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**THE IMPACT OF PROGRESSIVE TAXATION ON INCOME INEQUALITY IN
KENYA**

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ABSTRACT

The study focused on the analysis of Kenya's tax system and its impacts on income inequality, tracing various structural and policy-driven factors that have contributed to the heightening income disparities within the country in historical perspective. While the progressive tax system was to reduce the inequalities through the heavy burden of taxation for high-income earners, the research findings showed that this had largely been defeated by massive tax evasion among the well-endowed individuals and companies. Secondly, VAT and excise duties fell heavier on poorer households, who had less disposable income and thus had their economic inequality exacerbated as a result. Another contributory factor to income inequality was noted to be within the formal and informal sectors. Whereas the formal sector is only 20% of Kenya's workforce, it contributed the biggest share of the country's tax revenue, while the informal sector, which employs an estimated 80%, is mostly untaxed. This imbalance limits revenue collection making economic vulnerability heightened. Even though there are some government policies to reduce poverty and assist vulnerable groups, these are of limited effectiveness since the funding levels are not sufficient. This is further exacerbated by cash transfers and some relief efforts, the reach of which is constrained because of inadequate budgets. It is also indicated that investments in infrastructure are not being uniformly distributed; the urban areas get predominant shares compared to the rural regions and, are therefore likely to increase regional income disparities. Inequality in education is another important determining factor in the increase in income inequality due to students in rural areas being unable to compete with other students in the urban areas; hence, the educational divide is responsible for a low economic cycle of mobility where less educated are perpetually locked into low-paying jobs. The conclusion of the research was that based on the regression and correlation analyses run for a period of 40 years, a strong positive relationship existed between income inequality and the determinants of tax system issues, formal and informal sectors issues, government policy, and inequality in education. This study indicated that education inequality is the most significant determinant of income inequality. The findings suggested broad reforms are needed to reduce income inequality in Kenya, from more equitable tax policies, formalizing the informal sector to broaden the tax base, increasing social spending, and investing in rural education. Such measures are projected to foster a more inclusive and equitable economic landscape for the country.

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CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Kenya is classified as one of the fastest-growing economies in Africa. According to a study conducted in 2013 by the Africa Growth Initiative (AGI), Kenya ranked as the ninth largest economy in Africa and fourth in Sub Saharan Africa (SSA) (Opeyemi, 2020). Currently, Kenya ranks highest within the East African community, serving as a source for foreign direct investment and a leader in innovation and financial inclusion (Mose, 2021). The economic growth witnessed in the country in the past few decades has been felt at the local and national levels with the steady growth partly associated with the devolution of power (Mose, 2021). However, the progression of Kenya's economic growth is dependent on the tax structures in place especially since the country relies on taxes to fund various projects at all government levels, pay workers and provide public services to the citizens (Kadenge, 2021). Numerous studies have been conducted to understand the impact of taxation on the economy and organizational growth. However, more recently, there has been an increased focus on the impact of taxation on income inequality in Kenya.

The COVID-19 pandemic had a significant impact on tax collection with the country bouncing back in 2021. The pandemic slowed down the local economic growth, declined the tax revenue and shifted the growth trend that had been witnessed in the past decade (Ng'etich et al., 2021). A report generated by KRA in 2020 revealed that in response to the pandemic, the government had to enforce several measures including a reduction in Income Tax rate, Resident Income Tax Rate, turnover tax rate, Value Added Tax to 14% and implement a 100% tax relief for individuals earning up to Ksh. 24,000 monthly in gross income (Ng'etich et al., 2021). In turn, these measures

gave citizens more purchasing power and increased their production rate. It also enabled organizations operating in the country to minimize staff layoffs and save administration costs.

Unfortunately, since the pandemic, the country has experienced increased taxation. The basics of taxation in Kenya have shifted with the introduction of new tax rates and levies (Oyollo, 2022). Naturally, taxation in Kenya has been progressive, depending on one's level of income, stretching from income tax, Value Added Tax (VAT) and excise duty among others. Under income tax, one of the primary sources of tax funds in Kenya, an increase in income results in a tax rate increase (Oyollo, 2022). On the other hand, subsidiaries of foreign companies and resident companies are taxed at almost 41% while VAT stands at 16% for most goods and services according to the VAT Act, 2013 (Kimani, 2021). The government has also put in place an excise duty on services such as internet data services, petroleum products, alcoholic beverages, tobacco and telephone services intending to deter the consumption of certain goods and services while generating more revenue for the country (Kimani, 2021). However, while taxation is meant to benefit both citizens and the government, there has been increased public outcry with the introduction of new tax rates and levies since the Pandemic.

The country has recorded an upward trend in tax rates since the pandemic. More recently, Kenya has witnessed increased dissatisfaction with the revised tax rates and levies proposed in the 2024 Financial Bill. Majorly, as voiced by the youths protesting in the streets of major cities in the country, the proposed tax rates and levies deterred their investment opportunities, and businesses and lowered their living standards. A study conducted by Mwangangi (2023), revealed that the increased taxation in the county has impacted small and medium enterprises significantly.

According to this study, due to high taxation, many SMEs have been forced to close their businesses (Mwangangi, 2023). Further, large and foreign companies in the country have equally felt the pressure emanating from increased taxation (Mwangangi, 2023). Unfortunately, in the proposed Finance Bill 2024, the government sought to further raise taxes on several products and services such as local online platforms offering ride hailing, food delivery and online jobs services. Additionally, the introduction of new tax rates including the recent Housing Levy, Digital Service Tax and increased turnover tax rate to 3% threaten to not only increase the cost of living but also diminish returns, deter entrepreneurship and investment and stifle economic growth. As such, reinstating higher tax rates and levies raises questions about its long-term impacts on the citizen's income, investments, savings and work.

While taxation is central to public policies and the provision of public services such as education, infrastructure, access to sewer systems, clean air and water, there should be a tradeoff between equity and efficiency. Efficient tax collection should be similarly characterized by equity. The development of income inequality has attracted considerable attention to the issue of increasing taxation in Kenya spurring the need to research and understand its impact on income inequality. This research project aims to examine the relationship between increased taxation and income inequality in Kenya. The general public dissatisfaction with increased taxation and widening social inequality between the rich and the poor may provide evidence of inequality in the current system that favours the rich and oppresses the poor further. Investigating the extent to which an increase in taxation affects income distribution may be key to understanding its contribution to poverty and income inequality.

1.2 Problem Statement

Although Kenya is categorized as one of the fastest growing economies in Africa, it still falls under the lower-middle income status. According to a study conducted by the United States Agency for International Development, Kenya experienced an annual average growth rate of 6% between 2010 and 2018 (Mose, 2021). However, it has only recently achieved the lower-middle income status. Another report shows that more than 35% of Kenya's population currently lives under the international poverty line with this percentage expected to rise in the next five years (Nafula et al., 2020). In another study, Wambugu et al. 2019, established that education quality is different, where rural areas and the most marginalized populations get lower quality education. This hence creates divergence in skill building and job opportunities and further exacerbates the persistent income gap. Richer families afford to access the best schools, while poorer households struggle to attain quality schools hence very minimal chances for upward mobility. It has been indicated that the gap between the educated and uneducated contributes a lot to wage inequality, hence promoting income disparity between generations. Therefore, while Kenya has witnessed significant economic growth, the concerning trend of widening poverty and income inequality raises questions about the associated contributory factors (Nafula et al., 2020). While the nation's economic growth is an indication of the nation's welfare, poverty reduction is also a key indicator of a country's performance.

