FISCAL POLICY AND PUBLIC DEBT IMPLICATIONS ON HOUSEHOLD CONSUMPTION: A CASE OF KENYA.

By

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DECLARATION

I, Naomy Nthenya Muindi declare that:

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ABSTRACT

Fiscal policy can be applied with a stabilisation intention if government finance choices are capable of influencing household consumption behaviour. After the great depression of the 1930s, Keynes ascertained expansionary fiscal policy as the best economic stabilisation tool during a recession as it can crowd in household consumption.

Empirical studies dealing with fiscal policy and public debt implications on household consumption have concentrated more on developed nations and more so, the studies conducted have been based on the assumption of an obvious symmetric relationship between household consumption and fiscal policy. The study objective was to examine if fiscal policy crowds in/crowds out household consumption, and if the Ricardian Equivalence hypothesis holds in Kenya. An empirical analysis was conducted using secondary data for the period between 1971 and 2018. The Nonlinear Auto-regressive Distributed Lag (NARDL) bounds test was used to evaluate the existence of an asymmetric relationship between household consumption (dependent variable) and government expenditure, tax revenue, public debt, real GDP, and inflation (independent variables).

In the short run, both expansionary and contractionary fiscal policies were found not to affect household consumption; only negative changes in inflation significantly impacted household consumption. However, expansionary fiscal policy (through the negative changes in tax revenue) was found to crowd in household consumption, while positive changes in government expenditure were found to crowd out household consumption in the long run. Positive changes in public debt were found to crowd out household consumption as well. For contractionary policies, lowering government expenditure or increasing revenue was found not to affect household consumption in the long run.

Using the Wald test criteria, the independent variables were found to show an asymmetric impact on the dependent. The research findings of this study disclosed that, in the short run, fiscal policy and public debt do not affect household consumption. However, in the long run, fiscal policy and public debt were found to have a significant effect on household consumption, and therefore it was concluded that REH does not hold in the long run.

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LIST OF ABBREVIATIONS AND ACRONYMS

AIH…….. …..Absolute Income Hypothesis

ARDL…… …Autoregressive Distributed Lag

APC……..... Average Propensity to Consume

COMESA…….. Common Market of Eastern and Southern Africa

CSRP……. Civil Service Reform Program

DSGE……. Dynamic Stochastic General Equilibrium

ECM……... Error Correction Model

GDP ……Gross Domestic Product

IMF …….International Monetary Fund

ICC……..International Criminal Court

KNBS……..Kenya National Bureau of Statistics

KRA……Kenya Revenue Authority

LCH……. …..Life Cycle Hypothesis

MPC……. Marginal Propensity to Consume

NARC……National Rainbow Coalition

NARDL…….. ..Nonlinear Autoregressive Distributed Lag

NYS…….. National Youth Service

PIH…… Permanent Income Hypothesis

REH ……..Ricardian Equivalence Hypothesis

RIH……Relative Income Hypothesis

TMP…….. Tax Modernization Programmes

SAPs……..Structural adjustment programmes

STR……Smooth Transition Regression

UECM……Unconditional Error Correction Model

VAT ……Value Added Tax

WBG ----------World Bank Group

CHAPTER ONE:

INTRODUCTION

1.1 Background of the study

2007/2008 worldwide great recession was one of the global events that triggered the use of various government strategies and policies to prevent a global depression. Whereas the short term impacts of those strategies seemed to stabilise the world economy, the short and long run asymmetric impacts are yet to be investigated. Among the policies which have been critical in controlling economic performance are government expenditure, tax adjustments and public debt.

Fiscal policy entails governments' deliberate interventions established to boost a country's economic performance and direct a state's economy with an aim of achieving set objectives(Mutuku, 2015). These policies are either expansionary (intended to boost aggregate demand during a recession) or contractionary (used to even out booms in a country) (Parkin et al., 2010). The major fiscal policy tools that a government applies to influence the aggregate demand, boost the production of goods and services, and distribute wealth include tax revenue or tax structure adjustments, transfer payments, and government expenditure (Mutuku, 2015, Mankiw, 2013). If a country is faced with a destabilising shock, a good fiscal policy should be capable of creating enough fiscal space to counter it. Fiscal policy ramifications are mostly achieved via fiscal budget automatic stabilisation or discretionary changes (Mutuku, 2015).

Kenya has used both budgetary expenditure changes and tax to control its economic performance. However, in most cases, the Kenyan government has used government expenditure expansionary tools to boost aggregate demand, hence making government expenditure exhibit rapid growth. For instance, in the last five decades, government expenditure has grown by more than 100 per cent (WBG, 2020). The World Bank reports also show that in 1971 final government consumption was Ksh 588.16 billion. A decade later, it had escalated to Ksh 938.78 billion, and by 2019 it was Ksh4.67721 trillion (WBG, 2020). Tax rate adjustments and public debt have been employed to finance the rapidly growing

government expenditures. From the mid-1970s to the mid-1980s personal and corporate tax rates were raised, and the new range was set at 10% on the lowest marginal personal income and 65 % on the highest marginal personal income (Karingi and Wanjala, 2005).

In the early 1980s, the second world oil price shock fuelled uncontrolled government expenditure, which ended up putting the country into a budget deficit of more than 6 per cent. This scenario led to the formation of Tax Modernization Programmes (TMP), which were aimed at raising government revenue from 22% to 24% of GDP by the mid-1990s (Muriithi and Moyi, 2003). In 1990, a new tax system was introduced and sales tax was replaced with the Value-added Tax (VAT). By 1992, the tax base was broadened to 28 per cent of GDP (Muriithi and Moyi, 2003). In 2014, the VAT rates were raised from 12 % to 17 % on all goods and services (Mutua, 2012).

In less industrialised nations like Kenya, VAT has turned out to be a key source of government revenue; this is because VAT is possibly the easiest to adjust. Thus so many reforms have been carried out on it (KATHURE, 2017). To increase tax revenue by a projected value of Ksh 10 billion, a new VAT act was inaugurated on 2nd September 2013. Significant changes which were made under this act were; removal of reduced VAT on an electricity rate of 12%, removal of VAT remission, incorporation of the previously zero-rated goods into tax and making exempted goods and services taxable (Eissa et al., 2010). Widening the tax bases in every fiscal year has become a norm in Kenya, and in so doing, tax revenue has experienced some growth.

With all the tax reforms put in place, still, government expenditure has always exceeded tax revenue in Kenya. For example, between 2003 and 2004, government expenditure was K.sh 269.17 billion and K.sh 288.46 billion respectively while tax revenue was K.sh 203.98 billion and 201.62 billion respectively (IMF, 2019). In addition, under the current Jubilee administration regime; government expenditure increased by more than 17%, that is from K.sh 1205.07 billion in 2013/2014 to K.sh 2268.11 billion in 2017/2018 (KNBS, 2018, IMF, 2019). Tax revenue on the other hand has experienced an average growth of only 12.7% between 2013 and 2018. Generally, most countries experience domestic revenue insufficiency challenges and

are not able to meet their planned expenditure, and this has always pushed them to borrow (both internally and externally) to meet the revenue gap. A reasonable level of government borrowing of a country is also capable of enhancing its economic growth which can be observed in its productive capacity and household consumption behaviour (Poirson et al., 2004, Makau et al., 2018). However, persistent accumulation of public debt beyond sustainable levels can be problematic, because it can cause a strain on fiscal variable adjustments through their impacts on Gross Domestic Product (GDP) (Kiminyei, 2014).

The aptitude of fiscal policy to stimulate aggregate demand is immensely influenced by household consumption as fiscal policy displays positive effects capable of boosting economic activities(Saraswati and Wahyudi, 2018). From the Neoclassical perspective, consumption is the eventual target of economic activity, thus consumption per capita becomes a primary tool for gauging the productive success of an economy (Muzindutsi, 2018).

1.2 Household consumption in Kenya and factors that influence it

Household consumption expenditure, formerly referred to as private final consumption expenditure, is the market value of all goods and services (durable goods such as cars included) and expenditures on non-profit organisations servicing households and imputed rent for owner-occupied dwellings but excludes purchases of homes (WBG, 2016). According to Chai and WP3 (2018), household consumption is the key driver of economic growth - it takes more than 60 per cent of GDP in most countries. Also, households tend to change their consumption pattern rapidly, and a range of new goods enter their consumption basket as the wealth of these countries grow (Chai and WP3, 2018). The World Bank reports indicate that household consumption has remained the key driver of economic growth in Kenya, meaning it has been the key element of aggregate demand and has accounted for not less than 78% of the economy's GDP for the last decade (WBG, 2020).

Various factors can influence consumption. These factors include households level of income, wealth, interest rates, age, family size, expectations of the riskiness of future income and fiscal policy (Rodriguez, 2016). Household consumption highly depends on income and all other

factors remaining the same, individuals with high income are likely to spend more on consumption than those with low income. Again, if consumers expect inflation to occur in the near future, they tend to purchase more durable goods in bulk at current low prices, and if expecting a deflation, they wait to purchase them after their prices fall

It has long been believed that high-interest rates lead to an increase in savings hence leading to a reduction in private consumption. On the contrary, other things remaining the same, Keynesians argue that the lower the interest rates, the higher the consumption expenditure and the lower the savings(Keynes, 1936). A sudden increase in wealth is capable of altering household consumption plans. According to Keynes, an increase in wealth may discourage savings and as such encourage consumption(Keynes, 1936). Moreover, economists contend that an increase in liquid assets enhances economic security feelings and therefore prompts higher consumption expenditure. Keynes also believes that household consumption can greatly be influenced by the capital gain (Keynes, 1936).

The terms of a consumers' credit can also influence consumers' consumption behaviour. For instance, a household's demand for durable goods like automobiles and TV sets, among others are more sensitive to credit availability, because a sizable expenditure is involved in such goods (Rekhi, 2020). A high debt level is believed to be capable of dampening consumer demand hence making fewer funds available for current consumption (Rekhi, 2020). Another factor that affects household consumption is fiscal policy (government expenditure, tax and transfer payments). The Keynesians claim that government spending, especially during recessions and downturns, raises employment, investments and profit through its multiplier effect on aggregate demand(Keynes, 1936). Hence government expenditure is capable of boosting aggregate demand and influence household consumption (Mahrous, 2016). In addition, tax cuts and transfer payments are also able to stimulate household consumption. An increase in indirect taxes leads to an increase in the prices of goods, and this may lead to a decline in demand for those goods. Also, an increase in tax tends to lower household consumption as it is capable of lowering consumers' purchasing power (Keynes, 1936).

In Kenya, household consumption is said to be the most relevant tool to determine the well-being of citizens because it is regarded smoother compared to other widely used measures of economic performance such as income (KNBS, 2007). Over the years, household consumption in the country has been improving with the number of people living below one dollar per day declining. For instance, between 1997 and 2006 absolute poverty was found to decline from 52.2% to 45.9% of the total population(KNBS, 2007). This number has been observed to further decline to 36.1% by 2015/2016, indicating a continuous improvement in household consumption in Kenya (KNBS, 2018).

With household consumption taking the greater proportion of GDP of many countries, any factor which affects it negatively similarly affects the economy's productivity. In 2007, 2010 and 2012 the World Bank report for Germany showed that household consumption occupied 55.1%, 56.1% and 55.7% of the country's GDP respectively, USA, 67 %, 68 %, and 69% respectively and South Africa 63 %, 60 % and 61 % respectively (WBG, 2016). Similarly, household consumption in East African Countries was also found to take a significant percentage of their GDP, for example; in the years 2007, 2010 and 2012, household consumption in Uganda took 78.4%, 76.3%, and 77.6 % of GDP respectively, Tanzania 61.4%, 66.5% and 64.5 % respectively and finally, in Kenya, it took 74.52%, 77.33% and 78.81 percentage of GDP (WBG, 2016).

1.3 The trends in household consumption in Kenya

In line with Chai and WP3 (2018), household consumption has been the backbone of the economic growth of Kenya, and for the last five years, it accounted for at least 78 % of the country's GDP (WBG, 2020). Figure 1 shows the trend of household consumption in Kenya for the period between 1971 and 2019.

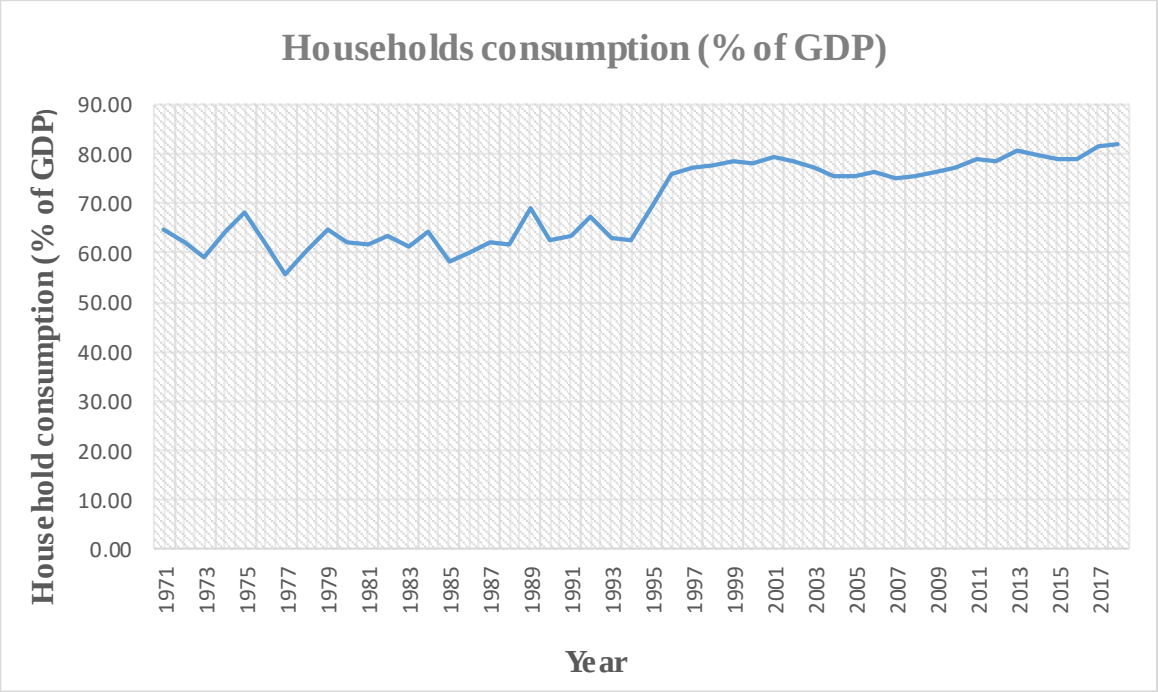

Figure 1: Household consumption expenditure, 1971-2018

Source; Author's own graph using data from World Bank 2019

Between the year 1971 and 1994, household consumption was low compared to the period between 1995 and 2017. One of the possible reasons which contributed to this is the Gulf crisis of the early 1970s and late 1980s, which saw oil price shocks and price increases for other goods and services (M'Amanja et al., 2005). Again, Kenya experienced high inflation rates (inflation reached a record of 100%) and high-interest rates in the early 1990s, which was possibly contributed by the political instabilities that faced the country at that time (Legovini, 2002). At the same time, the country was in severe crisis caused by the drought in the mid-1990s.

An upward trend in household consumption was recorded from the late-1990s, and it has continued to rise for the last two decades (WBG, 2020). Some of the possible factors which could have contributed to the observed trend are; the change of governance from a single party democratic country to a multiparty democratic country, and the change of leadership from the Moi regime to the Kibaki regime in 2003. These changes saw an improvement in the livelihood of many Kenyans as the National Rainbow Coalition (NARC) government (under the President Kibaki regime) focused more on job creation, poverty eradication, and creating an enabling

environment for private investment. Implementation of these strategies translated to sustainable economic growth and wealth creation. This is evident since household consumption was observed to grow at an average of 77% of GDP between 1997 and 2006 (Kenya, 2003)(World Bank 2007).

