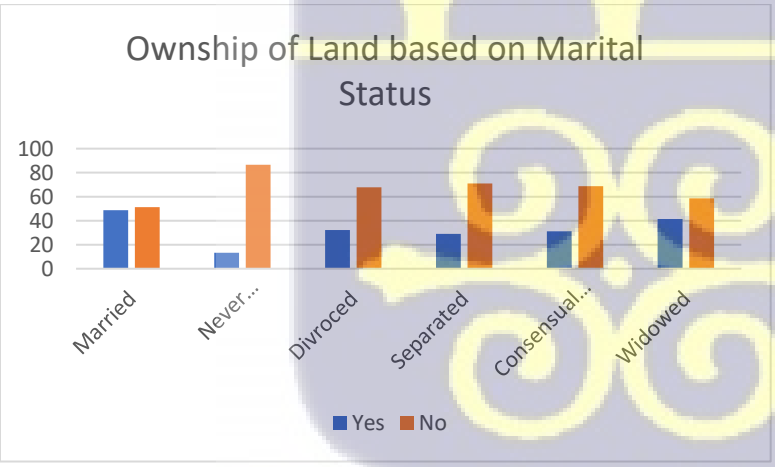

Figure 4: Ownership of Land-based on marital Status

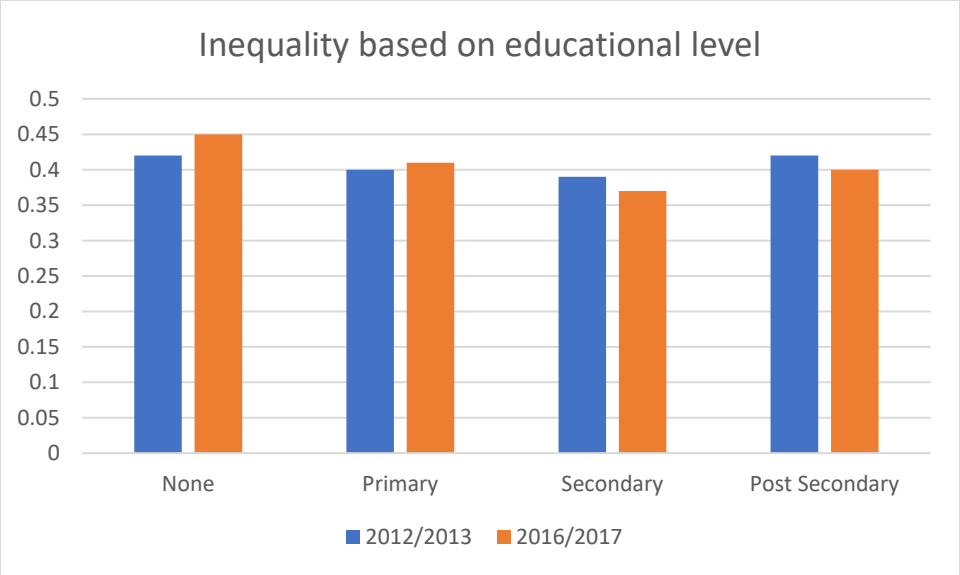

Figure 5: Inequality based on Educational Level