The extreme concentration of wealth to a small percentage of the country's population creates unsustainability and creates a need to investigate contributing factors including the regressive tax system and policies in place (Obiero & Topuz, 2022). Further, Kenya's tax system is also considerably unequal. There is heavy income tax taxation of the formal sector, which contributes to almost 80% of the tax generated in Kenya while the informal sector constituting more than 65% of the

nation's workforce, barely contributes to income tax (Maritim, 2020). As such, the latter category loses its revenue generation potential. Employed individuals who fall into various categories including the self-employed, contracted, outsourced, or casualized pay taxes through their employers making it difficult to track their taxes (Maritim, 2020). Numerous factors affect tax collection and consumption. In addition to the changes in tax rates, levies, and policies, the likelihood of reducing income inequality through taxation becomes more challenging. Exploring the taxation dynamics will provide insights that inform policy changes and interventions, promoting a more equitable distribution of income in Kenya.

1.3 Research Objectives

The relationship between progressive taxation and unequal income distribution has been a subject of study for decades. This study aims to investigate the impact of Kenya's progressive tax system on income inequality. With the understanding that taxation can significantly impact a nation at the micro and macro levels through the distribution of expenditure to support society's vulnerable populations, this study aims:

1. To look into the impact of tax system on income inequality in Kenya.
2. To access the impact that between formal and informal sector disparities on income inequality in Kenya.
3. To examine the role of government policies on income inequality in Kenya.
4. To assess the impact of education inequality on income inequality in Kenya.

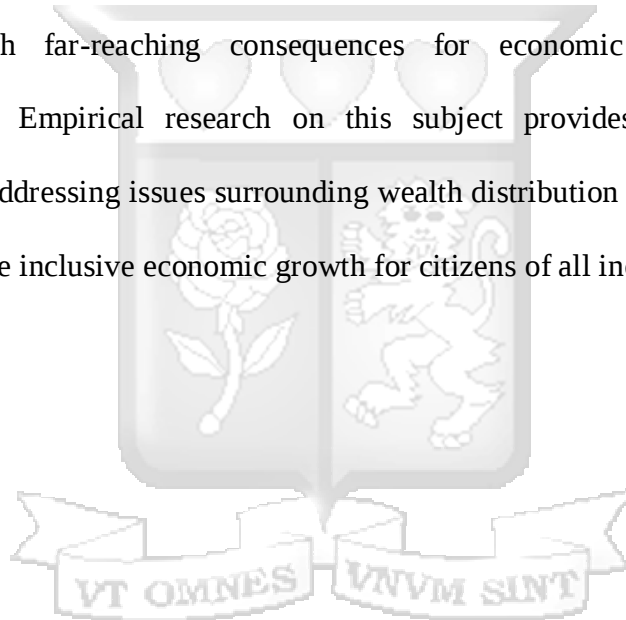
1.4 Research Questions

- a) How does the tax system impact income inequality in Kenya?
- b) How does the disparities between the formal and informal sectors impact income inequality in Kenya?

- c) How do government policies impact income inequality in Kenya?
- d) How does education inequality impact income inequality in Kenya?

1.5 Justification of the Study

This study sheds light on the need for the key policymakers and the Kenyan government to consider policies on taxation and their impact on Kenyan citizens, especially low-income individuals and households. It also informs future studies in taxation policies as a powerful tool to fund public services and redistribute wealth in society. Income inequality is not only a local issue affecting Kenya but a global problem with far-reaching consequences for economic growth and social development. Empirical research on this subject provides an evidenced-based approach to addressing issues surrounding wealth distribution and taxation in Kenya, fostering more inclusive economic growth for citizens of all income levels.



CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter delves deeper into understanding progressive taxation and income inequality witnessed locally and internationally. The researcher examines the impact of progressive taxation and income inequality in other countries. The chapter also draws back on theoretical frameworks associated with the concepts, conceptual frameworks, research gaps, and empirical studies. By examining previous studies discussing these topics, the researcher can understand the existing pool of knowledge and provide a comprehensive discussion of how progressive taxes can help potentially mitigate or increase income inequality. On the other hand, by exploring several theoretical frameworks associated with progressive taxation and income inequality, the researcher can understand the existing knowledge and get a basis for the choice of research methodology. Overall, this chapter aims to inform the readers, other researchers, stakeholders, and policymakers about the impact of progressive taxation in mitigating or fostering income inequality in Kenya.

2.1.1 Income Inequality and Its Significance in Kenya

Globally, the issue of income inequality has been a trend for the past few decades. Across various countries, emerging and advanced economies are facing rising levels of income inequality, with both accounting for approximately 66% of the global population (Ranaldi & Milanović, 2022). The increase in income inequality can be attributed to several factors, including stagnant wages, high inflation, unequal land distribution, historical racism, and unfair taxation practices and policies (Ranaldi & Milanović, 2022). Developed economies such as Russia, India, China, and the United States face this challenge, with the richest individuals consisting of less than 5% of the

general population in these countries (Ranaldi & Milanović, 2022). Studies show that the occupation adopted by many is the greatest contributor to income differences in various economies (Boschken, 2022). In developed economies such as the United States, salaries and wages are the major sources of income (Boschken, 2022). On the other hand, property ownership is the major source of wealth and income for the richest. Income inequality can be equally attributed to cultural and structural causes such as family responsibilities, gender roles, institutionalized sexism and racism, discrimination, and segmented labour markets (Boschken, 2022). Economic, political, and legal factors also play a role. However, there are underlying causation factors that appear to be constant for both emerging and developed economies. According to a study conducted by Fang et al. (2021), the principal causes of rising income inequality are disproportional tax cuts that benefit the richest and wage erosion for less-educated workers. The latter consequently leads to a decline in the value of minimum wages and a growth of the service sector.

At the local level, Kenya is one of the developing economies facing rising income inequality. The gap between the poorest and the richest in Kenya is at an extreme level, with less than 1% of the country's population owning more wealth than the rest of the population (Maket et al., 2023). Further, statistics show that the richest 10% of the country's population earns averagely 20 times more than the poorest 10% (Maket et al., 2023). With studies predicting an increase in the number of millionaires in Kenya over the next decade, this gap is more likely to increase with the current tax base. Unequal opportunities in education and healthcare worsen the situation, with the government spending less on the first as the year progresses (Bohra & Sharma, 2021). The unsustainable income inequality in this country has become a social ill and shame, as termed in several studies (Bohra & Sharma, 2021; Saleh, 2022). Heavy taxation has

also been identified as the biggest contributor to income inequality in Kenya. The rich in Kenya are favored by corruption, tax evasion, and tax incentives (Bohra & Sharma, 2021). On the other hand, middle and lower-level class citizens are further affected by rising basic commodity, fuel, and power costs and heavy taxation (Bohra & Sharma, 2021). It is this difference that this study aims to understand and develop recommendations that can contribute positively to the country.

2.1.2 Importance of Progressive Taxation as a Policy Tool

A progressive income taxation system can have both positive and negative impacts on a country's economy and its citizens. It can result in faster growth of the economy, less economic and financial volatility, higher revenues, and more equitable income distribution. Studies show that the rationale behind progressive taxation is to tax individuals based on their levels of income (Barannyk et al., 2021). Therefore, the tax rate increases as one's taxable income progresses. As evidenced in Kenya, income is divided into various brackets, with the tax rate increasing as the income range shifts upwards. The Kenyan system, like the United States income tax system, is considered progressive in nature (Barannyk et al., 2021). This type of system reduces the tax burden on the least earners and tends to collect more taxes in an economy compared to regressive or flat rates (Barannyk et al., 2021). However, taxation in Kenya stretches further than income tax. Progressive taxation in an economy is mainly effective if it is well-designed and depends on its interaction with the other types of taxes. As such, high rates of progressive taxes should be coupled with low-rated consumption taxes to produce a system that is progressive in nature.

Progressive taxation should equally be characterized by progressive spending. Considering that progressive taxation discriminates largely against the richer population, it can lead to individuals hiding assets and income, penalization of the

hardest-working citizens, and class warfare (Seelkopf & Lierse, 2020). The key is finding a tradeoff between efficiency and equity in progressive taxation systems. Unfortunately, through this system, as one's income rises to adjust for the rising cost of living, the tax rates equally increase. Research also shows that even in developed economies such as the United States, progressive taxation has failed to reduce income inequality (Seelkopf & Lierse, 2020). Instead of achieving economic stability, many countries experienced distorted economies and reduced real incomes.