Implementation of the Kenya Vision 2030 development programme (established by the NARC government but implemented by the Jubilee Government) also contributed to the improvement of the livelihood of many Kenyans. The focus of the vision 2030 development programmes was to transform Kenya into a middle-income economy and making sure that Kenyans have a high-quality life. Programmes like *Kazi Kwa Vijana* (jobs to the youth), credit availability at affordable interest rates, and provision of appropriate technologies in the agricultural sector increased employment avenues for the youth in the country. The introduction of the devolved government under the 2010 constitution also led to the creation of more jobs through the county governments plans (Randa and Gubbins, 2013).

Even though household consumption has been on the rise, tax revenue has also been on the rise due to various tax reforms which have been aiming to increase government revenue. According to the economics theory, household consumption is supposed to decline as tax revenue increases but the opposite has been the case for Kenya. This suggests that there seems to be an unusual relationship between household consumption and tax revenue hence necessitating further investigation.

In Kenya, the fiscal deficit has also been continually growing due to continuous growth in public expenditure unequal to growth in government revenues. According to Mutuku (2015), unstable fiscal policy exposes the economy to external shocks, adversely affects the welfare of the state via large fiscal deficits, excess debt, and generation of inefficient resource allocation, which is the case in Kenya. World Bank reports show that the fiscal balance to GDP ratio for Kenya has worsened from a surplus of 0.2% to a deficit of 6.1%, while the public debt to GDP ratio has increased from 30% to 57% between 1963 and 2019 (KNBS 2019). To elaborate on this scenario, the relationship between fiscal policy, public debt and household consumption was investigated for the period between 1971 and 2019.

1.4 Problem statement

Fiscal policy is among the tools that many governments apply to maintain macroeconomic stability for growth and to prevent market failures. Fiscal policy can affect the orientation of wealth accumulation as well as affecting macroeconomic expansion and contraction. It is also able to influence intergenerational transfers via taxation on extractable resources, debt and subsidies (M'Amanja et al., 2005). The Kenyan government has used a mix of fiscal policies with more resources being directed to development projects. Again, there has been increased taxation on household income and luxury items as well as an increase in public debt (M'Amanja et al., 2005).

Increased government expenditure directly affects the economy by inducing high demand for goods and services. Consequently, this leads to an increase in income and employment, thus indirectly boosting household consumption (Parkin et al., 2010). On the other hand, tax rate and tax base expansion, reduce household purchasing power due to the negative effect it induces on disposable income(Keynes, 1936, DeLong et al., 2012). In Kenya, government expenditure has been observed to grow at a very high rate and to fund these expenses; tax and public debt have been increasing as well. In economic theory, household consumption expenditure is supposed to be crowded out as tax increases, but in the case of Kenya, household consumption has been increasing instead. Also from the visual analysis of tax revenue and household consumption, there seems to exist a positive relationship between the two variables

The increase in household consumption can insinuate that the effects of government expenditure exceed the impact of tax increments because wages exceed the tax increases hence increasing consumption. On another angle households in Kenya can be said to take public debt as net wealth thereby increasing their consumption, thus making fiscal policy have no significant effect on household consumption as the Ricardian equivalence theory explains, see (Mankiw, 2013). This consumption behaviour attracted the attention of this study which intends to investigate whether the expansionary and contractionary fiscal policies crowds in/out household consumption in Kenya.

1.5 Objectives of the study.

The general objective of this study is to investigate the implications of fiscal policy and public debts on household consumption in Kenya.

The specific objectives of the study are to;

1. Evaluate the asymmetric effects of fiscal policy and public debt on household consumption in Kenya for the period between 1971 and 2018.
2. Investigate whether fiscal policy crowds in household consumption in Kenya.
3. Test whether the Ricardian Equivalence Hypothesis (REH) holds in Kenya.

1.6 Research questions

Guided by the objectives of this study, the researcher answered the following questions;

1. Do fiscal policy and public debts have asymmetric effects on household consumption?
2. Does fiscal policy crowd in household consumption in Kenya?
3. Does the Ricardian equivalence hypothesis hold in Kenya?

1.7 Research hypothesis

For crowding-in/out;

H_0; Fiscal policy and public debt do not have asymmetric effects on household consumption

H_1; Fiscal policy and public debt have asymmetric effects on household consumption

H_0**;** Expansionary fiscal policy crowds in household consumption in Kenya.

H_1; Expansionary fiscal policy does not crowd in household consumption in Kenya.

H_0; Contractionary fiscal policy crowds out household consumption in Kenya.

H_1; Contractionary fiscal policy does not crowd out household consumption in Kenya.

For Ricardian Equivalence Hypothesis;

H_1**;** Ricardian Equivalence Hypothesis holds in Kenya.

H_0**;** Ricardian Equivalence Hypothesis does not hold in Kenya.

1.8 Justification for the study

In any economy, household consumption expenditure acts as a key indicator of economic well-being. Despite its importance, empirical studies examining the relationship between fiscal policy and household consumption are limited in Kenya. In addition, empirical studies conducted on this subject have given full attention to the linear or the symmetric effects of fiscal policy and public debt on household consumption. No effort has been made to evaluate the asymmetric or the nonlinear effects of fiscal policy and public debt on household consumption. This study is thus important since it is able to investigate the asymmetric effects of fiscal policy on household consumption as well as the effectiveness of fiscal policy in Kenya. The results will enable policymakers to make wise economic decisions since it will help them understand the reactions of Kenyans to expansionary and contractionary fiscal policies and public debt. It will also contribute to the existing literature on the impacts of fiscal policy and public debt on household consumption in developing countries.

1.9 Organisation of the study

This study is organised as follows: Chapter 1 introduces the study, outlining the research objectives, research questions, research hypothesis and the importance/justification of the study. Chapter 2 gives the biography of Kenya and detailed information on Kenya's public debt and fiscal policy. Chapter 3 discusses the existing literature regarding the implications of fiscal policy and public debt on household consumption while chapter 4 outlines the empirical framework, data and data sources and the econometric modelling issues encountered in the empirical model estimation. Chapter 5 presents and discusses the research findings, and finally, chapter 6 gives a summary of the findings and concludes the study.

CHAPTER TWO:

AN OVERVIEW OF FISCAL POLICY AND PUBLIC DEBT IN KENYA

2.1 Introduction

This chapter gives a detailed discussion of fiscal policy and public debts in Kenya, with the first section beginning with an explanation of the biography of Kenya and its economic activities followed by government expenditure trends in Kenya. Tax reforms and tax revenue trends in Kenya are also discussed in this chapter as well as public debt trends in Kenya. Finally, the last section gives a summary of the whole chapter

2.2 Biography of Kenya

Kenya is one of the East African countries. Ethiopia and South Sudan neighbours it to the north and northwest respectively while Tanzania, Somali, and Uganda border it to the south, east, and west respectively. In addition, the Indian Ocean neighbours it to the southeast. Kenya is the forty-eighth largest country in the world, with its population exceeding forty-seven million people (KNBS, 2019). Prior to Nairobi city becoming its capital city, Mombasa, the oldest city was the first capital city. In June 2020, Kenya was ranked among the top three largest economies in Sub-Saharan Africa. Kenya is a middle-income country whose economy is the biggest in Eastern Central Africa after Nigeria and South Africa. Kenya is a middle-income country, and its economy is the largest in Eastern Central Africa (Standard, 2020).

Kenya was declared independent in 1963 from the British colony and since then it has remained a member of the common wealth of nations. It is also a member of the United Nations (UN), World Bank, the Common Market of Eastern and Southern Africa (COMESA), International Monetary Fund (IMF), International Criminal Court (ICC) and other organisations like the East African Community trade block(Standard, 2020).

It is noteworthy that Kenya has a higher efficiency in the service sector, with numerous innovations implemented in many African countries having their roots in Kenya. For instance, Kenya became the first to trade in government bonds through mobile phone technology platform in 2017 (SA, 2020). The sectors of Information Technology (IT), communication, and construction have been rapidly growing with a lot of dynamism. The rate at which transport, education, medicine and financial services are growing makes Kenya a regional hub (Standard, 2020).

Kenya is the third-largest producer and exporter of tea in the world. Among the nations producing oilseeds and dry beans, Kenya ranks seventeenth and ninth respectively, and it is also part of the counties producing the largest amount of coffee in Africa. Agriculture and horticulture are the two biggest sectors of Kenya, with agriculture taking almost 35% of its GDP and employing at least 57% of the Kenyan workforce (SA, 2020). Vegetables, coffee, sugarcane, wheat, fruits and maize are among the leading crops produced in Kenya and the leading animal products that the country produces are eggs, beef, pork, fish, and poultry. The main exports of Kenya include fresh flowers, tea, coffee, and vegetables (SA, 2020). Moreover, the service sector takes a 42.7% share of the GDP, while employing 35% of the Kenyan workforce. However, tourism, an essential service sector in Kenya, has suffered from the negative impacts of several incidences of terrorism since 2013. These terror attacks have mostly been conducted by the Al-Shabab group (SA, 2020). This sector was on the path to recovery before the last terror attack in Nairobi which occurred in January 2019 and left 15 people killed.

For the last decade, Kenya has enjoyed a strong and stable economic performance allowing the country to gain the status of a middle-income country in 2016 (SA, 2020, Standard, 2020). Steered by a strong recovery in agriculture resulting from better weather conditions, strong household consumption, the resilient performance of service sectors, sustained confidence in the economy and due to eased political uncertainties, Kenya maintained its good economic performance in 2019 (SA, 2020).

One of the tools which have been employed to stabilise the economic performance of this country is fiscal policy. To slow down an economy, the government uses contractionary fiscal policy, which involves decreasing government spending or increasing taxes. On the other hand, expansionary fiscal policy is achieved through increased government spending or decreasing taxes to expand the economy. Government consumption is financed by, among others, government revenues which are obtained from the private sector through tax collection.

2.3 Government consumption expenditure in Kenya

In Kenya, government expenditure has often been used to boost its economic performance. Moreover in Kenya government expenditures are classified into two types: development and recurrent expenditure. Development expenditures are once time expenditures that are mostly on new projects and funded externally and are more discretionary in nature. On the other hand, recurrent expenditures are repetitive in nature, spent on ongoing projects and less discretionary. Recurrent expenditures are primarily funded internally (Region, 2009, Mahrous, 2016).

Before independence, i.e., between 1960 and 1963, most of the government expenditures were directed to recurrent expenditures such as interest payments, subsidies and payments for goods and services, (wages and salaries, employer contributions), and transfers. In the years 1961, 1962, and 1963, 84.9%, 86.4%, and 83.7% of total government expenditure respectively went to recurrent expenditures (Kenya, 1965). The colonial government used the remainder for development expenditure and so it was used to set up social-economic structures only in their areas of interest – which mostly focused on the development of the urban regions and agriculturally productive regions. Standard roads, excellent schools, railways, hospitals, playgrounds, and other recreational facilities were set up in their areas of interest while a larger part of the country was left underdeveloped.

Upon gaining independence, government expenditure has undergone a huge expansion. This could be due to the training of Kenyans who were to replace the British civil servants and the formation of Kenya's armed forces. The country's diplomatic representation exerted a lot of financial pressure on the government since funds had to be provided to meet all the intended

expenses (King, 1979). From figure 2 we can see that by 1971 government expenditure was approximately Ksh546.2 billion and it has been on a continuous rise.

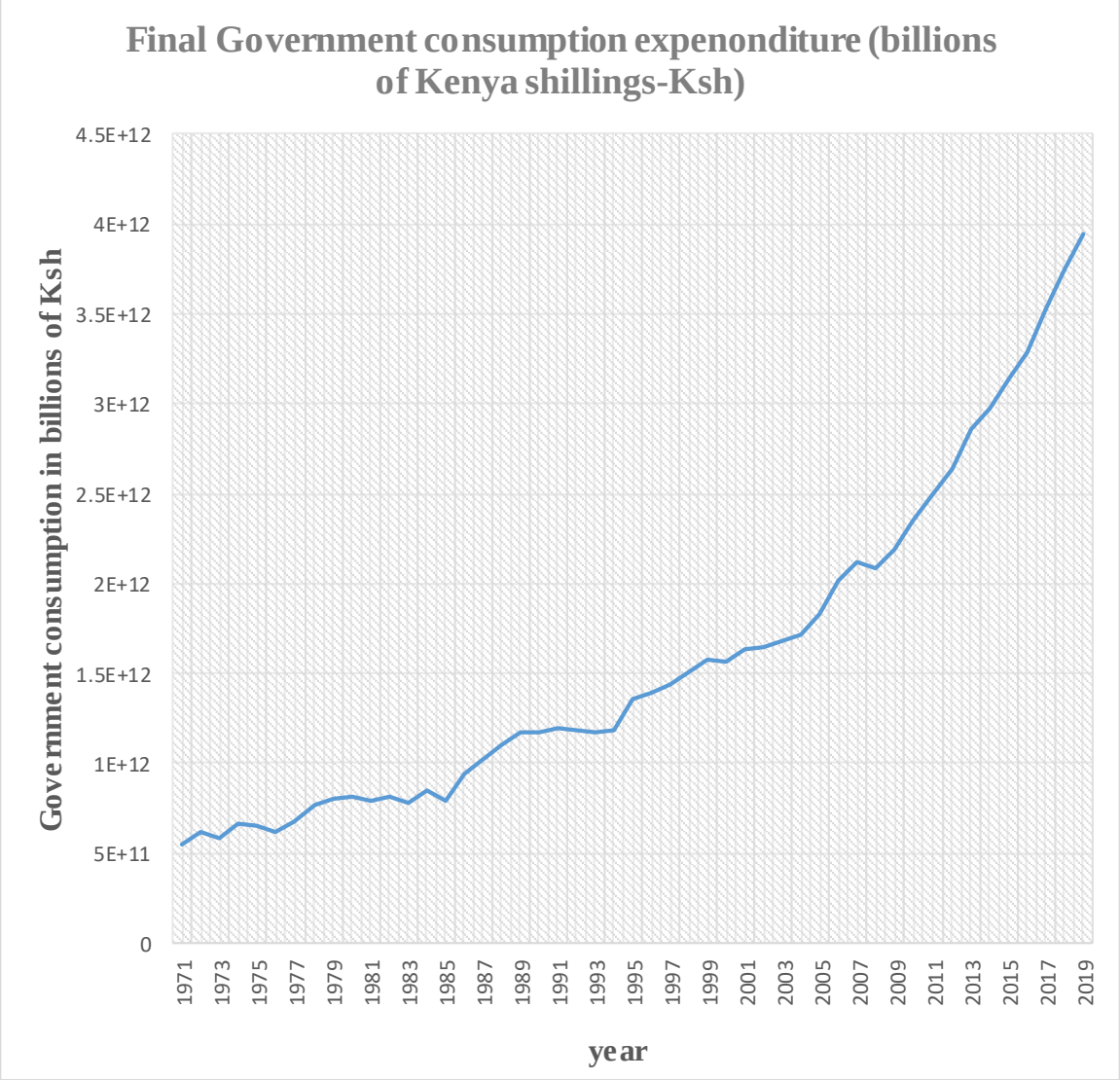

Figure 2: Government expenditure in Kenya, 1971-2018

Source; Author's own graph using data from World Bank, 2019

Some possible reasons behind this tremendous growth are the adoption of African socialism towards poverty, disease, ignorance and prevalence of corruption, inefficiency and the enormous rise of the government officials salaries in the period between 1970 and early 1980s (Mahrous, 2016). By 1981 government expenditure had gone up to Ksh 786.11 billion. Consequently, a lot of pressure came from the municipal society, politicians, and Kenyan development partners urging the government to cut unnecessary expenditures. Hence, 1n the mid-1980s, Structural Adjustment Programmes (SAPs) were formed to help review government expenditure of Kenya (Swamy, 1994).