2.2 Theoretical Framework

Several theoretical frameworks explain income inequality and progressive taxation. These theories explain that income distribution emerges from different economic perspectives, emphasizing various factors, including market forces. They also provide a lens through which the researcher and policymakers can examine income generation, distribution, and redistribution in a country. It is through this theoretical framework that progressive taxation policies can operate in a country, with an aim to reduce income disparities. This section discusses various theories, including institutional economics, Marxist perspectives, and neoclassical economics, that explain income inequality and progressive taxation.

2.2.1 Human Capital Theory

The theoretical underpinnings that explain income inequality are associated with the growth of an economy. According to neoclassical economics, supply and demand are the drivers behind the consumption of goods, pricing, and production (Dotti, 2020). In reference to income inequality, this theory argues that several factors could explain income inequality globally. The Human Capital Theory, as developed by Gary Becker, argues that income inequality can be attributed to the distribution and level of education in a population (Gruzina et al., 2021). Therefore, the supply and

demand of educated individuals in a society will determine their earnings. The more skilled and knowledgeable an individual is, the higher their earnings, wages, and productivity are likely to be, thus contributing to income inequality (Gruzina et al., 2021).

2.2.2 Marginal Productivity Theory

On the other hand, Nani elucidates income inequality as a product of marginal market productivity. According to the marginal productivity theory, individuals in a society are paid according to their marginal productivity (Asimakopulos, 2020). Hence, individuals in the market who offer the highest productivity and contribute the most to production receive higher wages (Asimakopulos, 2020). As such, income inequality witnessed in a society and country can be attributed to productivity differences among individuals.

2.2.3 Theory of Compensating Wage Differentials

Adam Smith offers a more detailed view of income inequality, attributing it to the theory of compensating wage differentials. According to this theory, individuals accept different wages depending on the job characteristics, such as risk and difficulty (Lavetti, 2023). As such, jobs that are riskier and more difficult attract more pay to compensate for these factors. On the other hand, less-demand jobs attract low pay, creating income inequality in a difference (Lavetti, 2023). Unfortunately, these three theories focus only on single factors instead of factoring in multiple dimensions, such as stagnation of wages, high inflation, a country's economic performance, and unequal land distribution. The neoclassical economic theories separate individual factors from the role of government institutions and governance in promoting policies that mitigate income inequality.

2.2.4 Marxist Theory

On the contrary, the Marxist theory of income inequality focuses on the capitalist mode of production. According to this theory, income inequality is a result of an individual's environment and the social structure in which they grow up (Muntaner et al., 2020). Since capitalism largely breeds an inegalitarian social structure, the latter creates hierarchical classes that are centered on an individual's production power, ability to purchase labor, and ownership of means of production (Muntaner et al., 2020). Consequently, income distribution in such a society becomes dependent on who can purchase labor as a factor of production as one part of the population works for the other, creating an unequal distribution of income and wealth.

2.2.5 Progressive Taxation Theory of Optimal Taxation

Progressive taxation has been elaborated through various theories. Frank Ramsey tries to elucidate progressive taxation through his theory of Optimal Taxation. According to this theory, a good tax system is flexible enough to meet society's needs (Boadway, 2021). This principle is echoed by other authors, including Peter Diamond and James Mirrlees, who argue that taxes can be structured in a manner that reduces income inequality (Boadway, 2021). As such, proponents of this theory say that progressive taxation is key to achieving this goal, as higher-earning individuals generally have lower marginal utility of money compared to individuals who earn less (Boadway, 2021). As a result, taxing them higher in comparison to individuals earning less reduces the overall societal dissatisfaction with the tax system. However, this theory posits that the progressive tax system promotes social welfare. Since it is designed to impose higher taxes on those with higher incomes, the additional revenue collected by the government can be used to support social programs that improve the living standards of people experiencing poverty.

2.2.6 Public Finance Theory of Progressive Taxation

The public finance theory echoes the findings of this theory, arguing that the government equally plays a crucial role. According to this theory, progressive taxation promotes equitable distribution of income and aligns with the concept of social justice (Tresch, 2022). However, how practical is progressive taxation? While it is considered the fairest form of taxation, it focuses largely on income. According to Williamson (2020), while people falling within the lower bracket of income pay a lower tax percentage, in a general sense, they pay more as a percentage of their income. The author explains this concept by arguing that wealthier individuals tend to own more land and property (Williamson, 2020). Therefore, as the government increases the tax rate for the highest earners, they might take steps to reduce their taxable income. The rich can reduce their taxable income through tax evasion, avoidance, or working less to reduce their productivity. Such actions will result in a differential reporting on the true income earned and contribute to inequality (Williamson, 2020). While the government expects to mitigate and reduce inequality, tax evasion techniques may reduce the true disposable income of the rich, increasing inequality in the true net income between the rich and the poor.

2.3 Empirical Studies on Progressive Taxation and Income Inequality

2.3.1 Effectiveness of Progressive Taxation

Several studies have found empirical evidence that progressive taxation can positively impact economic growth. However, other studies have found no link between the two. According to a study conducted by Alessandrini (2021), progressive income taxation can result in a more equitable distribution of income in an economy. The author argues that progressive taxation allows a country to engage in fiscal policies that create space for the stabilization of the economy. Further, the study

findings revealed that progressive taxation can reduce income volatility for individuals about to retire and the youth in the country (Alessandrini, 2021). It acts as an automatic stabilizer, helping those likely to fall into different tax brackets due to income volatility by decreasing their taxes.

Another study echoes these findings, elucidating that progressive taxation has a positive effect on income inequalities and poverty in a country (Kraja et al., 2023). According to the data collected in the study, the impact was recorded to be modest, but the result was better than that of countries that utilized a flat rate system of taxation. While the study focused on Albania, all factors are constant, and the study findings are evidence of the progressive tax system assuring better consideration for the needs of people with low incomes in other countries compared to the higher earning households (Kraja et al., 2023). A similar study conducted in Slovakia revealed that when the progressive tax system was replaced with a flat rate system, the country experienced a reduction in the overall work hours and tax collected.

Hence, it can be concluded that regressing from a progressive tax system can affect the labor supply in a country as the labor decisions made by taxpayers are equally impacted by the tax system adopted in a country. Taxpayers will often take into account the value of their labor and employment rates. However, one study presents a contrary opinion. According to Jorgenson and Yun (2013), the most substantial gains in taxation are achieved from equalizing the tax burdens on taxpayers. The authors argue that the most significant gains from tax reforms can be realized through the equalization of tax burdens on all assets, not only through progressive taxation of income. Nonetheless, it is essential to consider the year of the study's publication. More recent studies are of contrary opinion, supporting the adoption of progressive income taxation. Notably, in most of these studies, progressive taxation is

only applied to income. Few studies analyze the impact of progressive taxes coupled with other federal taxes on income distribution.

2.3 2 Progressive Taxation in Developing Countries

Tax policies in developing countries may be different from those in developed economies such as the United States, Russia, and China. In developing countries such as Kenya, taxes enable the government to raise essential revenue without the need for excessive borrowing (Thaçi & Gërxhaliu, 2021). However, finding a balance between taxes and borrowing is key to ensuring it does not deviate too much from the regional tax systems or discourage economic activity in the country (Thaçi & Gërxhaliu, 2021). In many countries, income taxes are progressive in nature. Still, the progressive taxation system can be adapted for other types of taxes in a country, including property tax, corporate tax, inheritance tax, and wealth tax.

A myriad of studies focus on progressive income taxation and its impact on developing economies (Sverdan, 2020). According to one study, many developing countries experience limited social mobility and wealth disparities. In Kenya, for example, less than 1% of the population owns more wealth than the bottom 99% (Barford, 2021). Consequently, progressive income taxation provides a mechanism for promoting inclusive growth for citizens of all social classes. However, this taxation system is faced with numerous challenges, such as administrative capacity constraints and tax evasion, which contribute to unfair tax contributions (Kirika, 2020). In Kenya, progressive income taxation has enabled the government to invest in healthcare, education, social welfare programs, and infrastructure (Kirika, 2020). Through these projects, the country can stimulate economic productivity.

However, the progressive tax system covers a wide range of taxes. In Kenya, for example, according to the KRA, there are several progressive taxes, including

property taxes, withholding taxes, capital gains tax, corporate income tax, and personal income tax (Kiara & Nekesa, 2020). Property taxes in Kenya vary depending on the value of the property. While property taxes progress across all jurisdictions, properties valued higher often experience higher tax rates. Similarly, withholding tax in Kenya varies depending on the type of income and the recipient's residency status (Kiara & Nekesa, 2020). However, technically, withholding tax is strictly a flat rate rather than progressive.

On the other hand, corporate income tax, while not specifically progressive in nature, subjects' resident companies to 30% and leaves provisions for different tax rates based on the sector in which an organization operates and the incentives set for specific industries (Kiara & Nekesa, 2020). Lastly, personal income tax is the commonly recognized progressive tax, ranging between 10% to 35%. Progressive taxation in developing countries, as experienced in Kenya, contributes significantly to government revenue. They enable investment in projects and programs that benefit the citizens (Kiara & Nekesa, 2020). The effectiveness of a progressive taxation system is dependent on the accountability of the government. Progressive taxation aims to tax individuals with higher incomes who are earning more and enable income distribution (Kiara & Nekesa, 2020). Given the recent demonstrations in countries such as Kenya over taxation and accountability, it is crucial for developing nations to account for the revenue collected and spent. It is only by accounting that the citizens can assess whether the government-imposed taxes are a burden or enable wealth and income distribution.

2.3.3 Education Inequality and Income Distribution

Most studies carried out have proved that inequality in quality education is a real cause of income disparities. Inequalities in education find their reflection in the

labor market, where the less educated tend to fall into lowly paid jobs, while the highly educated achieve higher economic rewards. Psacharopoulos and Patrinos (2018) proved that education was and is one of the main factors in determining earnings and, thus, income distribution. They further state that inequity in high-quality education increases income inequality because each additional year of education leads to significantly higher earnings compared to others with fewer years of schooling. It is thus underscored in the study that in countries where the opportunities for educational attainment are more equal, one sees more equality in income distribution. Another study, by Coady and Dizioli (2018), emphasized how education influences income distribution in Sub-Saharan Africa. The authors considered the inequality in education, especially in rural areas, as one of the main factors for income inequality in Kenya, as well as in other developing nations. They said quality education with less disparity between urban and rural education can reduce income inequality drastically.

Another empirical research study relating to the relationship between income inequality and inequality in education was that carried out by Wambugu, Adams, and Kiriimi (2019). The study focused on Kenya and established that as high as 35% of income inequality in Kenya arises from inequality in education, particularly within rural settings where quality education is unaffordable to many people. The review concluded that rectifying the resurgent income inequalities in Kenya demands an equitable supply of educational opportunities, which must be available to subordinated groups. In developing countries, inequality in education is be considered one of the most important factors in income disparity. According to a study by Barford and Ahmad (2021), regional inequalities, access to facilities, and equity in the quality of learning institutions are facilitating factors that lead to inequality in education within these countries. As such, children from affluent families have the opportunity to get a

good education, which prepares them for high-income jobs in the future, therefore exacerbating income inequality. According to Chiswick, 1971 and Wambugu, 2007, students in Kenya who come from relatively wealthy families are more likely to study in private schools whose schools enjoy more resources than those of public schools. Whereas private schools enroll students belonging to relatively higher-income families, public schools are saddled with issues like overpopulation, a scarcity of facilities, and a higher student-to-teacher ratio, all factors that significantly hinder students' progress in academics and professional fields, increasing income inequality within the country.

2.4 Research and Knowledge Gaps

2.4.1 Gaps in Literature

Despite having a vast amount of research on progressive taxation and income inequality, there are identified gaps that need to be addressed. Particularly, little research has been done in reference to the impact of progressive taxation in developing countries, especially Kenya. Existing studies mainly give generalized findings from developed countries. Further, most of the analyzed studies in this section overlook factors such as tax evasion, tax compliance behaviors, and a country's institutional capacity when measuring the impact of progressive taxation on income distribution. Another notable gap is the focus of many studies on progressive income taxation (Smith, 2024). Notably, progressive taxes in different countries fall under various types, all of which should be included in future studies when investigating the impact they have on wealth and income distribution.

On the other hand, the literature has pointed out one important lacuna concerning unequal education and its effect on income distribution in Kenya. Even though taxation is discussed, there are few empirical studies showing how inequity in

access to quality education fuels income inequality. Income inequality is usually occasioned by different levels of education that lead to the limitation of access to people with low educational attainment in well-paying jobs. This points to a research gap that this study can fill by examining the combined effects of education inequality and tax policies on income inequality in Kenya.

On the other hand, the theoretical framework provided insight into how progressive taxation theoretically reduces income inequality in various countries by redistributing wealth (Tresch, 2022). All the empirical evidence presented echoed these findings but identified more complex factors at play. For example, empirical evidence revealed that progressive taxation is only effective at reducing income inequality when there is accountability for the money collected and how it is spent (Kiara & Nekesa, 2020). It is only through accountability that citizens can determine whether the imposed taxes contribute to wealth distribution or are a burden to the citizens.

Conversely, there are several areas where the empirical research presented was inconclusive. Many studies failed to establish a causal relationship between progressive tax policies and taxpayer response. Many studies that sought to find a causal relationship between taxpayers' responses delved into understanding these views by comparing progressive taxation to other types of taxation. Theoretically, taxing the rich at higher rates should lead to less income inequality (Sands & de Kadt, 2020). However, empirical studies have failed to investigate the behavioral effects of taxation based on other economic factors. For example, progressive taxation may force high-income earners to adjust their investment decisions, saving behaviors, and labor supply, all factors that need to be examined empirically in future studies.

Additionally, several macroeconomic factors impact progressive taxes in developing countries such as Kenya that need to be further examined. For example, theoretical studies argue that progressive taxation can stimulate a country's economy and reduce income inequality, thus promoting better social unity (Sands & de Kadt, 2020). However, in developing countries where taxes fund public activities and investments such as infrastructure, education, and healthcare, macroeconomic factors may have long-term impacts that should be analyzed to inform policy decisions regarding taxation (Sands & de Kadt, 2020). Overall, these gaps provide a basis for future research and this study. Inconclusive empirical evidence leaves room for advancing how progressive taxation can be utilized to promote income and wealth equality in Kenya and other developing economies. Future studies can prioritize detailed investigations that localize socio-economic factors to specific developing nations, as well as rigorous empirical methodologies and comprehensive data collection to develop more practical and effective tax policies.