Introduction of the 1986 Structural adjustment programmes (SAPs), (recorded in sessional paper 1 of economic management for renewed growth), immensely affected fiscal policy as they emphasised limiting the role the government plays in providing public utilities and upholding law and order. Market forces were rather adapted to aid recourse mobilisation to boost economic growth and development and aiming to improve household income (Kenya, 1986). Based on the expectations of the donor-initiated SAPs, the government had to increase its expenditure on infrastructure to upgrade smaller towns in rural areas through initiatives like enhancing road networks, water facilitation and power installation.

A sharp rise in government expenditure was observed from1992, possibly due to the implementation of multiparty leadership policies of diversity in economic development. The first regime after independence continued with the colonial trend of developing areas of interest and the areas where their allies hailed from. However, multiparty democracy fought for the development of all provinces in Kenya; hence government expenditure had to experience the observed sudden increase in 1992. Additionally, the Civil Service Reform Program (CSRP) of 1993, worked on reforming state expenditure by concentrating more on development expenditure rather than recurrent expenditure (Hope and Governance, 2012). On the contrary, there was a steady rise in recurrent expenditure in the late 1990s (KNBS, 2018).

Another sharp growth in government expenditure was observed in 2009. This was possibly caused by the economic recovery plans of 2008/2009 after the 2007/08 post-election violence. More than 22 billion Kenya shillings was released into the Kenyan economy under projects such as *jua Kali (*harsh sun*)* sheds building initiatives, horticultural market stimulants and many more (Were, 2017). Again, the introduction of the devolved government under the 2010 constitution saw the formation of county governments in 2012, which have proven expensive to maintain (Were, 2017). Mismanagement of public funds is another possible reason behind the sharp rise in government expenditure. Accusations of corruption and mismanagement of funds at both the National and county level include; the National Youth Service (NYS) affair where K.sh 1.9 billion was lost, K.sh 5.2 billion misappropriated in the health sector, mobile clinics being valued at 1.4million each but being sold to the government at more than seven times the price and many more (Were, 2017).

To finance all these expenses, the government worked hand-in-hand with KRA to ensure more revenue was collected from the taxpayers. Kenya is amongst the high tax-yield economies in Africa with a tax to GDP ratio of 18.3 (WBG, 2020).

2.4 Tax and tax reforms in Kenya

Mutua (2012), defined tax as a compulsory financial charge imposed by the state on a person's income, business profit, property, or added to the cost of some goods and services in order to raise funds for public purposes. Taxation is also applied as a tool to realise social purposes such as; wealth redistribution, drawing away money from people which, if spent, can increase inflation in an economy (Mutua, 2012). The Keynesians also argue that taxation is vital in the management of an economies aggregate demand which in the long run affects employment, inflation and production (Keynes, 1936).

In Kenya and many other countries in the world, taxes are divided into two major groups; direct and indirect taxes. The indirect tax also referred to as consumption tax, is the tax levied indirectly on goods and services, for example, the VAT. The effects of indirect tax fall on either the producer or the consumer, subject to the elasticity of the goods on which the tax is levied. Consumption taxes can either be domestic (exercise) VAT or international trade taxes. Consumption tax is found to be very regressive in nature, and therefore this tells that it has higher negative implications on a person's consumption as it translates to high commodity prices. Direct tax, on the other hand, is the tax levied directly on the income of the household, and its impact falls direct to the taxpayer (consumer). According to (Lipsey and Chrystal, 2008), direct taxes have a high impact on a household's disposable income, while indirect tax is felt by consumers through price changes.

According to (Chilibasi, 2014) Kenya's tax structure bends more on VAT and income tax because the two are the main sources of revenue. For instance, income tax and VAT contributed 36.3 and 25 % of total revenue respectively for the years 2005 and 2012 (Kiminyei, 2014,

Mutua, 2012). Kenya has been on continuous tax reform with the aim being to boost its revenue collections and these reforms are as outlined in the next section.

2.4.1 Tax reforms in Kenya

From the year Kenya achieved self-rule (1963), to the 1980s the Kenyan government financed its expenditure through a system inherited from the British colony which was majorly characterised by disorganised fees and taxes. Moreover, foreign aid inflows were also used to subsidise Kenya's government expenditure.

In the third quarter of the 20th century, Kenya faced serious oil shocks which left it in a substantial fiscal crisis. As a consequence, the government established various tax reforms to help generate more revenue. Sales tax and trade taxes were introduced. The government believed that goods-specific sales and exercise taxes could help normalise the prices specifically, via the application of trade taxes to pursue expert-directed strategies of growth and policies concerning import substitution (Eissa et al., 2010). The Kenyan government viewed personal tax, income tax and, to a lesser extent, corporate tax as better tools in wealth redistribution and so these were adopted and implemented in the 1970s (Eissa et al., 2010). From the mid-1970s to the mid-1980s personal and corporate tax rates were raised, and the new range was set at 10% on the lowest marginal personal income and 65 % on the highest marginal personal income. Moreover, tax rates applied to income on foreign corporations were set to be 52% in1974, while domestic corporations were charged 45% (Karingi and Wanjala, 2005).

By 1986 the Kenyan government approved TMP whose aim was to broaden the tax base to boost revenue collection. The major objective of TMP was to increase the revenue to GDP ratio to 24 per cent by mid-1990, down from 22%. This goal was surpassed, and by 1992 it was raised to 28 per cent (Muriithi and Moyi, 2003). In 1990, VAT was introduced in place of sales tax since it was viewed that VAT had a higher revenue potential with its collection and administration being more economical, effective, and efficient. The objective of TMP was, to

some extent, similar to the US tax reform act of 1986 where the country targeted to achieve higher tax revenue by broadening the tax base, lowering tax rates, and closing possible tax collection loopholes (Eissa et al., 2010). It is not clear whether, before TMP, the country was on the undesired side of the Laffer curve. However, from the high rates of marginal income tax before TMP, it can be deduced that the country was on the wrong side of the Laffer curve.

Additionally, the government instituted the Kenya Revenue Authority (KRA) in 1995, whose objective was to strengthen revenue collection, harmonise the different tax collection branches in Kenya and modernise tax collection. The KRA was dedicated to putting in place a more effective and efficient tax collection system, control the widespread loopholes in the tax system, and incorporate many eligible taxpayers as possible into the tax system (Karingi and Wanjala, 2005). For the last two decades, KRA has formulated internal management mechanisms projected towards fighting corruption, curbing tax evasion as well as providing better services to the taxpayers.

To boost administrative efficiency, better record-keeping of business transactions and reduce tax evasion, the KRA adopted an electronic tax register in 2005 (Eissa et al., 2010). This led to a great improvement in tax compliance and VAT revenue collection. In 2007, the VAT threshold was revised upward, from Ksh 3 million annual turnovers to Ksh 5 million. Initiation of the new VAT act in September 2013 stressed more on tax base expansion, and this was achieved through reducing the number of tax exempted and zero-rated goods and services. Through the same act, VAT on electricity was also increased from 12 per cent to 16 per cent (young, 2014).

2.4.2 Tax revenue trends in Kenya

Figure 3 illustrates the trends of tax revenue in Kenya since 1971.

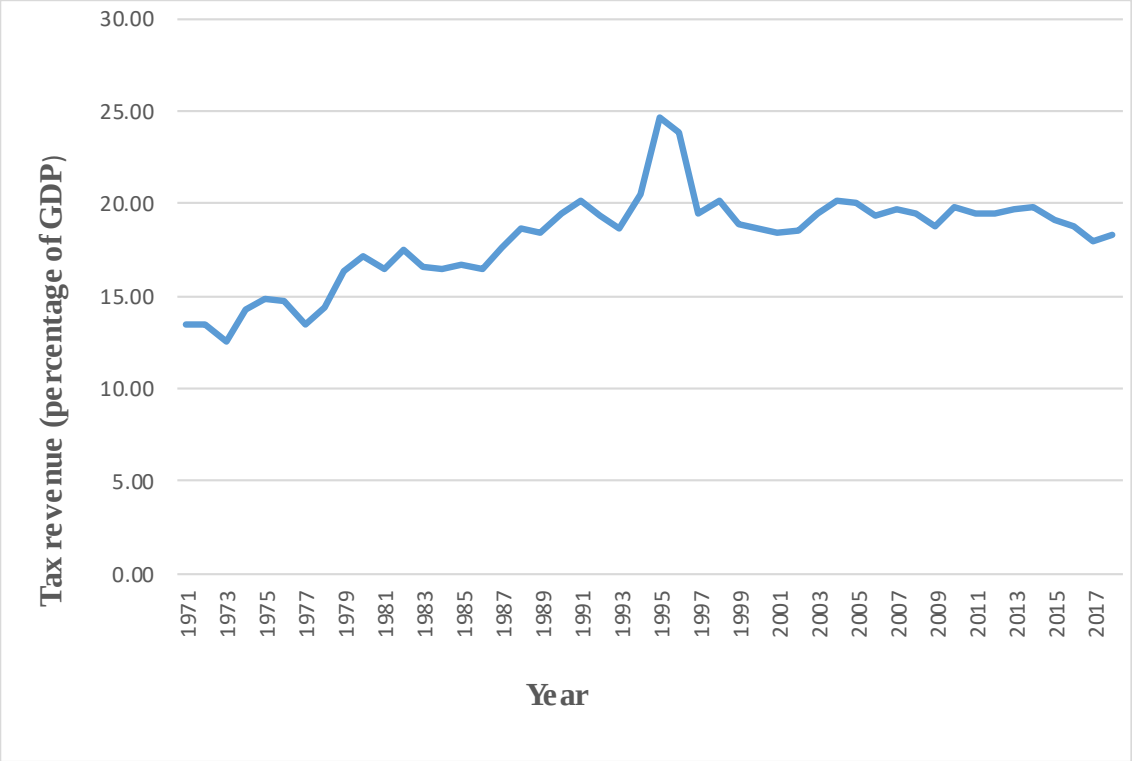

Figure 3: Trends of Tax Revenue

Source; Author's own graph using data from IMF staff Report 2010, and IMF database 2019.

After the introduction of sales tax, trade tax and the increment of tax rates, tax revenue as a proportion of GDP grew from around 13 per cent to approximately 17 per cent between 1971 and the early 1980s. However, the 1991 to 1992 draught, combined with the 1992 political instability, led to a tax revenue drop. Between 1991 and 1993, tax revenue dropped from 20.1% to 18.3% but later picked up in 1994 (Eissa et al., 2010). Likely because of the introduction of TMP, tax revenue to GDP grew gradually, and by 1995 it had reached 24 per cent of GDP (IMF, 2010). The formation of the KRA organisation has seen tax collection become more efficient, and it has kept on widening the tax base to keep tax revenue high, hence justifying the observed continuous moderate growth in tax revenue.

Tax revenue being the main source of government revenue has not been in a position to finance the rapidly growing government expenditure. To finance these revenue disparities, the government opted for public borrowing.

2.5 Government/public debt trends in Kenya

Kenya has from time to time recorded a rise in fiscal deficit which could have been as a result of the continued rapid growth of public expenditure unequal to growth in government revenue. According to (Mutuku, 2015), unstable fiscal policy exposes the economy to external shocks, adversely affects the welfare of the state via large fiscal deficits, excess debt and generation of inefficient resource allocation. World Bank reports show that the ratio of fiscal balance to GDP for Kenya has deteriorated from a surplus of 0.2% to a deficit of 6.1%. On the other hand, the public debt to GDP ratio has increased from 30% to 57% between 1971 and 2019 (KNBS 2019).

The structure and size of government debts have varied with time, necessitated by the need for loans to finance the government development projects. Figure 4 displays the trends of public or government debt in Kenya from 1971 to 2018.

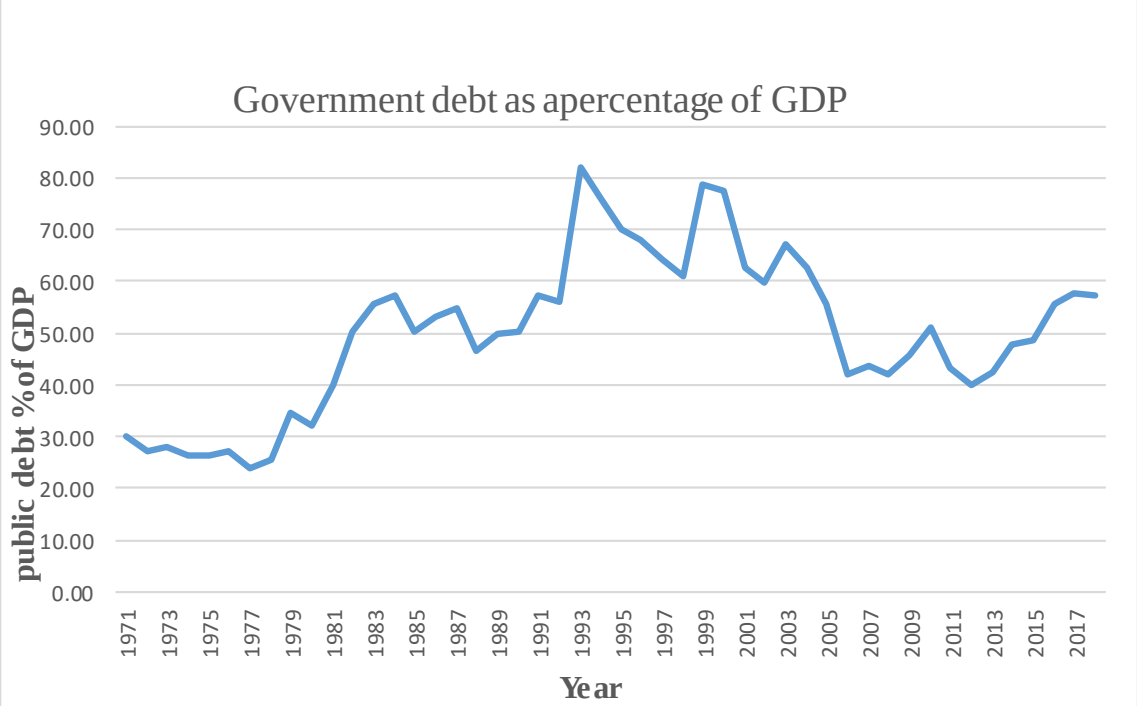

Figure 4: Public debt in Kenya, 1971- 2018

Source: Author's own graph using data from Republic of Kenya annual public debt management reports and IMF database April 2019.

For the period between 1971 and1980, the average proportion of debt to GDP was 28.3 %, which was an increase from 28.1 % of the previous decade. In this period the country was faced with a coffee boom and oil shocks, and so the government had to borrow more to boost the economy's productivity. The average share of debt to GDP ratio rose sharply to 51.5% by 1983. This was ascribed to the 1982 political instability and the structural adjustment programmes (SAPs) which were advocated by the IMF and the World Bank. SAPs worked to increase development projects which left the country in more debt (Makau et al., 2018). For the period between 1991 and 2002, debt to GDP averaged 60.8%. This rise was associated with the Goldenberg scandal, economic uncertainty due to the multiparty elections of 1992, and suspension of foreign aid in Kenya that led to a foreign exchange crisis and depreciation of the Kenya shilling against other currencies (Republic of Kenya 1993).

Economic recovery strategies of 2003, saw public debts start declining but later experienced a slight increase due to the global financial crises of 2007/2008 and post-election violence. The increase in development projects of the current regime has left it at an average growth of 48 per cent of GDP, observed between 2013 and 2018 (Republic of Kenya 1993)(KNBS, 2018).

According to Kiminyei (2014), government expenditure, tax revenue and public debt are interlinked and cannot be separated easily. Both tax revenue and public debt are employed in financing government expenditure programmes such as, social sectors and infrastructure and the three are the most important ingredients of stimulating aggregate demand, rising real output and curbing unemployment which is always evident in a country's private consumption. While both taxes and public debts represent a shift of resources to the public from the private sector, taxes are mostly viewed as transfers, whereas public debts as transfers that are naturally voluntary. Accordingly, when the state has to choose between public debt/borrowings and tax it finances government expenses, public debt is chosen. The reason behind this is that increasing taxes to finance government expenditure is mostly socially undesirable.