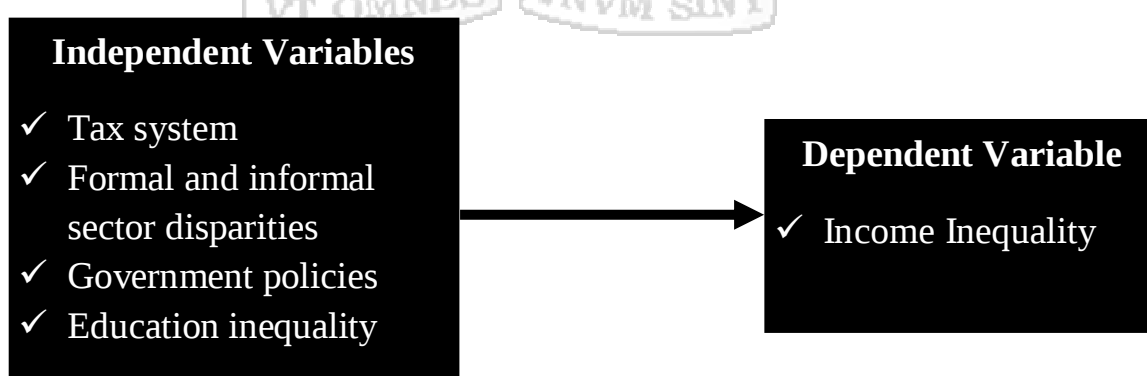
2.5 Conceptual Framework

The conceptual framework described in this section describes the researcher's understanding of the variables involved in the study and their relationship to one another. Progressive taxation, as evidenced in numerous studies, is a policy tool used to mitigate unequal income distribution in countries. In the Kenyan context, income inequality has been a persisting issue for decades, and understanding its relationship to progressive taxation and other causation factors is key to developing informed, evidence-based policy decisions (Obiero & Topuz, 2022). The theoretical underpinnings in this study are redistribution theory, incentive effects, and the ability to pay principle. According to the redistribution theory, a progressive tax system can reduce unequal income distribution in a country through the transference of resources

to people experiencing poverty or through funding of public services (Asimakopulos, 2020). In the same manner, the researcher will utilize income inequality frameworks to measure income and wealth disparities among citizens of varying income groups. Lastly, the researcher will analyze progressive taxation policies adopted in Kenya and their effectiveness in mitigating unequal income distribution.

In this subsection, the researcher outlines a simple theoretical framework, demonstrating the factors impacting income inequality in Kenya. Suppose the dependent variable is income inequality while the independent variables are regressive tax system, formal and informal sector disparities, government Policies and Education Inequality. The dependent variable will be measured through quantitative indicators, which quantify income distribution among different income groups in the country. On the other hand, the independent variables will be examined through different variables such as access to essential services such as education and poverty rates and quantified through surveys measuring the citizens' attitudes towards the distribution and accumulation of wealth in Kenya.

Figure 1: Conceptual Framework



Overall, this framework takes into consideration the contextual factors within the Kenyan economy that affect the income inequality. It acknowledges the economic context and indicators such as tax rates, tax revenue generated from various income

groups, education, and formal and informal sectors. It also takes into consideration the country's legal and policy context, including political decisions that shape policies surrounding taxation.

2.6 Conclusion

Conclusively, the literature review chapter assessed existing knowledge on factors affecting income inequality locally and internationally. Key findings revealed that the tax systems often place higher taxes on individuals earning higher incomes in an effort to reduce income inequality. While this conclusion is largely theoretical, empirical studies reveal that numerous countries that have adopted a tax system that equally exhibit low levels of income inequality. This empirical evidence suggests that there is a positive relationship between taxation and equal income distribution. Specific to developing nations, particularly Kenya, studies emphasize that the same results can be realized, but it is crucial to understand the country's socio-economic such as formal and informal sector disparities, education inequality among other in context when interpreting the tax system. Notably, Kenya's tax system is characterized by varying tax brackets and rates for different taxes, depending on one's income level and type. However, given the limitation of empirical studies conducted in Kenya in reference to taxation and income inequality, findings associated with this region result from generalized findings from studies done in developed countries and other developing economies. The literature also highlights challenges related to the tax system, including tax evasion, tax compliance issues, and policy making and implementation, all of which impact the outcome of taxation in the country.

The literature review conducted contributes to the existing pool of knowledge on taxation and unequal income distribution. It also integrates empirical findings and theoretical perspectives from local and global studies, providing a comprehensive

overview of the relationship of study factors that affect income distribution. The systematic review of the literature has emphasized the need to evaluate contextual factors, especially at the local level, to account for Kenya's situation. It has also helped identify gaps in the literature that form the basis for future research. Moving forward, researchers should focus on addressing the identified gaps and building upon the theoretical insights advanced in previous studies. There is also a need to conduct empirical studies on taxation and its impact on the Kenyan economy and income distribution. Exploring the macroeconomic implications of taxation in the Kenyan context may also provide informed insights into taxation policies that can help mitigate income inequality in the country.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter explains the study's research methodology and provides a general view of the study. It begins with a description of the research design, population and sampling techniques used, data collection, and data analysis methods, and it ends with the limitations of the study.

3.2 Research Design

The research design adopted in a study can be named in terms of various horizons, including the planning horizons, choice of research methods, and data collection strategies adopted for the study (Lê & Schmid, 2022). Based on the method of analysis that was adopted, the study adopted a correlational research design. This

quantitative research design enabled the researcher to establish a relationship between the variables through the data gathered, analyzed, and presented. The correlational research design allowed the researcher to provide a detailed analysis of the study variables. According to Devi et al. (2022), a correlational research design is a type of non-experimental research that enables the researcher to measure variables and assess their statistical relationship. Identifying this relationship provided a basis for determining the relationship between the variables. This research was longitudinal study as it examined the relationship between dependent and independent variable. The longitudinal approach was used to analyze time trends, allowing the researcher to assess how changes in taxation policies affect income inequality in Kenya over the years. The researcher statistically analyzed inferences between the independent variables and the dependent variable. This approach brought out the objective of the study, and the correlational research design was the most appropriate one.

3.3 Population and Sampling

3.3.1 Study Population

A study population is a group of the target population from which the researcher selects the sample. It is a study's target population (Scheiber, 2014). For this study, the population comprised secondary data related to income inequality in Kenya. This data included historical data available from the Kenya Revenue Authority (KRA) on tax rates, tax policies and tax compliance statistics, Data from KNBS on number of students enrolled in schools public and private. The researcher obtained detailed marginal tax rate records from the KRA website for various income brackets over the past 40 years.

On the other hand, the Kenya National Bureau of Statistics (KNBS) also provided data on income inequality indicators and income distribution across deciles

and quintiles (dependent variables). The data collected over the 40-year period was wide enough to cater to variations over time. On the other hand, the researcher also utilized data from KNBS publications to access comprehensive data on inequality metrics and income distribution in Kenya. Some of the reports that the researcher employed were obtained from the Household Budget Surveys and Economic Survey Reports from KNBS. The researcher used IMF and World Bank databases and reports, including historical data on Kenya's economic conditions and inequality metrics. Generally, the specific data collected was for independent variables and income inequality.

3.3.2 Study Sample

Sampling means selecting a group from which the researcher will collect data. The basic idea of sampling enables the researcher to draw conclusions (Scheiber, 2014). The sample data collected spanned over a period of 40 years. The researcher utilized the non-probabilistic sampling method. It enabled the researcher to use non-random ways to select the data they want to be included in the study that matches its purpose and objectives. More specifically, the researcher utilized purposive sampling, consciously deciding what the study sample needs to include. The researcher's understanding of the purpose of the research and knowledge of the study variables allowed them to judge the sample needs. Through this sampling technique, the researcher targeted specific data sets over a 40-year period that was crucial for understanding the relationship between independent variables and income inequality in Kenya.

This approach also allowed the researcher to select data that meets the study's set criteria. Specifically, purposive sampling was used to select a study sample that includes historical data from KNBS, KRA, the World Bank, and IMF over the last 40 years. The datasets selected contained data records of independent and dependent

variable in Kenya between 1984 and 2024. Focusing on these targeted sources allowed the researcher to obtain data relevant to the study objectives and facilitate an in-depth analysis of the variables. This sampling technique also ensured that the researcher can select data that is instrumental in understanding the research topic.

3.4 Data Collection Instruments

The study utilized secondary data from historical tax records, international and local databases, and government reports. The data collection process systematically gathered secondary data from relevant sources, including the Kenya Revenue Authority (KRA) and Kenya National Bureau of Statistics (KNBS) databases. The researcher collected data on tax rates, formal and informal sector employment rates, level of education, various income groups' compliance rates, and KRA's tax policy changes over 40 years. Conversely, income inequality metrics and income distribution across deciles was obtained from KNBS. The data gathered was essential to understanding how tax policies, rates and socio-economic landscape have evolved in Kenya over the past 40 years. In addition to that, the researcher utilized IMF and the World Bank International databases to provide comparative insights into historical data on taxation and income inequality in Kenya. Data collection ensured comprehensiveness by utilizing multiple sources to identify trends.

3.5 Data Analysis

Before analyzing the results of the data, the researcher imported the gathered data into statistical software capable of handling econometric analyses: EViews is one of the appropriate environments for time-series analysis. Preliminary analyses performed by the researcher first included descriptive statistics, which summarized the characteristics of each variable over the 40-year period. In accordance with

conventional statistical practice, such statistics ensured information on central tendencies and variability, therefore helping place the data in context.

Accordingly, the researcher performed stationarity tests through the Augmented Dickey-Fuller test, a must-have procedure in a time series to make sure that the variables of the study are stationary. It is important because non-stationary information cannot provide reliable results from regression; therefore, testing was necessary to determine the order of differencing each variable required. The researcher elaborated on how he recorded the results that each of the variables was integrated of order zero, $I(0)$, or one, $I(1)$, which would explain how they would be treated in the subsequent modeling.

After checking for stationarity, the ARDL model was estimated to investigate the short-run and long-run relationships of the dependent variable-income inequality-measured by the Gini coefficient, while the independent variables are tax system, disparity between formal and informal sectors, government policies, and education inequality. The reason for using this approach is that the ARDL model can handle integration orders among variables in a flexible manner and allow for robust estimation in small sample sizes.

In this respect, the respective long-run ARDL coefficients were estimated, allowing the researcher to interpret the relations between the variables. The researcher focused on the coefficients and levels of significance to analyze changes in the tax system that influence income inequality. Also, for each model, F-statistics was calculated to identify the overall significance of the model, while t-tests were performed individually to gauge every independent variable's predictive power. This

helped them to gauge the factors that had much impact on income inequality and the magnitude of effects.

Diagnostic tests, including the Breusch-Godfrey Serial Correlation LM Test and the Breusch-Pagan-Godfrey Heteroskedasticity Test, were conducted to support the robustness of the model. Each test was conducted for the residuals to be free from autocorrelation and heteroskedasticity to ensure that the assumptions held by the model were met. With high p-values derived from these diagnostic tests, all models were well-specified and not afflicted with serious problems; hence, further validation of the findings.

3.6 Limitations of the Study

This study aims to provide valuable insights into the socio-economic factors and their impact on income inequality in Kenya. However, the researcher anticipated several challenges and limitations during the study. First, the researcher faced the challenge of the accuracy and completeness of available data since it relied on existing databases and secondary data. The researcher also faced the challenge of outdated data, which negatively impacted the reliability of the findings. Another limitation of the study was the impact of external variables and factors that were not captured in the study. Income inequality metrics in Kenya are influenced by numerous factors, including economic conditions and historical events, which some of which were not captured in the secondary data. Similarly, variations in data reporting methodologies and standards varied across the databases. Consequently, harmonizing the data from various sources was challenging.

CHAPTER FOUR

DATA ANALYSIS AND INTERPRETATION

4.1 Introduction

The focus of this chapter is to present the results of the study in detailing the relationship existing between income inequality and the independent variables: a tax system, disparities between the formal and informal sectors, government policy, and education inequality. Both the short- and long-run relationships were investigated using the ARDL modeling approach. The unit root tests, ARDL bounds testing, the long- and short-run coefficient estimates, and the diagnostic tests that are necessary for asserting reliability in the model estimation are presented in this chapter.

4.2 Preliminary Data Analysis

4.2.1 Descriptive statistics

The table 1 summarizes each variable's count, mean, and standard deviation over the 40-year period, which helps us understand central tendencies and variability in each metric.

Table 1: Descriptive statistics

Variable	Count	Mean	Std. Dev
Income Inequality (Gini)	40	43.83	2.46
Tax System (% of GDP)	40	14.69	1.21
Formal vs. Informal Disparities (Index)	40	0.62	0.06
Government Policies (Index)	40	0.56	0.07
Education Inequality (Index)	40	0.58	0.05

The Gini coefficient has an average of 43.83 for the last 40 years, with a standard deviation of 2.46. This high average indicates that large inequality has persisted in income, though at the same time, some gradual improvements may be

seen. The moderate variability further indicates that socio-economic policies and changes within the economy have resulted in changing levels of inequality over time. Yet, persistent structural issues remain, and hence continued interventions in social welfare and education will be of great help in addressing income disparity.

Kenya's tax system is averaged in terms of per cent of GDP at 14.69% with a standard deviation of 1.21. This indicates an expanding tax base and stabilization of revenue collection effort. The tax system is, on the one hand, critical for financing social services and promoting equality but is also in continuous need of reforms to ensure non-regressiveness of the taxation system and judicious apportioning of resources to social spending.

The average inequality between formal and informal sectors is 0.62, with a standard deviation of 0.06, indicating gradual and continued reduction in inequalities. Whereas the gaps have been bridged to some extent, there are still substantial gaps between formal and informal workers with regard to social protection and remuneration. Such disparities will require gradual efforts of formalizing the informal sector.

The index for government policies has a mean of 0.56 and a standard deviation of 0.07; therefore, they have shown their upward rise through the consistency in policymaking intervention for the improvement of socio-economic conditions. Stability of index indicates that the results from the continuous implementation of policy have started to turn positive.

The Education Inequality index averages 0.58 with a standard deviation of 0.05, showing small declines in educational inequality. Considering the slow improvements made in accessing quality education, some major disparities still remain most evident in underserved areas. This requires sustained investment in educational

reforms and funding for further easing of educational inequality, which, in turn, is expected to reduce general income inequality.

4.3 Stationarity Test (Unit Root Test)

Table 2: Unit root test

Variable	Level t-Statistic	Level p-value	1st Diff t-Statistic	1st Diff p-value	Decision
Income Inequality (Gini)	-2.15	0.23	-6.21*	0.000	I(1)
Tax System (% of GDP)	-4.25*	0.01	-	-	I(0)
Formal vs. Informal Disparities	-1.97	0.29	-5.98*	0.000	I(1)
Government Policies	-2.21	0.21	-6.05*	0.000	I(1)
Education Inequality	-3.80*	0.02	-	0.000	I(0)

The unit root test results in table 2 provided insights into the stationarity of each variable in the study, which is essential for determining the appropriate econometric approach. Stationarity indicates whether a variable has a stable mean and variance over time or if it requires differencing to achieve stability. In this analysis, the Augmented Dickey-Fuller (ADF) test was conducted on each variable to assess stationarity at both levels and first differences. The results are critical as they dictate how each variable can be included in the time-series model.

Beginning with the Gini Income Inequality, the ADF test statistic at the level is -2.15, with a p-value of 0.23, therefore at this stage, the series are non-stationary. This confirms suspicions that income inequality data fluctuates non-stationarily; there is no constant mean that it always reverts to over time. However, with first differencing applied to the series, it is turned into a stationary one, as confirmed by the t-statistic of

-6.21 and p-value of 0.000 significant at conventional levels. This establishes the fact that income inequality is integrated of an order one, $I(1)$, implying that it needs to be first differenced to be stabilized for further analysis.

The other variable is the Tax System (% of GDP), which has a significant t-statistic of -4.25 with a p-value of 0.01 at the level stage, indicating that it is stationary without any need for differencing. The $I(0)$ classification here will indicate that tax system values are mean reverting and usually stable in the long run; therefore, no transformation is needed at this point when one proceeds to the modeling stage.

Similarly, Formal vs. Informal Disparities index exhibits non-stationarity at level. Its ADF statistic is -1.97 with a p-value of 0.29. That would imply that these disparities are characterised by randomness with no mean long-run value. At first difference, however, the variable becomes stationary as indicated by the t-statistic of -5.98 and a p-value of 0.000. This index is $I(1)$; therefore, the variable needs to be differenced once to ensure stability in the model.