2.6 Conclusion

This chapter gave detailed information on the geographical location of Kenya and the major economic activities carried out in Kenya. It was discovered that Kenya is one of the most advanced countries in the service sector and the third-largest producer of coffee in the world. This section also investigated the trends of government expenditure, tax revenue and various tax reforms which have been taking place. Government expenditure has been growing at a very high rate and to finance this expenditure various tax reforms have been implemented to boost tax revenue, thus tax revenue has been on an upward trend. Public debt trends were also discussed in this chapter.

CHAPTER 3:

LITERATURE REVIEW

3.1 Introduction

With the recent development in economic research, economists have brought up some fundamental questions about consumption. Among others, those questions include, what are the main factors behind household consumption growth? Is fiscal policy capable of crowding-in, crowding-out or is it neutral on household consumption? While trying to answer some of these questions, economists have developed various theories explaining that, other than personal income, factors such as fiscal policy, monetary policy, inequality of wealth distribution among households, and expectations of riskiness also affect household consumption. This chapter contains a review of economic theories and empirical studies conducted to investigate the relationship between fiscal policy and household consumption. The theoretical review gives a detailed review of consumption theories while empirical literature contains studies conducted on Sub-Saharan Africa Countries and studies outside Sub-Sahara.

3.2 Theories of household consumption

3.2.1 The Absolute Income Hypothesis (1936)

Research work based on household consumption function is said to have commenced with John Maynard Keynes's General Theory in 1936. According to Keynes (1936), current real income is the sole determinant of household consumption, and the association between consumption and income is grounded to the Absolute Income Hypothesis (AIH). In AIH, economic agents make consumption decisions while considering their current disposable income. Keynes, (1936) argued that consumption is an increasing function of income. So households increase their consumption of various goods and services as their disposable income increases, but not in the same proportion of income.

In the Absolute Income Hypothesis (AIH), aggregate consumption is assumed to be steady though not linearly related to disposable income (Keynes, 1936, Alimi, 2013). The AIH consumption function is outlined in the following form;

$$Ct = \alpha + \beta Yt \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3.1)$$

Where; Ct is total personal consumption expenditure at time t, and Yt represents total disposable income at time t. β is said to be the marginal propensity to consume (MPC), and it is expected to be constant and positive but less than one. Moreover,α is small and positive, and it represents the autonomous component of consumption. The absolute income hypothesis operated under three main assumptions;

(1) Consumption expenditure is assumed to change with the changes in income but not equally. The non-proportionality of these two components means that in the short-run, marginal propensity to consume (MPC) is less than the Average Propensity to Consume (APC), where APC= $\frac{C}{Y}$, and MPC= $\frac{\Delta C}{\Delta Y}$. This is due to the fact that in the short run exogenous consumption remains unchanged despite the changes in income. Contrarily, in the long run, exogenous consumption increases as wealth and income rise and Marginal Propensity to Consume is closer to the Average Propensity to Consume (Keynes, 1936, Alimi, 2013).

(2) The proportion of income consumed reduces as income rises: $\frac{\partial APC}{\partial Y} < 0$, thus, income elasticity, which is defined as $\frac{MPC}{APC}$, would be less than one (Keynes, 1936, Alimi, 2013).

(3) According to Keynes (1936), the consumption function is stable both in the short run and in the long run.

Additionally, John Keynes was the first to explain consumption behaviour while incorporating fiscal policy changes in 1936**.** Keynes (1936) regarded consumption as the most reliable and predictable component of aggregate demand. For an economy to be off recession and enjoy long-term economic growth, the government must boost aggregate demand by increasing its expenditure or lowering taxes (Keynes, 1936). Keynes further explained that expansionary fiscal policy could promote household consumption in hard times and when a country is facing a recession, with tax playing the most crucial role in the control of households income inequality and improving their living standards by enhancing their consumption levels (Pigou, 1936).

Across the world, even in Kenya, the government has tried managing aggregate demand through tax cuts to foster aggregate demand in the short term. Keynes considered government a critical sector in the economy as it plays the most significant role in determining aggregate expenditure. Keynes (1936) postulated that the government should increase its consumption

expenditure during the recession period to compensate for inadequate household expenditure components and private investments, which help maintain demand in the market,

According to Keynes theory of the AIH, households' disposable income is the primary factor that affects a household's current consumption. Keynes (1936) strongly believed that expansionary fiscal policy, that is, increase in government consumption or decrease in taxation, should increase consumption because consumption directly relates to income. In the Keynesians theory, a static and determinist expiation regarding household behaviour is given priority while ignoring the trade-off between current and future consumption. However, the relationship between current household consumption and fiscal policy is not always as anticipated, and this is explained in the Ricardian Equivalence theorem.

3.2.1.1 Kuznets paradox (1946)

In 1946, the AIH received the first objection from Kuznets, who evaluated the long run relationship between household consumption and disposable income in the US (Kuznets, 1946). Kuznets (1946) found consumption not to decrease as income increases. It was also discovered that, in some cases, APC could be mean reverted in such a way that even if income increases at a high rate, household consumption remains stable and a constant share of income. Meaning income was now a fraction of revenue rather than a share of income (Kuznets, 1946).

From Kuznets results, the existence of short-run and long-run consumption functions was revealed. According to Kuznets (1946) and Mankiw (2013), the Keynesian consumption function holds in the short run, while in the long run, the consumption function takes a constant APC. Because of fluctuations in income during the period of business cycles or in the short run, MPC is smaller compared to the APC, as explained by Keynes. However, in the long run, APC is constant and equivalent to MPC (Mankiw, 2013). Friedman (1957) termed this empirical inconsistency as a consumption puzzle or Kuznets' puzzle and expanded more on it in the Permanent Income Hypothesis.

Keynes approach was further marginalized not because of his empirical shortcomings, but because of emphasizing the psychological and social influences on consumption patterns, and because of not incorporating the intertemporal utility-maximizing framework. The aversion

towards incorporating concepts and findings from other social sciences is also a strong component of mainstream economic methodology (Drakopoulos, 2021). The same holds for the model of optimizing agents operating in social isolation in an environment of calculable uncertainty. The inadequacies of mainstream consumption functions to predict and deal with the recent financial crisis has drawn attention to these characteristics even by leading economists who can hardly be characterized as "heterodox" or "dissident". Finally, the marginalization of Keynes' approach combined with their economic policy implications can be viewed in the context of the issue of ideological bias of contemporary mainstream theories (Drakopoulos, 2021).

3.2.2 Relative Income Hypothesis (RIH) (1949)

Duesenberry (1949) propounded that household consumption expenditure depends on an individual's income relative to other people's income but not necessarily the absolute quantity of his income. Thus, the Relative income theory of consumption was developed. Duesenberry, (1949) further argued that consumption expenditure is not only influenced by an individual's present income but also by the relative consumption level, which has ever been attained. According to Duesenberry, the consumption behaviour of households is not only influenced by their income but also by the consumption behaviour of neighbouring households because people are mindful of their status(Duesenberry, 1949).

Moreover, Duesenberry argues that if there is an increase in income, households' consumption expenditure remains the same because their relative income does not change. This meant that the average propensity to consume remains constant despite the rise in absolute income. In line with Kuznets' findings, Duisenberg's relative income hypothesis submits that in the long run, economic agents continue to spend the same fraction of their income as their income increases (Duesenberry, 1949).

As far as savings are concerned, Duesenberry claims that households with low income do not raise much of their savings in response to a positive change in their incomes. This insinuates that households savings would not increase in the same scale of income increase as it happens with people who have the same high level of income before the current rise in income (Duesenberry, 1949). This is because if all individuals' income increases by the same scale, then the relative income of the economic agents remains unchanged, and so they end up

consuming an equal proportion of their income. In this case, Duesenberry implies that, with an assumption that relative income distribution remains unchanged as income in the society grows, the APC remains the same. Hence, the conclusion of RIH differs from the AIH is that, as the absolute income of the households increase, they devote a smaller fraction of their income to consumption expenditure, meaning APC will decrease. Despite the empirical successes of this theory, it was promptly substituted by the permanent income hypothesis which was developed by (Modigliani and Brumberg, 1954) and (Friedman, 1957), and it differs from Duesenberry's arguments of consumption to be is an increasing function of the individuals expected lifetime resources.

3.2.3 Life Cycle Hypothesis (1954)

Modigliani and Brumberg put forward another paramount post-Keynesian consumption theory in 1954. This model was referred to as the Life Cycle Hypothesis (LCH). Modigliani and Brumberg (1954) were of the view that household consumption at any given period is a function of current income as well as the lifetime expected income of an individual. In contrast to the Keynesians consumption theory, which claims consumption is entirely based on current income, the LCH assumes that people plan their consumption pattern depending on their expected lifetime income (Modigliani and Brumberg, 1954). Moreover, households are said to keep a roughly constant or faintly rising consumption range (Modigliani and Brumberg, 1954). This insinuates that consumption must be stable even if income is through the life-cycle and unstable, and savings are meant to finance consumption in old age or after retirement (Kankaanranta, 2006). In addition, consumers are posited to consume less of their earned income as they put more into savings and invest their savings in assets, hence accumulating wealth which they consume later during their retirement age. After retirement, people again des-save as they consume more than their income to keep their consumption smooth or even increase it slightly (Baranzini, 2005).

There are four major assumptions behind the life cycle hypothesis. First, it is assumed that a person knows his life span precisely. Secondly, it is assumed that net savings for the whole life are equal to zero. That is, savings made by people during their working period is equivalent to the dissaving they make after retirement. For simplicity purposes, it is also assumed that interest paid on their assets is zero and, finally, there are no bequests (Baranzini, 2005).

Modigliani (1986) was also of the view that the average propensity to consume is more extensive in young and older people. This is because young people tend to borrow more to smooth out their consumption while older people depend on their lifetime savings. However, middle-aged people concentrate more on saving from their high income and consuming less hence they have a small APC.

Modigliani explained the Life Cycle Hypothesis using the following equation;

$$C = (W + RY) / T \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(3.2)$$

Where; W is Initial endowed wealth, R is the number of years earning labour income, Y is Labour Income, and T is the number of years lived by an individual. Rewriting the consumption function (3.2), we have equation (3.3) as;

$$C= \frac{1}{T}W + \frac{R}{T}Y \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3.3)$$

If people plan their consumption expenditure in such a manner, then the economy's total consumption takes the form;

$$C = \lambda W + \delta Y \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3.4)$$

Where λ $(=\frac{1}{T})$ is the marginal propensity to consume out of the accumulated wealth and δ $(=\frac{R}{T})$ is the marginal propensity to consume out of income. With this model, MPC depends on two factors, that is, temporary changes in income and permanent changes in income. As a result of temporary changes in income, MPC will be equal to 1 divided by the period an individual expects to live. On the other hand, MPC, due to changes in labour income, will be given by the number of years of labour divided by the period an individual expects to live. The main idea behind this consumption theory is that consumption is affected by income and the expected lifetime income. Again, in life cycle theory, an individual's wealth in the current period also determines their consumption.

Despite the various explanations provided in the life cycle hypothesis, it has also faced several critics. Ackley (1957) criticised the life cycle hypothesis assumption of consumers being so certain about their life. Ackley found the idea of households having complete knowledge of the future family size, life expectancy of every family member, future emergencies, credit availability in future, and the whole life income profile of each family member to be unrealistic.

The LCH was also criticised for not recognising the effects of liquidity constraints when determining consumers' reactions to changes in income (Ackley, 1951). According to Ackley (1951) even if an economic agent has a solid vision of his income in future, the LCH has visualised very little on their ability to borrow from capital markets which creates liquidity constraints in consumption plans. As a consequence, consumption gets more responsive to current income, which contrasts with the LCH.

3.2.4 Permanent income hypothesis (1957)

In 1957 an American economist named Milton Friedman developed the Permanent Income Hypothesis (PIH). Even though the PIH differs from the LCH, they have some similar features. Just as the Life Cycle Hypothesis, Friedman (1957) argued that consumption is subject to the long-term expected income but not the current income. Friedman (1957) postulated that if a consumer receives his or her payment once a month, he or she would not consume it all in a single day and have zero consumption on other days. The consumer will consider a smooth consumption flow every day but not high consumption on a single day and low consumption on other days. Hence, from the permanent income hypothesis, a one-day consumption does not rely on the income of that day but rather based on the average daily income received for some time (Friedman, 1957). As Friedman states economic agents make their plans on consumption considering their long term average income which is also termed as permanent income. Friedman (1957) further pointed out that Permanent Income is obtained from both non-human and human wealth. Human wealth is obtained from selling households labour services and, non-human wealth is made up of tangible assets like equity shares, debentures, real estate, and consumer durables. Friedman considers the value of the flow of services imputed by these consumer durable goods as consumption.

In the PIH, Friedman assumes that household consumption corresponds with permanent income; hence their relationship can be illustrated as;

$$C_p = kY_p \quad \text{.....(3.5)}$$

C_p stands for permanent consumption, Y_p stands for permanent income, and k takes the fraction of permanent income consumed, which is the MPC. In PIH, MPC is said to be equal to APC,

and this is in line with the empirical findings of Kuznets. Moreover, the MPC of every consumer is said to be the same. The proportion of k depends on factors such as interest rates, the proportion of human and non-human wealth, and the desire to accumulate more wealth. In times of high interest rates, people tend to save more and consume less, while the opposite happens at lower interest rates (Friedman, 1957). Quantity of human and non-human capital are denoted by w, and when wealth increases, the propensity to consume k also increases. On the other hand, when wealth reduces, the tendency to consume reduces as well. The desire to increase one's wealth rather than consuming more can be represented by u. When income increases, many consumers prefer to increase their consumption instead of adding more into their wealth stock. Therefore, based on Friedman's PIH, the consumption function can now be written as;

$$C_p = k(r, w, u) \times Y_p \ldots\ldots\ldots\ldots\ldots\ldots \quad (3.6)$$

The above function indicates that permanent consumption is a function of permanent income, and the proportion of permanent income is determined by interest rates (i), the ratio of non-human wealth and labour income (w) and households' desire to increase their stock of assets (u).

It was further pointed out that consumption expenditure comprises a transitory consumption C_t and permanent consumption components C_p. Moreover, household income also contains a transitory income component Y_t and a permanent income component Yp. Transient income is a short term income that does not last for a long period and the transitory income may not impact household consumption (Friedman, 1957).

$$Y = Y_p + Y_t \ldots\ldots\ldots\ldots\ldots\ldots \quad (3.7)$$

$$C = C_p + Ct \ldots\ldots\ldots\ldots\ldots\ldots \quad (3.8)$$

Where; C is current consumption spending, C_p is permanent consumption, C_t is transitory consumption, Y is current income, while Y_p and Y_t are permanent income and transitory income respectively. Equations 3.7 and 3.8 provide a way in which actual values of C and Y are linked to their appropriate permanent components.

Despite the contribution of PIH to consumption literature, some vital features of consumption seem inconsistent with its arguments. This is because evidence from microeconomics and macroeconomics suggests that household consumption reacts to income changes that result from fiscal policy adjustments (Carroll and Summers, 1991). The PIH theory does not explain the relationship between people expected income growth over their lifetime and the expected increase in consumption. A study by Carroll and Summers (1991) criticised the PIH by arguing that developed countries experience a high growth rate of consumption over time while developing countries like Kenya have low consumption growth rates. Also, consumption patterns of people differ depending on their occupations and match their lifetime income pattern, hence MPC cannot be the same for all the households (Fernandez-Corugedo, 2004, Carroll and Summers, 1991). Household's consumption typically follows household's income patterns and as a consequence, their current income plays a significant role in the determination of their consumption.

3.2.5 The Substitutability theorem (1960)

In the early 1960s, Bailey developed the substitutability theorem. The substitutability theory postulated that government expenditure increase brings about a decrease in private consumption. The effect of government expenditure was said to be inevitable regardless of how the government finances its expenditure (Bailey, 1971). Bailey (1971) was of the idea that government expenditure on various goods and services reduces current resources available for household consumption, insinuating that a unit increase in government expenditure will lead to a decrease in household consumption by an equal amount. In this case, the crowding-out of household consumption comes through either consumers being pushed to postpone consumption due to deficit-financed government spending or the negative wealth effect, making the consumer feel poor due to tax increases. This phenomenon is referred to as the substitutability hypothesis between public and household's private consumption (Blanchard and Perotti, 2002).

3.2.6 The Ricardian Equivalence theorem (1974)

Robert Barro, in the seminal paper of 1974, "Are Government Bonds Net Wealth?" developed the Ricardian Equivalence Hypothesis (REH), which was an extension of the neutrality proposition of David Ricardo, (1820). In a modern form, Ricardian Equivalence is a simple generalised form of the Permanent Income/Life-Cycle Hypothesis (PILCH) but incorporates fiscal policy and public debt effects on consumption. The Ricardian Equivalence Hypothesis(REH) was regarded as the logical completion of the permanent income/life cycle hypothesis in the presence of government expenditure, taxation and public debt (Seater, 1993).

The main assumptions of REH include;

1. *The households wish to have a smooth consumption pattern in their lives*; So if they anticipate a tax rise in future, they tend to save something from their current tax cuts so that they are able to pay for the future tax increases.
2. *Rational expectations of the households;* Households respond to tax reductions in the current period by keeping in mind that there is a probability of tax increase in the future.
3. *Perfect capital markets;* Consumers can borrow to finance their consumption if necessary.
4. *Intergenerational altruism*; Tax cuts in the present period may mean tax increases for future generations. Thus, consumers have infinite lives and minds about their successors' welfare, hence providing them with something to inherit by saving more when there is a tax cut.

Barro (1974) postulated that the choice of fiscal policy in the economy, i.e. taxes, government expenditures or transfer of payment, is neutral to the allocation made on household consumption. This is because households are assumed to be foresighted, and they do not treat government spending as net wealth. According to Barro (1974), debt for tax replacement does not induce more consumption, for people tend to save extra income earned so that they can pay for the expected future tax levied when a country is trying to pay off its debt. Barro (1974) further proposed that an increase in government consumption expenditure brings about an equivalent rise in private savings, and as a consequence, there is no first-order effect on consumption (Barro, 1974). This effect was referred to as the neutrality effect.

According to intergenerational altruism, Ricardian Equivalence holds even if the tax cut recipients die before implementing the future tax increase to repay the bonds (Seater, 1993). Hence, to households, whether spending is debt-financed or tax-financed is merely a choice of tax now or tax later. Therefore, the Ricardian theorem states that rational consumers are

mindful of their present value of taxes in the future. As a result, they increase their savings to offset new government borrowing (Barro, 1974).

This theory helps in understanding the relationship between government expenditure, taxes, and household consumption. However, the assumption that households have an infinite horizon is not realistic (Samuelson, 1958). Various studies criticised Barros theory by urging that people live for only two periods in a succession of overlapping generations and derive satisfaction from their consumption (Samuelson, 1958, Diamond, 1965). Samuelson (1958) further stated that the government could only raise funds through tax and public debts, so REH does not make sense. Again, the current value of the future tax burden imposed by the government might be less than the current tax reduction. Consequently, financial schemes that interfere with the timing of taxes, for instance, debt for tax swaps, are net wealth and, thus they should have a significant impact on household consumption (Seater, 1993).

3.3 Empirical review

3.3.1 The empirical literature on Sub-Saharan Africa countries.

The effectiveness of fiscal policy and its implications on household consumption has been widely discussed. Evans et al., (2019) investigated the response of consumption and employment of the poor and the rich, referred to as Non-Ricardian and Ricardian, respectively, to fiscal policy changes in Nigeria. The study employed the dynamic stochastic general equilibrium (DSGE) model in their empirical work. Three types of public spending, i.e. government spending, government transfers and public investment, and three types of taxes, consumption tax, labour tax and capital tax, were used to examine the impacts of fiscal policy shocks. Government expenditure, taxes and transfer payments were used as proxies for fiscal policy. The study found government expenditure to have a strong positive impact on employment and, consequently, positively affected consumption of the poor. Conversely, government expenditure shock was found to have a positive impact on the consumption of the rich. Government transfers exhibited a stronger positive impact on poor households' consumption than on the rich, but the same implication n on employment to both groups. Public investment had a strong positive effect on the employment of the poor and an increased positive influence on the consumption of wealthy households. Labour tax, consumption tax and capital

tax were found to strongly affect the consumption of the rich more than that of the poor but had almost the same effect on employment of the two groups (Evans et al., 2019).

Sunge et al., (2015) conducted an empirical study to test whether REH holds in Zimbabwe. The study used a bounds testing technique and an ECM within the ARDL model (Sunge et al., 2015). The variables used in the model included private consumption, tax revenue, GDP, government expenditure, interest rate, and total public debt. While private consumption was used as the dependent variable, the rest were used as the independent variables. Tax revenue, government expenditure, were used as proxies for fiscal policy. GDP was found to positively affect private consumption, hence in line with Ricardian and Keynesian theories. Government expenditure had a negative implication on private consumption. Tax revenue, public debt and interest rates were found to have statistically significant impacts on private consumption, but not zero coefficient as per REH thus differed from the theory. Tax revenue impact on private consumption was positive, while public debt had a negative effect on consumption. Both results were in perfect agreement with the Keynesian crowding-out effect of fiscal policy on household consumption. The results mainly supported the conventional Keynesian economics but not Ricardian, implying that fiscal policy in Zimbabwe plays a significant role in macroeconomic stabilisation.

Ofori-Abebrese and Pickson (2018) examined the validity of REH in five Sub-Saharan Africa countries using the panel ARDL model. The countries used in the analysis were Ghana, Botswana, Kenya, Gambia and Nigeria. The variables used for empirical analysis included private consumption, government debt, GDP per capita, government expenditure, inflation, interest rates, and government interest payments on outstanding debts. Government consumption expenditure was used as a proxy for fiscal policy. GDP per capita and interest rates were found to have a significant positive impact on private consumption. On the other hand, government interest payments on debts, government debt, and government expenditure were found to have a crowding-out effect on private consumption; hence government expenditure and public debt results deviated from the REH (Ofori-Abebrese and Pickson, 2018). The study, therefore, refuted the existence of REH in the Sub-Saharan African countries which were under investigation.

Abada (2016) tested the validity of REH in the Nigerian economy using data from the first quarter of 1981 to the last quarter of 2013. The study used the Autoregressive distributed lag ARDL bound test model to test whether there is a long-run equilibrium relationship between private consumption and fiscal policy, government debt, disposable income and government budget deficit. Government expenditure was used as a proxy for fiscal policy. Both government expenditure and disposable income exhibited a positive relationship with private consumption, thus confirming strong evidence against REH in Nigeria (Abada, 2016). On the other hand, the government budget deficit significantly influenced private consumption negatively.

Uutoni (2020) also sought to empirically investigate how fiscal policy and public debt affect household consumption in Namibia while trying to test for the existence of REH. The study adopted the ARDL bounds test Cointegration model to assess the presence of a long-run and short-run relationship between fiscal policy, public debt and household consumption. The study used quarterly data from 1991 to 2017. Government expenditure and tax were used as a proxy of fiscal policy. Other control variables applied in the empirical analysis included; population growth, inflation and real GDP. Government expenditure and government debt were found to exhibit a positive relationship with household consumption both in the short-run and long run. Tax was found to have a significant negative implication on household consumption in the short but no effect in the long run (Uutoni, 2020). These results were not in line with the REH. So it was concluded that the REH does not hold for the Case of Namibia but rather government expenditure and public debt crowds in household consumption.

Studies conducted in Sub-Saharan Africa concentrated on validating REH in various countries using the ARDL model. From the findings, REH is just a theory that does not hold water in many of the developing countries. However, some studies from outside Sub-Sahara validated REH while others found households to behave otherwise.

3.3.2 Empirical literature outside Sub-Saharan Africa Countries

Saraswati and Wahyudi (2018) carried out a study to investigate the implications of fiscal policy and public debt on household consumption in Indonesia. The key objective of this study

was to test the effectiveness of fiscal policy in Indonesia. To accomplish this objective, the study used an Error Correction Model (ECM) to analyse time-series data which covered the period 1990 to 2015. Government expenditure and tax revenue were used as proxies for fiscal policy.

The results of this study found both government expenditures and tax revenues not to affect household consumption both in the short-run and long run (Saraswati and Wahyudi, 2018). Their results were in concordance with the Ricardian Equivalence perspective, which urges that expansionary policies do not affect household consumption, for they tend to increase their current savings because they anticipate a future tax increment to compensate the present tax cuts (Barro, 1974). These results imply that an increase in the government expenditure of Indonesia does not boost economic productivity, which may increase household wages as the labour production factor. The existence of Ricardian Equivalence in Indonesia suggests that the ability of fiscal policy to stimulate aggregate demand via household consumption is ineffective.

Another study was conducted by Ayunasta et al., (2020) using the Impulse Response Function (IRF) technique and Variance decomposition to test the implication of foreign debt, tax revenue, government spending, gross domestic product, and government budget surpluses/deficit on Indonesian households' consumption. Tax revenue and government spending were used as proxies for fiscal policy. The study employed quarterly data from quarter one of 1997 to the fourth quarter of 2017. The study period was divided into two; the post-Asian crises of 1988 and the period after the 2008 global crisis. In the first period, shocks to tax revenue and governments' external debt led to a decline in household consumption (crowding-out effect) (Ayunasta et al., 2020). However, shocks in government spending led to an increase in household consumption (crowding-in effect). Hence, REH did not hold after the Asian crisis. Moreover, in the second period, after the global crisis of 2008, the presence of shocks on government spending, tax revenue and government debt had a negligible effect on household consumption. Thus, Ricardian Equivalence prevailed in Indonesia post the global crisis of 2008. These results were in line with the findings of Saraswati and Wahyudi.

Anderson et al., (2016) evaluated the effects of unexpected changes of macroeconomic, fiscal policies (government shocks) on different types of consumers (heterogeneous consumers) of the US. The study employed a structural Vector Autoregressive method in their analysis. The study results found that the consumption of the working (wealthy) people is hurt more by government spending shocks than the poor. In response to the government shocks, the rich tend to experience a high cumulative decline in consumption while the poor significantly increase their consumption (Anderson et al., 2016). The behaviour of the rich was found to be in line with the standard real business cycle arguments, while the poor behave as in the IS-LM (non-Ricardian) model. The poor can be said to act like this because they are credit constrained.

Additionally, Khanfir (2019) examined the implications of fiscal policy on household consumption by applying the smooth transition regression (STR) model. A linearity test on fiscal regimes of Tunisia was conducted against the linear STR model. Tunisia exhibited three regimes; a central regime and two extreme regimes. Government revenue and tax revenue were used as proxies of fiscal policy. In the case of a small fiscal impulse (central regime), an increase in government consumption positively affected household consumption. However, an increase in tax revenue negatively affected household consumption (Khanfir, 2019).

In the extreme regime, a large fiscal contraction, government consumption reduction or tax increase leads to a simultaneous rise in household consumption. These outcomes were different from the Keynesians arguments but are explained by the neoclassical effects of consumption and the anti-Keynesian. Again, in this case, a rise in government consumption or a decrease in tax revenues was found to reduce household consumption. These results showed that Tunisian households behave in a non- Keynesian way during large fiscal contractions and expansions.

Merko et al., (2020) carried out research that examined the implications of fiscal policy on household consumption in Albania covering the time frame from 2000 to 2016. The static multiple regression model and Granger causality were utilised to accomplish the objective of the study. Two separate estimations for the dependent variable (current account and private consumption) were used. Fiscal deficit, public debt, government consumption, GDP growth and population growth, and the fiscal deficit were used as explanatory variables. Government

expenditure was used as a proxy for fiscal policy. Fiscal deficit was found to affect the current account negatively; This is in line with traditional theories, which postulate that an increased fiscal deficit leads to a decrease in the current account balance and vice versa. Government debt and government spending were found to have a negative impact on the current account. Moreover, both population growth and GDP growth were positively related to the current account but not statistically significant. On the other hand, all the explanatory variables exhibited a positive relationship with private consumption (Merko et al., 2020). This means that government consumption and public debt were found to crowd in household consumption, which is in harmony with the Keynesian arguments. However, population growth results were not statistically significant.

Belingher and Moroianu (2015) investigated whether the Ricardian Equivalence exists in Romania using the linear regression model. Government expenditure and household disposable income were used as a fiscal policy proxy. The results obtained from this investigation validated the non-existence of the Ricardian Equivalence in Romania. Government expenditure and household disposable income were found to have a positive relationship with household consumption, which is in line with the Keynesian arguments on the relationship between fiscal policy and consumption (Merko et al., 2020).

Shamsi et al., (2016) tried to validate the existence of REH in Pakistan by evaluating the relationship between tax revenue, government debt, government budget deficit, disposable income with private/household consumption and private savings. Tax revenue was observed to display a negative correlation with household consumption, while the rest of the variables had a positive relationship with household consumption (Shamsi et al., 2016). The results were in absolute disagreement with the REH; hence, REH was rejected in the case of Pakistan. Comparatively, government debt was reported to negatively impact private savings, with the other variables having a positive relationship with private saving. These findings revealed that fiscal policy in Pakistan was effective, and households in this country take advantage of tax cuts to consume more.

Using time-series data from 1990 to 2017, Kusairi et al., (2019) examined the effect of fiscal policy and public debt on household consumption in eighteen Asian Pacific countries. Household consumption was used as the dependent variable while government expenditure, tax revenue, public debt, real GDP, inflation and real interest rates were the independent variables. The proxies of fiscal policy applied in this study were government expenditure and tax revenue. The study used dynamic heterogeneous panel data in the empirical analysis. Public debt and household consumption were found to have long-term Cointegration (Kusairi et al., 2019). Moreover, public debt was found to negatively affect household consumption, leading to the conclusion that REH does not hold in both the long and short run. Government expenditure, which was used as a proxy for fiscal policy, positively affected household consumption, which means fiscal policy crowds in private consumption. Also, real GDP, inflation, capital accumulation, and real interest rates positively affected household consumption.

Banday and Aneja (2019) carried out a study examining the impacts of fiscal policy on households' consumption in China. Time-series data was used for the period between 1990 and 2016. The study employed the Engle-Granger two-step Cointegration technique to empirically investigate the response of private consumption to fiscal policy and budget deficit. Household consumption was used as the dependent variable, while government expenditure, tax, budget deficit, and real interest rate rates were used as the independent variables. Tax revenue and government expenditure were used as proxies for fiscal policy. Tax, government consumption and budget deficit were observed to negatively impact household consumption in China (Banday and Aneja, 2019). This means that fiscal policy and public deficit crowd out private consumption since an increase in any of the variables would reduce household consumption. These results invalidated the REH in China since the proposition holds that there exists an insignificant relationship between private consumption, tax, and public debt regardless of whether the budget deficit is tax-financed or debt-financed. On the other hand, under specific circumstances, the implication of government expenditure on aggregate demand remains orthogonal to the type of funding budget deficit since rational consumers consider today's debt financing to be a future tax liability.

For the studies outside Sub-Saharan Africa, a study conducted by Saraswati and Wahyudi (2018) and Ayunasta et al., (2020) supports the idea of fiscal policy and public debt not being

able to either crowd in or crowd out household consumption, thus REH was found to hold. However, Anderson et al., (2016), Banday and Aneja (2019), Kusairi et al., (2019), Belingher and Moroianu (2015), Anderson et al., (2016), Khanfir (2019) Merko et al., (2020) found fiscal policy and public debt to significantly affect household consumption hence invalidating REH.