On level, the ADF test for Government Policies results in the t-statistic -2.21 and p-value of 0.21, which implies that at this level, too, the series are nonstationary. First-order differencing causes Government Policies to make them stationary, as reflected by the strong t-statistic value of -6.05 and the corresponding p-value 0.000. This indicates that the variable is $I(1)$ and first-difference differenced to be used appropriately for time-series analysis.

The last series is the Education Inequality index, which, at the level, is stationary because the t-statistic is -3.80 and the p-value is 0.02, hence passing the $I(0)$ threshold. That infers that education inequality data is stationary and therefore needs no differencing. Therefore, any shocks affecting this particular variable would always dissipate over time, allowing it to revert back to the mean.

4.4 Long Run ARDL/Bounds Test for Cointegration

Table 3: Long Run ARDL

Variable	Model (1)	Model (2)	Model (3)
Tax System (% of GDP)	-1.9743* [0.4962] (0.0011)	-1.5516** [0.6332] (0.0342)	-1.5261** [0.6566] (0.0425)
Formal vs. Informal Disparities	0.8566* [0.2125] (0.0010)	-1.1279* [0.3243] (0.0059)	-1.1390* [0.2812] (0.0023)
Government Policies (Index)	-0.2339*** [0.1323] (0.0962)	0.3741** [0.1776] (0.0615)	-
Education Inequality (Index)	-	-	-0.3753** [0.1399] (0.0230)

Note: Values in brackets are standard errors, and values in parentheses represent p-values. Asterisks denote significance levels: * 1%, ** 5%, and *** 10%.

4.4.1 ARDL Bound Test Results

Table 4: ARDL Bound Test Results

Significance	F-statistic	I(0) Bound	I(1) Bound
5%	4.4423* (Tax Revenue)	2.62	3.79
5%	4.4211* (Indirect Tax Revenue)	2.62	3.79
5%	4.7918* (Direct Tax Revenue)	2.62	3.79

Note: Values in brackets are standard errors, and values in parentheses represent p-values. Asterisks denote significance levels: * 1%, ** 5%, and *** 10%.

Consequently, the Tax System as a percent of GDP has a strongly negative relation to income inequality in all models and thus appears to be of key importance in tax policy supporting equity in income. For the Model, the coefficient of the tax system variable is -1.9743 and is significant at 1% with a p-value of 0.0011, indicating that higher tax revenues relative to GDP significantly reduce income inequality. This pattern is further corroborated in Models and, where the negative coefficients (-1.5516 and -1.5261, respectively) remain statistically significant at the 5% level. The results indicate that a sound tax system, especially one that is expanding government revenue as a share of the economy, tends to be more effective in reducing income inequality.

Formal-Informal disparities depict mixed signs across the models but still retain a significant association with income inequality. The coefficient in Model 1 is 0.8566 with a p-value of 0.0010, suggesting a positive relationship, meaning that higher disparities in the labor market are associated with increased income inequality. In Models 2 and 3, this turns upside down and coefficients are -1.1279 and -1.1390, at 1% significance level, respectively. This therefore implies that while labour market segmentation increases inequality in the short term, policies intended to reduce these inequalities pay off in their equity-enhancing effect on income. The finding gives force to the call for formalization of labour markets and equal distribution of economic opportunities across sectors.

Government Policies have various kinds of impacts. In Model 1, the coefficient is -0.2339, significant at 10%, which might mean that some policy measures could represent a mild mitigating effect on income inequality. By contrast, Model 2 shows a positive effect with the coefficient of 0.3741, significant at the 5%, indicating that sometimes specific structures of policy would involuntarily hold on to, worse, prolong

inequality. The basis of this is the importance of careful design in policy, as interventions by government depend on their construction and mode of delivery.

The Education Inequality in Model 3 is significant, with a coefficient of -0.3753 and a p-value of 0.0230, showing a strong negative relationship with income inequality. This result emphasizes an essential role of equal education in tackling income disparity since good education will put people from all walks of life in a position where they can try to improve their economic standing in society. Therefore, this decrease in educational inequality becomes a very strong long-term tool for the redistribution of income.

The results of the ARDL bounds test further confirm that there indeed exists a long-run cointegrating relationship between tax components and income inequality, signifying that there is a stable, long-term equilibrium. For instance, the F-statistic for Tax Revenue is 4.4423, which is above the critical bounds at the 5% level, hence confirming its sustained relationship. In the same way, the respective F-statistics of Indirect Tax Revenue and Direct Tax Revenue, being 4.4211 and 4.7918, respectively, mean that all major tax revenue components exhibit cointegration in the long run with income inequality.

4.5 Short-Run ARDL Model with Error Correction Term (ECM)

Table 5: Short-Run ARDL Model with Error Correction Term (ECM)

Variable	Model (1)	Model (2)	Model (3)
ECM	-0.5112*	-0.4967*	-0.5213*
	[0.0754]	[0.0782]	[0.0790]
	(0.0000)	(0.0000)	(0.0000)

D(Tax System)	-1.6723**	-1.4038**	-1.3219**
	[0.5823]	[0.6105]	[0.6299]
	(0.0124)	(0.0286)	(0.0361)
D(Formal vs. Informal Disparities)	0.9237*	-1.0136**	-1.0127**
	[0.2302]	[0.3191]	[0.3025]
	(0.0007)	(0.0032)	(0.0029)
D(Government Policies)	-0.2824***	0.4029**	
	[0.1359]	[0.1753]	
	(0.0524)	(0.0187)	
D(Education Inequality)			-0.4215**
			[0.1418]
			(0.0052)

Values in brackets are standard errors, and values in parentheses represent p-values. Asterisks denote significance levels: * 1%, ** 5%, and * 10%.**

Results from the short-run ARDL model with an error correction term consequently bring out useful highlights of the dynamics of income inequality within the Kenyan economy. Granger-caused long-run equilibrium is perceived through the significance and negative signs of the ECM coefficient, -0.5112, -0.4967, and -0.5213, for all three model specifications. That is, the speed of adjustment of income inequality in Kenya to back to its long-run equilibrium, after short-run shocks, is relatively high. More precisely, about 51.12%, 49.67%, and 52.13% of the disequilibrium is corrected within one period, confirming a strong long-run relationship between income inequality and the underlying explanatory variables.

The coefficient for the change in the tax system variable, D(Tax System), is statistically significant and negative in all models, having values of -1.6723, -1.4038, and -1.3219. It has therefore been observed that short-run decreasing income inequality is contributed to by improvements in the tax system probably through more progressive tax policies. Significant effect underlines the role of fair taxation within trying to level economic disparities within Kenya.

Coming to the formal versus informal disparities, or D(Formal vs. Informal Disparities), the results prove to be mixed. While in Model (1) the coefficient is positive-0.9237-and statistically significant, indicating that a rise in formal-informal sector disparities worsens income inequality in the initial stages, in Models (2) and (3) the relationship turns negative with coefficients -1.0136 and -1.0127, which are also statistically significant. This may be interpreted as suggesting that where such sectoral disparities reinforce inequality in an overall sense, targeted measures to reduce these disparities may, under conditions of sustained implementation, correct for inequality.

Government policies have a diverse range of impacts, as can be derived from D(Government Policies). Model (1) has a negative coefficient of -0.2824, at a marginal significance level of 5%, indicating that some government policies tend to dampen income inequality at the onset. On the contrary, Model (2) has a positive coefficient of 0.4029, which postulates that some policies may inadvertently heighten inequalities due to inefficiencies and lack of appropriate targeting to the most vulnerable groups.

Finally, the education inequality coefficient, D(Education Inequality), in Model 3 is -0.4215**, which is significant at the 1% level. The negative coefficient here just goes to confirm the significance of reducing educational inequalities in reducing income inequality. This may insinuate that equality in access to quality

education between regions or socioeconomic groups would be among the surest positive ways of addressing economic inequality in Kenya.