3.4 Research gap

From the elaborate and comprehensive literature review conducted, it is evident that the different methodologies adopted to investigate the implications of fiscal policy and public debt on household consumption assumed the presence of a symmetric relationship between the dependent and the beta coefficient of the explanatory variables. A symmetric relationship means that the degree of impact of the explanatory variables on the dependent variables is the same when the regressors increase as when the regressors decrease. However, this is not always the case. The magnitude of the impact of expansionary policies and contractionary policies on household consumption may not necessarily be the same. The current study improved on the existing work by adopting an error correction model which assumes an asymmetric relationship among the variables. This nonlinear model will be able to take into account the effects of positive and negative changes of fiscal policy and public debt on household consumption separately.

3.5 Conclusion

This chapter outlined the economic theory and empirical studies based on the relationship between fiscal policy, public debts and household consumption. The chapter conveyed how economic theory evolved from income being the only determinant of household consumption to the Relative income hypothesis in 1936 to incorporate government consumption, tax, and public debts and their neutral effect as explained on the REH. An empirical literature review was also carried out regarding the implications of fiscal policy on household consumption**.** Some studies found that government expenditure, tax, and public debt significantly affected household consumption, while others found them not to have any significant effect on consumption. The chapter that follows outlines the methodology employed in investigating the implications of fiscal policy and public debt on household consumption in Kenya while taking into account the nonlinearity of their relationship.

CHAPTER 4:

RESEARCH METHODOLOGY

4.1 Introduction

This chapter explains the research method, research techniques and the tools adopted to evaluate the implications of fiscal policy and public debt on household consumption**.** Moreover, the chapter explains in detail the data sources and the type of data that were available for use and provides an overview of the econometric model that was utilised in the data analysis. Lastly, this chapter also gives a detailed theory on how this research was done and the explicit theoretical and philosophical assumptions.

4.2 Research philosophy

Research philosophy is defined as a system of beliefs and approaches embraced by a researcher in developing knowledge-based theories and assumptions that shape the nature of the research (Saunders et al., 2016). There are four major philosophies in research: constructive, positivist, pragmatic and transformative (Cresswell, 2014). The current study adopted the positivism philosophical stance, which is also known as the scientific method. This method involves empirical observations, measurement reductionism and theory verification. Since the study intended to investigate the implications of fiscal policy and public debts on household consumption, the researcher had to adopt a quantitative approach.

4.3 Research approach to theory development

There are three major approaches that researchers can use in their studies; abduction, induction and deduction. The deductive approach is commonly used in quantitative studies, while the inductive approach is used in qualitative studies (Saunders et al., 2016). The researcher adopted the deductive method in the empirical analysis.

4.4 Research strategy

The current study adopted a quasi-experimental research design which is more experimental in nature without showing its ultimate validity. Quasi-experimental design is able to limit internal validity threats and enhance causal inferences (Rubin and Babbie, 2016). In most cases, quasi-

experimental methods are adopted in studies that do not have the feasibility to randomly allocate participants and control all the confounding parameters (Leedy and Ormrod, 2014). Scholars have classified quasi-experimental designs into Simple Time Series experiment, Equivalent time series, and Non-randomised control group time-series design. The current study used a simple time-series design. A simple time-series design involves making observations and introducing other dynamic interventions into the system for better analysis (Leedy and Ormrod, 2014).

4.5 Period of analysis

The current study was carried out using time series secondary data covering the period 1971 to 2018. The period under review was chosen because the Kenyan economy underwent significant economic structural changes and political dynamics, which affected the performance of the economy. The adjustments mentioned above included regime changes, political instability, structural adjustments (adoption of multiparty democracy in 1992, high corruption, terrorism, and rapid population growth, among others. Covering this period allowed the researcher to be able to assess the effectiveness of fiscal policy in boosting household consumption.

4.6 Research Design

The study was based on a correlational research design. Correlational research design helps identify relationships among variables and also predict possible outcomes. If a relationship of sufficient magnitude between variables exists, it is feasible to forecast a score on either variable with a known score of the other variable. This research design actualised the general study objective to establish the relationship between fiscal policy and household consumption in Kenya.

4.7 Conceptual framework

The empirical work of the current study builds from the absolute income hypothesis (AIH) (developed by Keynes in1930), which assumes consumption to be an increasing factor of income (Alimi, 2013). The AIH consumption function takes the form;

$Ct = \alpha + \beta Y_t^d$ with $0< \beta<1$ and $Y^d= Y-T$

Where Ct is consumption, Yd stands for disposable income. The consumption above can further be modified to take aggregate consumption and aggregate income, as represented in equation 4.1.

$$Ct = \alpha + \beta (Y_t - T) \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (4.1)$$

Where; C_t is the aggregate consumption, Y_t, aggregate income (GDP), T stands for tax, β is the marginal propensity to consume, and α is the autonomous consumption. When the government increases taxation, disposable income Y^d reduces. On the other hand, when taxes are reduced, disposable income goes up, meaning there exists a negative relationship between income and taxes, and so it is with consumption.

According to Keynes (1936), three key assumptions are behind the AIH; first, consumption expenditure changes with the changes in income though not proportionally. This non-proportionate relationship between consumption and income means that in the long run, Marginal Propensity to Consume (MPC) is less than the Average Propensity to Consume (APC), where MPC= $\frac{\Delta C}{\Delta Y}$. This is due to the fact that in the short run exogenous consumption remains unchanged despite the changes in income. On the other hand, in the long run, exogenous consumption rises as wealth and income rise and Marginal Propensity to Consume is closer to the Average Propensity to Consume(Keynes, 1936). Second, the proportion of income consumed is assumed to reduce as income rises:$\frac{\partial APC}{\partial Y}$<0, thus, income elasticity, which is defined as $\frac{MPC}{APC}$, would be less than one.. Finally, the consumption function is steady in both the short run and long run.

Keynes (1936), argued that consumption is the most appropriate economic factor which can be used to boost aggregate demand. Keynes further asserted that during bad times, the government should use fiscal policy to stimulate household consumption which in turn promotes economic performance. The most effective fiscal policy tools which can be used include government expenditure and taxation (Pigou, 1936, Keynes, 1936).

Most of the studies conducted to evaluate the impacts of fiscal policy on household consumption used government expenditure and tax revenue as proxies for fiscal policy, see (Merko et al., 2020, Saraswati and Wahyudi, 2018, Sunge et al., 2015). It is vital to have both the effects of government consumption expenditure and tax captured as they greatly affect consumption. Likewise, the current study used government consumption expenditure and tax revenue as proxies for fiscal policy.

Therefore, by incorporating fiscal policy components, the aggregate consumption function becomes a function of aggregate income tax revenue and government consumption expenditure.

$$C_t = (Y_t, TRt, GCt) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (4.2)$$

Where; C_t is Aggregate consumption at time t, Y_t is the gross domestic product, GC_t is government consumption expenditure, and TR_t is tax revenue.

Keynes (1936) postulates that government consumption expenditure has a positive relationship with household consumption, while tax revenue negatively affects household consumption. To boost household consumption, the government can either increase government consumption or lower taxes (expansionary fiscal policy).

If Keynes' presumption holds, then the Ricardian Equivalence raises the question of whether increasing government consumption or lowering taxes would boost aggregate demand or whether people would account for the implications of today's expenditure for future taxes (Ofori-Abebrese and Pickson, 2018). The REH is in most cases displayed in a model where the representative agents have infinite life, under the assumptions that the consumers have optimising behaviour, consumers are fully rational agents, presence of non-distortionary taxation and perfect capital market. Under these assumptions, a given level of government consumption, the tax-debt composition has no real effect on the economy. The REH postulates that households are foresighted to recognise that lowering taxes in the present period for high debts to finance government expenditure implies taxation in the future. Hence they tend to save

more when taxes are reduced (Barro, 1974). Therefore, it was essential to incorporate public debt (PD) in the consumption function 4.2 to test if Ricardian Equivalence holds in Kenya.

$$C_t = (Y_t, GC_t, TR_t PD_t) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (4.3)$$

The inclusion of public debt in this function is also justified by (Evans, 1988, Haug and Banking, 1990) and (Sunge et al., 2015).In any economy, price levels are found to have a significant implication on household consumption. This effect is mostly observed via inflation, which can be defined as a general rise in the price level (Mankiw, 2013, Rowan, 1983). According to Rowan (1983), inflation has a negative relationship with household consumption. This is because high inflation rates tend to lower households purchasing power as they indirectly reduce disposable income. Thus, high inflation rates lead to low levels of household consumption expenditure. On the other hand, low inflation rates increase consumers' purchasing power, leading to an increased household consumption rate (Rowan, 1983).

Looking at the data for inflation and household consumption in Kenya, there seems to be a similar trend. And so to understand how Kenyan households respond to inflationary changes, it was important to capture the relationship between inflation and consumption. Thus, the current study included the inflation component as a control variable, and the consumption function took the form;

$$HC_t = \alpha_0 + \alpha_1 GC_t + \alpha_2 TR_t + \alpha_3 PD_t + \alpha_4 Y_t - \alpha_5 INF_t + \mu_t \ldots\ldots\ldots \quad (4.4)$$

Where; HC_t; is total household consumption, Y_t is real GDP growth, GC_t is government consumption expenditure, TR_t is tax revenue, PD_t is public debt, INF_t is the inflation rate, and finally μ_t- is the error term.

4.8 Definition of Variable operations

4.8.1 Household consumption/private consumption

Household consumption expenditure (HC) is used in the current study as a proxy for pure household consumption, and it is the explained or the dependent variable. Following the PIH

definition, household consumption expenditure is the best measure of people's living standards. This is because it is found to be more stable across time than current income, which is prone to fluctuations due to the nature of economic activities (Friedman, 1957). There is no specific time where income can be equal to consumption because people can borrow from different sources, save a proportion of their income for future use, and may be getting more income from the stock of their investments. Therefore, consumption expenditure can give a better reflection of long-term or permanent income, hence, it is considered a better proxy of economic wellbeing (Brewer et al., 2006, Brewer and O'Dea, 2012).

4.8.2 Tax revenue

(Andrejovska and Pulikova, 2018) define tax revenue as money collected by the government on business profits and workers incomes or added to the cost of some goods, services, and transactions. Tax revenue is obtained from charges exerted on goods and services, social security contribution taxes, payroll taxes, taxes on ownership and transfer of property and many more. According to Ayunasta, (2020) tax revenue is a source of income that can be collected continuously and optimally advanced according to government needs and the situation of an economy. Total tax as a percentage of GDP explains the share of a country's output collected by the government through taxes and it is considered one of the government's fiscal policy tools used to control the economy's resources. In the current study, tax revenue is used as an independent variable.

4.8.3 Government consumption expenditure

Government expenditure is used to execute projects and tasks of the central government (Ayunasta et al., 2020). Government expenditure is also used as a fiscal policy tool, and so in the current study, it is an independent variable.

4.8.4 National Public debt

National Public debt, also known as national government debt, is the total outstanding debt owed by the central government. It consists of multilateral and bilateral debt, export credit facilities, leasing, commercial debt and also government securities issued both locally and

overseas but owned by non-residents. National public debt is one of the most important resources used by the government to finance its expenditure and fill the budget deficit. In the current study, it is one of the independent variables which will help determine if REH holds in Kenya.

4.8.5 Real Gross Domestic Product

Gross Domestic Product (GDP) is the most used measure of an economy's output and it is a representation of the monetary value of all goods and services that are produced within a country in a specified period of time (KNBS, 2018). Economists also use GDP to evaluate the health and the growth of an economy. GDP growth rate is regarded as the best indicator of the economic performance of a country. If GDP grows for two consecutive quarters, it is an indication that the economy is expanding as incomes are increasing, and consumers can make more purchases (Mankiw, 2013). Therefore, GDP explains the general performance of a nation at a specified time.

4.8.6 Inflation

Economists define inflation as the general price rise of goods and services for a given period of time. Inflation is known to be able to induce a sustained drop in the purchasing power of money (Mankiw, 2013). In most cases, Consumer Price Index (CPI) is used to report inflation rates. CPI is determined monthly by the national bureau of statistics and for the current study, inflation is measured by CPI using 2010 as the base year. Economic theory suggests that inflation has an inverse relationship with household consumption (Mankiw, 2013). Extensive efforts were made to investigate the relationship between inflation and household consumption in the 1970s, and various empirical studies found inflation to have a negative relationship with household consumption which was statistically significant (Deaton, 1977, Howard and Statistics, 1978, Davidson et al., 1978). The Incorporation of inflation in the household consumption model has both empirical and theoretical justification.

4.9 Data collection technique and the data source

Pure secondary data was used in the empirical analysis. According to (McQueen and Knussen, 2013), secondary data is a type of data collected from secondary sources or data obtained from earlier research. In historical research, secondary sources have emerged as prints, such as summary statistics and newspaper clippings (Salkind, 2017). The advantage of using secondary data is that it is time convenient since the data has already been collected and refined. The data utilised in the empirical analysis were retrieved from the data sources summarised in table 1.

Table 1: Data Source

Variable	***Source***	***Description of the variable***
Household consumption (HC)	KNBS	Total household consumption expenditure (Kenya shillings)
Government consumption expenditure (GC)	World bank	Total government consumption expenditure (Kenya shillings)
Real GDP (Y)	World bank	Real gross domestic product (Kenya shillings)
Tax Revenue (TR)	IMF and KNBS	Total tax revenue plus grants (Kenya shillings)
Public debt (PD)	Kenya public debt reports and KNBS	National public debt (Kenya shillings)
Inflation (INF)	World bank	Inflation rate(CPI index)

4.10 Data analysis

4.10.1 Statistical analysis software

The current study used EViews version 10 software for data analysis. EViews is a windows-based econometric software that is commonly used when working with time series econometric analysis. After the data was downloaded from various sources by the researcher in excel format, it was later imported into Econometric Views software (EViews) for analysis.

4.10.2 Correlation test

A Correlation coefficient matrix was also used in examining the strength of the relationship between the variables. Correlation is the degree and the strength of association between two variables. A correlation coefficient (r) reveals the direction and strength of a linear correlation among variables. The parameter (r) has values ranging from -1 to +1, where the negative (-) and the positive (+) signs tell the direction of the relationship. +1.00 means there is a perfect positive relationship, 0.00 means no relationship, and finally, -1 shows the presence of a perfect negative linear relationship between the pared variables. Under each correlation coefficient is the probability value which indicates whether the correlation is statistically significant or not. The relationship between the variables was investigated, and table 2 summarises a correlation matrix of the variables used in model estimation.

Table 2 Correlation Matrix

Correlation Probability	HC	GC	TR	PD	Y	INF
HC	1.000000					
GC	-0.255050 0.0802	1.000000				
TR	0.570450 0.0000	-0.137523 0.3513	1.000000			
PD	0.380574 0.0076	-0.170958 0.2453	0.691558 0.0000	1.000000		
Y	-0.150521 0.3072	0.217062 0.1384	-0.381579 0.0074	-0.471198 0.0007	1.000000	
INF	-0.354469 0.0134	0.274119 0.0594	-0.013798 0.9258	0.102436 0.4884	-0.411158 0.0037	1.000000

Source: Authors computations using data from World Bank (2020), KNBS and IMF

The results presented in Table 2 shows how the dependent and the independent variables are related, and also the relationship between the independent variables themselves.

Government consumption expenditure, real GDP, and inflation had a negative association with the dependent variable (household consumption) with pairwise correlations of 0.25, 0.15, and 0.35, respectively. However, the real GDP correlation was not statistically significant. Interestingly, tax revenue had a positive association with the dependent variable with a pairwise correction of 0.57 (P<0.01). This implies that household consumption increases as tax revenue increases. Apparently, this is where the problem discussed in this study emanates from, as theory suggests otherwise. Therefore, this study investigated this problem further, and the results are presented in the next section under the regression analysis.

Public debt has a weak positive relationship with household consumption with a pairwise correlation of 0.38 (P<0.01). Government consumption was found to have both a positive and a negative correlation with other explanatory variables, but only its association with inflation was statistically significant (0.274229, PV=0.0594). Real GDP had a weak negative correlation with tax revenue, public debt, and inflation, and their pairwise correlations were (0.38, P<0.01), (0.47 0.41, P<0.01) and (0.41, P<0.01) respectively.

In conclusion, there seem to be both negative and positive associations between the variables. A strong positive association was observed between public debt and tax revenue with a pairwise correlation of 0.69, which is statistically significant (P<0.01). With this kind of relationship, regressing the two variables in the same model can cause multicollinearity. However, neither of the variables is dropped since the effects of both variables on household consumption will help in answering the third research question.

4.10.3 Model Estimation

From the collected data, it is evident that a structural break exists after 1992. This structural break could have resulted from the structural change of 1992 when Kenya transitioned from a single party democratic country to a multiparty democratic country.

The structural break test for government expenditure, tax revenue and public debt were conducted using the Zivot Andrew break test and tested if they were statistically significant using the Chow test. From the results, only the structural break of 1992 was found to be

necessary to include in the model and the results are as reported in figure 5 and table 3. The rest of the tests were recorded in the appendix section.

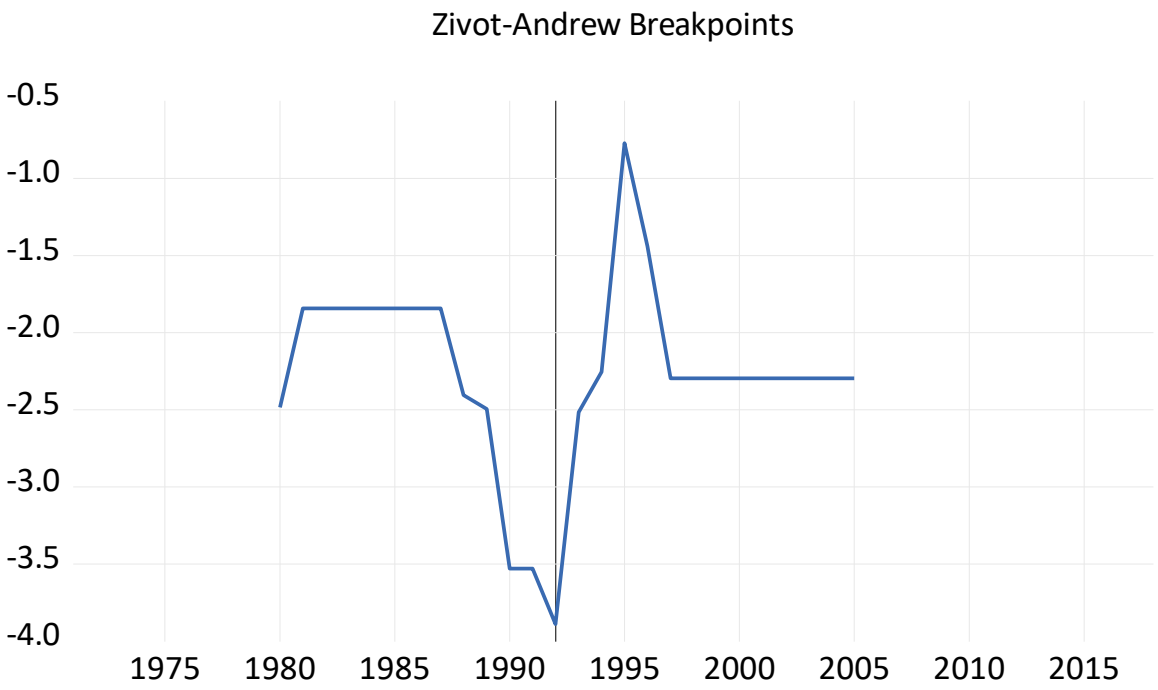

Figure 5: Zivot Andrew breakpoint test

Source: Own generated figure from EViews

The Zivot Andrew breakpoints graph indicates that only one structural break was observed in the data series for government expenditure. The point crossed by the vertical line indicates that a structural break exists in the year 1992. The chow test was further utilised to find out if it was worth including this structural break in the model. The null hypothesis H_0: no breaks at specified breakpoints was tested against its alternative hypothesis H_1: there is a break at the specified breakpoint. The Chow test results were as summarised below.

Table 3: Structural break test

Chow Breakpoint Test: 1992

Null Hypothesis: No breaks at specified breakpoints

Varying regressors: All equation variables

Equation Sample: 1971 2018

F-statistic	1.053130	Prob. F(5,30)	0.4055
Log likelihood ratio	6.468479	Prob Chi-Square(5)	0.2633
Wald Statistic	5.265648	Prob. Chi-Square(5)	0.3843

The f statistic (1.0531) was not statistically significant (PValue; 0.4055). Therefore we failed to reject the null hypothesis of no structural break in 1992. This made it important to introduce a dummy variable MD to help in capturing the impacts of this structural change. A dummy variable MD took the value 1 for the period after 1992, where the country was under multiparty leadership and 0 otherwise. Again to for a straightforward interpretation of results, all the variables were transformed into their natural log form.

$$LnHC_t = \alpha_0 + \alpha_1{}^i lnGC_t + \alpha_2 lnTR_t - \alpha_3 lnPD_t + \alpha_4 lnY_t - \alpha_5 INFt + MD \ldots\ldots\ldots \quad (4.5)$$

Where: LNHC is the log of household consumption, LNY; the log of national income, LNGC; the log of government spending, LNTR; log of tax revenue, LNPD; the log of public debt, INF; inflation And MD; the dummy variable.

Obtaining consistent results in any study is dictated by the estimation method (Ofori-Abebrese and Pickson, 2018). The current study employed an Error correction model for data analysis because it can examine the long and short run impacts of the explanatory variables on the

dependent variable simultaneously. The method which best suited the current study was the Nonlinear autoregressive distributed lag (NARDL) bounds testing error correction model developed by (Shin et al., 2014). This model was considered due to the peculiar advantages it has. Firstly, it can capture the asymmetric effects of fiscal policy and public debt on household consumption, which means that the model is able to capture positive and negative changes of the dependent variables separately. According (Chen et al., 2020) NARDL bounds testing error correction method is the best method to use when one wants to capture economic frictions, leading to vertical movements in the economy**.** Secondly**,** the NARDL model may be used on variables with I (0) and I (1) orders of cointegration, and finally, it can capture both the short-run and the Lon run effects of fiscal policy and public debt on household consumption. The NARDL specification was initiated from the linear ARDL model, which involves estimating the unconditional error correction model (UECM) version of the ARDL model.

4.10.4 Inferential statistical analysis

Inferential statistics involves using statistical methods to help derive conclusions about the population based on the gathered sample (Ling and Yusop, 2014). The empirical analysis, which was used in the current study, involved four major steps. First, a stationarity test was carried out on the variables using the ADF and PP stationarity test methods. Second is the determination of the optimal lag length to be used in the model. The third step involved estimating the nonlinear ARDL bounds test (equation 4.7) to help check if the six variables have a nonlinear Cointegration. Finally, the NARDL ECM model was estimated.

Step1: Unit root test.

In most cases, macroeconomic time series data is non-stationary, presenting a particular trend. Often, the data remains non-stationary even after getting rid of the deterministic trend due to the presence of unit root. Stationarity is the likelihood of a variable going back to its original after economic shocks (Gujarati, 2009). A variable is said not to have a unit root if its variance and mean remain the same over time. The covariance value from one period to another is dependent on the lag between the periods rather than on the specific time of covariance computation (Granger et al., 1974). According to Granger et al., (1974) using a non-stationary series in a regression model can lead to obtaining spurious results even if statistically significant.

The current study used the standard Augmented Dickey-Fuller (ADF) test and Philips Perron (PP) unit root test to examine the stationarity of the data series. Variables for the series found to be non-stationary were made stationary by differencing. This was done to ascertain that no variable is integrated of order two I (2) since only I (1) or I (0) variables can be accommodated in the NARDL model.

The conditions for ADF and PP test decision criteria were:

H_0; non-stationary (presence of unit root in the series)

H_1: stationary (absence of unit root in the series)

If T-stat< Critical value (CV), we do not reject H_0.

If T-stat >Critical Value (CV), we reject H_0

Step 2: Lag length determination.

Before checking whether the variables are cointegrated, it is necessary to specify the number of lags to be incorporated in the model. Including the optimal lag lengths help eliminate serial correlation among the residuals. Schwarz information criterion (SIC) was used to help decide the appropriate lag length.

Step 3: Cointegration and asymmetry test

A cointegration bounds test was conducted to test if there exists a long run cointegration among the variables by comparing the calculated F statistics with the upper bound I(1) and lower bound I(0) critical values. Suppose the calculated F-test statistic is higher than the respective upper bound critical value. In that case, we reject the null hypothesis of H_0 ; no Cointegration, to mean that they have a long run asymmetric relationship. This also means that even if there are shocks in the short run, which may affect their movements, they will converge in the long run with time. However, suppose the calculated F-statistic is less than the respective lower bound critical value, we fail to reject the null hypothesis, and come to a conclusion that the

variables have no long run cointegration. If the calculated F-statistic falls between the upper and the lower bound, then the findings are inconclusive.

Using the F-test criteria (Pesaran et al., 2001), long-run coefficient asymmetry (both positive and negative asymmetry) is tested for all the regressors. The null hypothesis H_0 ; the variables have no long run asymmetric cointegration was tested against the alternative hypothesis, H_1; the variables have a long run asymmetric cointegration. If we reject the null hypothesis ($H_{0;}$ $\rho = Q^+ = Q^- = 0$) of no Cointegration, we conclude that the variables are cointegrated in the presence of asymmetry.

Step 4: NARDL model

After confirming whether the variables have a long run relationship, the Nonlinear ARDL model was estimated instead of the commonly used unconditional error correction version (UECM) of the ARDL model. This method employs the decomposed partial sum of negative and positive squares to explore the asymmetries of regressors in both the short run and long run, hence providing consistent nonlinear estimates. The model also assumes that the response of the dependent variable to increase (+) and decrease (-)each independent variable is asymmetric (Shin et al., 2014). The decomposed positive and negative asymmetries for real GDP (Y), government consumption (GC), tax revenue (TR), public debt (PD), and inflation (INF) can be expressed as follows;

$Y_t^+ = \sum_{i=1}^{t} \Delta y_i^+ = \sum_{i=1}^{t} max\ (\Delta Y_i, 0)$. . $Y_t^- = \sum_{i=1}^{t} \Delta Y_{i^-} = \sum_{i=1}^{t} min(\Delta Y\ i, 0)$

$GC_t^+ = \sum_{i=1}^{t} \Delta GC^+_i = \sum_{i=1}^{t} max\ (\Delta GC_i, 0)$. $GC_t^- = \sum_{i=1}^{t} \Delta GC_{i^-} = \sum_{i=1}^{t} min(\Delta GC\ i, 0)$

$TR_t^+ = \sum_{i=1}^{t} \Delta TR_i^+ = \sum_{i=1}^{t} max\ (\Delta TR_i, 0)$. . $TR_t^- = \sum_{i=1}^{t} \Delta TR_{i^-} = \sum_{i=1}^{t} min(\Delta TR\ i, 0)$

$PD_t^+ = \sum_{i=1}^{t} \Delta PD_i^+ = \sum_{i=1}^{t} max\ (\Delta PD_i, 0)$. $PD_t^- = \sum_{i=1}^{t} \Delta PD_{i^-} = \sum_{i=1}^{t} min(\Delta PD\ i, 0)$

$INF_t^+ = \sum_{i=1}^{t} \Delta INF_i^+ = \sum_{i=1}^{t} max\ (\Delta INF_i, 0)$. $INF_t^- = \sum_{i=1}^{t} \Delta INF_{i^-} = \sum_{i=1}^{t} min(\Delta INF\ i, 0)$

The NARDL model was obtained by accommodating the positive and negative partial sums of the independent variables in the ARDL model. Accordingly, the nonlinear ARDL takes the following form:

$$\Delta LnHC_t = \alpha_+ \rho HC_{t-1} + Q_1^+ GC^+_{t-1} + Q_1^- GC^-_{t-1} + Q_2^+ TR^+_{t-1} + Q_2^- TR^-_{t-1} + Q_3^+ PD^+_{t-1} + Q_3^- PD^-_{t-1} + Q_4^+ Y^+_{t-1} + Q_4^- Y^-_{t-1} + Q_5^+ INF^+_{t-1} + Q_5^- INF^-_{t-1} + Q_6 MD + \sum_{i=1}^{q-1} \delta_1 \Delta\ ln\ HC_{t-i} + \sum_{i=0}^{p} \beta 1^+ \Delta\ ln\ GC^+_{t-}$$

$_I + \sum_{i=0}^{p} \beta 1^{-} \Delta\ ln\ GC^{-}_{t-I} + \sum_{i=0}^{p} \beta 2^{+} \Delta\ ln\ TR^{+}_{t-i} + \sum_{i=0}^{p} \beta 2^{-} \Delta\ ln\ TR^{-}_{t-i} + \sum_{i=0}^{p} \beta 3^{+} \Delta\ lnPD^{+}_{t-I} + \sum_{i=0}^{p} \beta 3^{-} \Delta\ lnPD^{-}_{t-I} + \sum_{i=0}^{p} \beta 4^{+} \Delta\ ln\ Y^{+}_{t-i} + \sum_{i=0}^{p} \beta 4^{-} \Delta\ ln\ Y^{-}_{t-i} + \sum_{i=0}^{p} \beta 5^{+} \Delta\ INF^{+}_{t-i} + \sum_{i=0}^{p} \beta 5^{-} \Delta\ INF^{-}_{t-i} + \beta_6 MD + \mu$ ……(4.6))

For us to make a judgement on the presence of asymmetry, an ordinary least square regression is applied on equation 4.7 following three steps. First, we tested asymmetric cointegration based on the asymmetric restriction $\rho = Q_{1} = Q_{2,3,4,5,6} = 0$. Second, the study validated the long run and short run asymmetric impacts of *GC, TR, PD, Y and INF* on *HC*. The long run asymmetric effect of the regressors on the dependent variable HC is calculated as $L_m = \frac{-\varrho^{+}}{\rho}$ and $L_m = \frac{-\varrho^{-}}{\rho}$.

The null hypothesis $H0; \frac{-\varrho^{+}}{\rho} = \frac{-\varrho^{-}}{\rho}$ presence of symmetry is tested against the alternative H_1; $\frac{-\varrho^{+}}{\rho} \neq \frac{-\varrho^{-}}{\rho}$ absence of symmetric impact using Wald test criteria. This helps test if the difference in the asymmetric coefficients is statistically significant. If we reject $H_{0,}$ there is a long run asymmetric impact, indicating the magnitude of change in the dependent variable when the independent variables increase is not the same as when they decrease.

The short run asymmetric effect of the regressors is represented as $\sum_{i=0}^{p} \beta 1^{+}, \sum_{i=0}^{p} \beta 1^{-}, \sum_{i=0}^{p} \beta 2^{+}, \sum_{i=0}^{p} \beta 2^{-}, \sum_{i=0}^{p} \beta 3^{+}, \sum_{i=0}^{p} \beta 3^{-}, \sum_{i=0}^{p} \beta 4^{+} \sum_{i=0}^{p} \beta 4^{-}, \sum_{i=0}^{p} \beta 5^{+}, \sum_{i=0}^{p} \beta 5^{-},$

Wald test criteria were employed to test the presence of short run asymmetry for the positive and negative shocks using the null hypothesis.

$H_0; \sum_{i=0}^{p} \beta 1^{+} = \sum_{i=0}^{p} \beta 1^{-}, \sum_{i=0}^{p} \beta 2^{+} = \sum_{i=0}^{p} \beta 2^{-}, \sum_{i=0}^{p} \beta 3^{+} = \sum_{i=0}^{p} \beta 3^{-}, \sum_{i=0}^{p} \beta 4^{+} = \sum_{i=0}^{p} \beta 4^{-}, \sum_{i=0}^{p} \beta 5^{+} =, \sum_{i=0}^{p} \beta 5^{-}$

Suppose by using Wald test criteria, the presence of the long run symmetry and short run symmetry are rejected. In that case, we conclude that the impact of the independent variables on the dependent variable is asymmetric.