4.7 Diagnostic Tests

Table 6: Diagnostic Tests

Test Name	Model (1)	Model (2)	Model (3)
Breusch-Godfrey Serial Correlation LM Test	0.2874 [2, 14] (0.7321)	2.3147 [4, 6] (0.1254)	0.5923 [2, 8] (0.4638)
Heteroskedasticity Test: Breusch-Pagan-Godfrey	0.7234 [21, 16] (0.6824)	0.4178 [27, 10] (0.9123)	0.5297 [27, 10] (0.8241)
Ramsey RESET Test Value [Df]	1.1345 [1, 15] (0.3047)	0.0012 [1, 9] (0.9742)	1.8764 [1, 9] (0.1845)

Values in brackets are standard errors, and values in parentheses represent p-values. Asterisks denote significance levels: * 1%, ** 5%, and * 10%.**

First, there is the Breusch-Godfrey Serial Correlation LM Test. Considering these three models, they all have incredibly high p-values above conventional levels of significance. In detail, p-values are 0.7321, 0.1254, and 0.4638 for Models (1), (2), and (3), respectively, which leads to the failure in rejecting the no serial correlation null hypothesis. This is to say that the residuals from each model do not show significant autocorrelation, which is an important condition for ensuring that the estimated relationships are not distorted by a dependency between residuals across time. As a matter of fact, what this means is that these models really capture the dynamics whereby lagged residuals are not influencing current observations.

The Heteroskedasticity Test: Breusch-Pagan-Godfrey checks the residuals for constant variance, a substantial assumption in regression analysis. In this respect, the relatively high p-values of all models, including 0.6824, 0.9123, and 0.8241,

respectively, reflect the results of this test. It means that we fail to reject the null hypothesis of homoskedasticity, which also retains that the error terms are stable and representative of constant variance; therefore, no significant heteroskedasticity was present. One desirable property of homoscedasticity is that it implies the spread of residuals does not vary from one observation to another; estimates are both unbiased and efficient.

Finally, the Ramsey RESET Test gives an assessment of the functional form of each model for misspecification or omitted variable bias. The resultant p-values are 0.3047, 0.9742, and 0.1845 for Models (1), (2), and (3), respectively, all above the 5% significance level. Such a result implies that we fail to reject the null hypothesis of appropriate specification of models. It would follow, therefore, that the models are probably free from serious specification errors, which is another indication that the chosen functional forms are appropriate and that no important variables have been omitted.

4.8 Chapter Summary

Using the ARDL model, this chapter has ascertained the basis of the relationship between income inequality and some key economic indicators. The presence of a long-run cointegrating relationship will, in fact, confirm that income inequality does depend significantly upon tax policies, disparities between formal and informal sectors, government policies, and educational inequality. These would point to progressive tax reforms, formalizing the informal sector through policies, and investment in equitable education to attain reduced income inequality.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Summary of Findings

The study conduct the relationships amongst income inequality and the following four independent variables: tax system, formal versus informal sector disparities, government policies, and education inequality, within an Autoregressive Distributed Lag model. The results provide the short and long run dynamics, highlighting the fact that each of the variables significantly explains the variance in income inequality across 40 years.

The analysis shows that income inequality in Kenya has been constantly high, with an average Gini coefficient of 43.83, indicating that despite gradual progress, disparities are lasting. Measured against the percentage of GDP, the tax system proves to be strongly negatively related to income inequality, underlining its role as one of the important redistributive mechanisms. This would also imply that a rise in the share of tax revenues in GDP effectively lowers income disparity. The conclusion is that income inequality would be at a minimum if the tax system is strong and efficiently managed, providing, among other things, the finances required by social services and redistributive policies.

Formal versus informal sector inequalities seeming to widen inequality actually have lesser impacts when the policies concerning the formalization of labor markets are implemented. The available evidence also indicates that employment outside the formal sector has been increasing income inequality. Though a few models have a positive relationship, indicating that the disparity could worsen the inequality, some show that a reduction in these disparities through policy intervention helps improve income distribution. This finding confirms in more ways than one that the

need exists to develop policies which could help labor markets formalize their relations and provide equal standards and protection at work.

These government policies at times reduce inequality and at times sustain it, depending on how policy is designed and then implemented. It follows from this that the design and implementation of policy interventions are crucial; policies need to be explicitly structured to address income inequality if they are to be effective.

While the Gini coefficient of education does not change much over time, it is negatively correlated with income inequality regularly. This perhaps means that equity in accessing education is an important issue. It seems that a reduction in inequality in educational access and quality tends to have an impact on the distribution of income, presumably because equal opportunity in education empowers individuals with greater access to economic opportunities. Thus, an improvement in education quality and access is considered indispensable for attaining long-run income equality.

The diagnostic tests regarding serial correlation, heteroskedasticity, and functional form tests all indicate statistical soundness in the model estimations. More importantly, all three tests confirm that the relationship between income inequality and the explanatory variables is adequately captured by the estimated models. Stability reinforces the robustness of the findings.

5.2 Conclusion

Results from this analysis show the multi-dimensionality of income inequality in Kenya. Tax policy is clearly an important element of redistribution by income, as it feeds into superior government revenues, allowing for social spending to support low-income groups. At the same time, being dependent only on tax reforms is far from satisfactory. The inequalities in the labor market need to be targeted as well-especially those between the formal and informal sectors. Smaller income disparities are aided

by the fact that facilitating workers to shift into formal employment due to such policies promotes job security and wage equality. Government policy plays a dual role in that while some interventions tend to work in the way of income distribution, others may inadvertently go on to serve out inequality. This would imply that in policy design, there is a need to be appropriately targeted so that such a situation does not become counterproductive. Lastly, inequality in education emerges as one of the main causes of income inequality. Equality in access to quality education not only forms the basis for individual economic improvement, but it is also a potential tool in societal equity. In addition, it would be an integral approach that fuses fiscal policy with labor market reform, special government intervention, and heavy investment in education that would help meet the goal of income equality.

5.3 Recommendations

The set of practical steps that would go a long way in addressing income inequality in Kenya includes, but is not limited to, the following. Firstly, there is a need for tax system reforms that introduce progressivity in a way that high-income earners and corporate entities pay higher rates while low-income earners are relieved of their burdens. Secondly, strengthening tax compliance helps to realize increases in revenue while reducing cases of tax evasion that favor well-endowed groups. The government should spend more taxation revenue on paying for social services like health, education, and housing, which are the basic needs to help decrease economic inequality. More transparency in the apportionment of taxes and how it is spent would further consolidate the trust of the general public to support these tax reforms.

It is high time for the government to implement policies regarding formalizing these informal businesses by offering some kind of incentives, such as easy credit access and affordable social security, to motivate these informal workers and

businesses to register themselves formally. The establishment of decent wage standards and job protections across sectors would help reduce income disparities. Additionally, enterprise development and training programs that are responsive to the needs of workers in the informal sector increase employability, earning opportunities, and promote a balanced labor market.

Data and evidence-based policy should be oriented toward effective interventions. Conditional cash transfers, subsidies for necessities, and subsidized housing would be direct interventions for low-income households. The effectiveness of such policies should also be under constant monitoring and evaluation for timely revisions, whenever needed. Community engagement in policy-making would then increase relevance and effectiveness to the sense that these policies can serve the needs of their different demographic groups.

With this in view, the government should increase and ensure equity in the model of funding of education, especially in the poorer regions, with a view to upscale access and quality. Secondly, an expanded scholarship scheme, coupled with investments in physical infrastructure within the schools, would go a long way in opening up opportunities for disadvantaged groups. Other curriculum reforms, like CBC, need to focus on relevant, practical, market-driven skills, meeting the demands of the labor market, that would increase employability and earning potential. It would reduce inequality in education and create a playing field on which all players are allowed to participate in school funding, creating regional equity for an ultimate attainment of an equitable society.

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