Investing if fiscal policy crowds in /out household consumption.

If the variables are confirmed cointegrated, the long run NARDL and the short run error correction models are estimated. The long run NARDL take the form;

$$\Delta LnHC_t = \alpha + \phi_1^+ GC^+_{t-1} + \phi_1^- GC^-_{t-1} + \phi_2^+ TR^+_{t-1} + \phi_2^- TR^-_{t-1} + \phi_3^+ PD^+_{t-1} + \phi_3^- PD^-_{t-1} + \phi^+ Y^+_{t-1} + \phi_4^- Y^-_{t-1} + \phi_5^+ INF^+_{t-1} + \phi_5^- INF^-_{t-1} + \phi_6 MD \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (4.8)$$

To know if fiscal policy is effective in the long run, the hypothesis H_0; $\phi_1^+ > 0$, $\phi_2^- < 0$ expansionary fiscal policy crowds in household consumption must hold against its alternative. Again the hypothesis H_0; $\phi_1^- > 0$, $\phi_2^+ < 0$ contractionary fiscal policy crowds out household consumption should hold against H_1; $\phi_1^- < 0$, $\phi_2^+ > 0$.

The short run implications of fiscal policy and public debts on household consumption are obtained from the short run ECM;

$$\Delta LnHC_t = \sum_{i=0}^{p} \beta 1^+ \Delta \ ln\ GC^+_{t-I} + \sum_{i=0}^{p} \beta 1^- \Delta \ ln\ GC^-_{t-I} + \sum_{i=0}^{p} \beta 2^+ \Delta \ ln\ TR^+_{t-i} + \sum_{i=0}^{p} \beta 2^- \Delta \ ln\ TR^-_{t-i} + \sum_{i=0}^{p} \beta 3^+ \Delta \ lnPD^+_{t-I} + \sum_{i=0}^{p} \beta 3^- \Delta \ lnPD^-_{t-I} + \sum_{i=0}^{p} \beta 4^+ \Delta \ ln\ Y^+_{t-i} + \sum_{i=0}^{p} \beta 4^- \Delta \ ln\ Y^-_{t-i} + \sum_{i=0}^{p} \beta 5^+ \Delta \ INF^+_{t-i} + \sum_{i=0}^{p} \beta 5^- \Delta \ INF^-_{t-i} + \beta_6 MD + \Psi ECT \ldots\ldots\ldots\ldots\ldots (4.9)$$

ECT represents the error correction term towards long-run equilibrium post the short-term shock, while Ψ shows the rate at which the parameters converge to equilibrium. To ensure convergence of the long-run dynamics towards equilibrium, the coefficient (Ψ), must be negative and statistically significant.

In the short run H_0; $\beta_1^+ > 0$, $\beta_2^- < 0$ expansionary fiscal policy crowds in household consumption should hold against H_1; $\beta_1^+ < 0$, $\beta_2^- > 0$.Again the null hypothesis H_0; H_0; $\beta_1^- > 0$, $\beta_2^+ < 0$ *Contractionary* fiscal policy crowds out household consumption should hold against H_1; $\beta_1^- < 0$, $\beta_2^- > 0$.

Testing whether the Ricardian Equivalence Hypothesis (REH) holds in Kenya.

For REH to hold, in the long- run hypothesis H_0; $\phi_1^+ < 0$ must hold against H_1; $\phi_1^+ > 0$, and H_0; $\phi_2^+ = \phi_2^- = \phi_3^+ = \phi_3^- = 0$. On the other hand, in the short run, if the null hypothesis H_0; $\beta_1^+ < 0$ *and* H_0; $\beta_2^+ = \beta_2^- = \beta_3^+ = \beta_3^- = 0$ holds, then this is evidence that households in Kenya are Ricardian in the short run.

4.10.5 Assessment of fitness of the model

Several post-model estimation tests were carried out to assess the model's fitness. These tests included normality test, serial correlation test, heteroscedasticity test, linearity test and model stability test. A normality test was conducted to determine if the residuals from the model violate the normality assumption. Jarque-Bera statistics test was used to perform the normality test.

A serial correlation test is always conducted to assess the temporary independence of successive error terms of a series. In this case, the Bruesch–Godfrey LM test was used. A heteroscedasticity test was carried out to find out if error terms exhibit a constant variance. Hervey test was employed in testing the presence of heteroscedasticity.

A linearity test was conducted to find out if the variables used in the model have a linear relationship or not. Ramsey RESET test was used for the linearity test. The cumulative sum of Squares of the recursive residuals (CUSUMSQ) and cumulative sum of the recursive residuals (CUSUM) test and were used to check for model stability. Lastly, cumulative dynamic multiplier graphs were used to track the nonlinear impact paths of government consumption expenditure and tax revenue on household consumption.

4.11 Ethical consideration

To use the needed secondary data, the researcher sought permission from the concerned institution while adhering to the University of Kwazulu Natal's code of ethics for research. The researcher was honest enough not to fabricate any data and reported the findings honestly as obtained. Any source of information was referenced, and previous researchers were well-acknowledged.

4.12 Conclusion

The chapter explored the method used in the empirical analysis of the implications of fiscal policy and public debt on household consumption, and also described the model which was used for analysis and how the objectives and questions of the study were met.

CHAPTER 5:

DATA ANALYSIS AND DISCUSSION OF RESULTS

5.1 Introduction

This chapter discusses the results of the analysis conducted towards investigating the implications of fiscal policy and public debt on household consumption in Kenya over 47 years that is from 1971 to 2018. The primary aim of this section is to discuss the results obtained from the empirical analysis conducted to evaluate the asymmetric effects of fiscal policy and public debt on household consumption and in the investigation of whether fiscal policy crowds in or crowds out household consumption in Kenya.

A nonlinear ARDL model was employed in the analysis. Before model estimation, some time series pre-estimation tests were done. These tests included unit root tests, lag length determination, and Cointegration tests. Regression analysis is estimated for the NARDL model to evaluate the long-run and the short-run asymmetric relationship between dependent and independent variables using EViews. Finally, model diagnostic tests are carried out to assess the fitness of the model, and the chapter concludes with a discussion of the main findings

5.2 Empirical analysis

For the empirical analysis section, log-transformed data is used to make the interpretation of results easier. Log transformation of variables is also essential, especially when dealing with data that is not normally distributed. It also helps in the normalisation of data and solves the problem of heteroscedasticity (Gujarati, 2009). The regression results of the analysis model, that is the long run and short run results are summarised in table 9 and 10 respectively. From the results obtained, the following research hypotheses are tested;

H_0; Fiscal policy and public debt do not have asymmetric effects on household consumption

H_1; Fiscal policy and public debt have asymmetric effects on household consumption

H_0**;** Expansionary fiscal policy crowds in household consumption in Kenya.

H_1; Expansionary fiscal policy does not crowd in household consumption in Kenya.

H_0; Contractionary fiscal policy crowds out household consumption in Kenya.

H_1; Contractionary fiscal policy does not crowd out household consumption in Kenya.

H_1**;** Ricardian Equivalence Hypothesis holds in Kenya.

H_0**;** Ricardian Equivalence Hypothesis does not hold in Kenya.

As explained in the methodology chapter, various steps are followed in model estimation, and they were as follows;

5.2.1 Unit Root Test

One of the NARDL model's preconditions is that none of the variables should be I (2). Thus, to ascertain the stationarity of the variables, unit root tests were conducted using Augmented Dick Fuller (ADF) and Phillips-Peron (PP) methods. Results of the tests generated at level and first difference are presented in Appendix A1 to A18. Tables 4 and 5 summarise the ADF and PP unit root tests for each variable at 5% level. Null H_0*;* the series is non-stationary, is tested against H_1: that the series is stationary. H_0 is rejected for the series that are found to be stationary. Under the ADF unit root test, the decision criterion is based on the absolute values of the calculated ADF t-statistic and ADF critical value at 5%. H_0 is rejected if the absolute value of the ADF t statistic is found to exceed the absolute value of the ADF critical value. Moreover, under the PP stationarity test, the absolute values of the PP t-statistic are also checked against the PP critical values, and H_0 is rejected if PP t-statistics is greater than the PP critical value to mean that the series does not have a unit root, meaning it is I (0).

Table 4: The results of the ADF unit root test

Variable	Log levels			First difference			Integration order
	ADF t-stat	***Critical value (5%)***	***p-value***	***ADF-t –stat***	***Critical value (5%)***	***p-value***	
LNHC	-1.2170	-2.9252	0.6595	-7.8508	-2.9281	0.000	I(1)
LNGC	-4.6774	-2.9458	0.0006*	NA	NA	NA	I(0)
LNTR	-2.2409	-2.9252	0.1951	6.6203	-2.9266	0.0000	I(1)
LNPD	-1.6722	-2.9252	0.4385	-6.6467	-2.9266	0.0000	I(1)
LNY	-5.7299	-2.9281	0.0000*	NA	NA	NA	I(0)
INF	-5.1477	-2.9252	0.0001*	NA	NA	NA	I(0)

Source: Table summarised from the unit root results generated from EViews.

, **, * indicates that the series is stationary at 1%, 5%, and 10% significance level, respectively.*

Table 5: Philips-Peron (PP) Unit root test

Variable	Log levels			First difference			Order of integration
	PP t-stat	***Critical value (5%)***	***p-value***	***PP t -stat***	***Critical value (5%)***	***p-value***	
LNHC	-0.8591	-2.9252	0.7924	-9.4090	-2.9266	0.0000	I(1)
LNGC	-4.7184	-2.9458	0.0005*	NA	NA	NA	I(0)
LNTR	-2.1949	-2.9252	0.2108	-6.6203	-2.9266	0.0000	I(1)
LNPD	-1.6722	-2.9252	0.4385	-6.6469	-2.9266	0.0000	I(1)
LNY	-5.7293	-2.9281	0.0000*	NA	NA	NA	I(0)
INF	-5.1490	-2.9252	0.0001*	NA	NA	NA	I(0)

Source: Table summarised from the unit root results generated from EViews.

, **, * indicates that the series is stationary at 1%, 5%, and 10% significance level, respectively.*

For household consumption, both the calculated values of Augmented Dick Fuller and Phillips-Peron tests were lower than their critical values [ADF: | 1.2170 |< | 2.9252 |], P-value 0.6595, [PP:| 0.8591| < | 2.9252|] P-value 0.7924. Moreover, their P-values were greater than 0.05, suggesting that household consumption data was non-stationary. Therefore, we failed to reject the null hypothesis H_0 household consumption is non-stationary. The household consumption series became stationary after first defencing [ADF: | 7.8508| > |2.9281|] and [PP: | 9.4090| > |2.9266|] and so a conclusion was reached that household consumption data had a unit root or was I (1). Government consumption was stationary at level as both the Augmented Dick Fuller and Phillips-Peron test statistics were larger than their respective critical values [ADF: |4.6774| > | 2.9458|] with P-value 0.0006, [PP: |4.7184| >|2.9458|, P-value 0.0005. With this information, H_0 was rejected, and it was concluded that government consumption data was I (0).

Tax revenue and Public debt unit root tests revealed that these were both non stationary, with the tax revenue data having ADF;| 2.2409|< |2.9252|, P-value 0.1951 and PP:| 2.2409|<| 2.9252|, P-value 0.2108, and public debt data ADF:| 1.6722| <|2.9252|, P-value 0.4385 and PP: |1.6722|<| 2.9252|, P-value 0.4385. Their data also became stationary after first differencing; hence it was concluded that tax revenue and public debt were I (1). It was interesting to discover

that real GDP data was stationary and statistically significant at level, as revealed by the stationarity tests conducted, ADF;| 5.7299| > | 2.9281|, P-value 0.0000 and PP:| 5.7293|>|2.9281|, P-Value 0.0000. Inflation turned out to be stationary and statistically significant at level as the ADF: |5.1477| >| 2.9252|, P-value 0.0001 and PP:| 5.1490| >|2.9252| P-value 0.0001 indicated. The stationarity test results confirmed no variable was integrated of order two, I (2), and thus moved to lag length determination.

5.2.2 Lag determination

Before performing the bounds test for Cointegration, it is crucial that the optimum number of lags to include in the model are determined. The symbol (*) is used to indicate the maximum number of lag each criterion selects. After specifying four lags to be included in the model, each criterion selected a lag length. Table 6 presents the lags selection by each criterion.

Table 6: Lag selection criterion

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-786.9323	NA	1.81e+08	36.04238	36.28568	36.13261
1	-654.7452	222.3148*	2325227.*	31.67024	33.37333*	32.30182*
2	-625.6928	40.93745	3498005.	31.98604	35.14892	33.15898
3	-592.5447	37.66831	5137823.	32.11567	36.73834	33.82998
4	-537.8723	47.21708	3834242.	31.26692*	37.34939	33.52259

Source: Author's own table generated from EViews

Where; LR; sequential modified LR test statistics (each test at 5% level, FPE; final prediction error), AIC; Akaike information criterion, SC; Schwarz information criterion and HQ; Hannan-Quinn information criterion.

LR, FPE, SC, and HQ selected one as the optimal lag length but AIC selected four lags. Choosing to incorporate more than one lag in annual data whose observations are few can reduce a model's degree of freedom and introduce a multicollinearity problem into the model

(Damodar N, 2004). For this reason, one lag was chosen as selected by SC lag selection criteria and not four lags.

5.2.3 Cointegration test

A bounds cointegration test among the variables was performed by checking Wald f-statistics against Pesaran et al., (2001) lower and upper bound critical values rather than the Johansen Cointegration method which is used more frequently. This method was regarded as better because, unlike the Johansen criterion, which uses a system of multiple equations, the NARDL bounds test uses a reduced form equation, and can accommodate variables that are purely I (1), purely I (0), or a mixture of both (Duasa, 2007). Table 7 presents the results for the bounds test of Cointegration.

Table 7: Bounds test for cointegration

				Bound critical values	
Test statistic	**Value**	**K**	**Level of significance**	**Lower bound**	**Upper bound**
f-statistic	6.54	10	1%	2.54	3.86
			5%	2.06	3.24
			10%	1.83	2.94

Source: Author's own table generated using bounds test for cointegration results.

The Calculated F statistic is compared against the Pesaran and shin (2001) lower bound I (0) and upper bound I (1) critical values at 10%, 5%, and 1% significance levels. From the cointegration test results, the calculated F-statistic is found to be 6.54, which is greater than all the upper bound critical values. Therefore, we reject the null hypothesis H_0; the variables have no long run asymmetric cointegration in favour of the alternative hypothesis H_1; the variables have a long run asymmetric cointegration. This suggested that there is a long-run asymmetrical relationship between household consumption and the explanatory variables used in the model.

5.2.4 Regression Analysis

Asymmetry test

To validate that the relationship between household consumption and its regressors is nonlinear, the Wald test criterion is used to test if the different asymmetric coefficients of the independent variables were statistically significant. The stepwise model estimates for the nonlinear ARDL are as recorded in Appendix A21.

The Wald test criterion was used to test if different asymmetric coefficients of the independent variables were statistically significant. The null hypothesis H_0; $\frac{-\varrho^+}{\rho} = \frac{-\varrho^-}{\rho}$, no long-run nonlinear relationship was tested against the alternative H_1;$\neq \frac{-\varrho^-}{\rho}$. Linear relationship.

Where $Q^+_{1,2\ldots6}$ represents the positive partial sums of the independent variables, $Q^-_{1,2,\ldots.6}$ represents the negative partial sums or the negative changes of the independent variables, and ρ is the lag of the dependent variable (household consumption). The coefficients ρ, $Q^+_{1,2\ldots6}$ and $Q^-_{1,2,\ldots.6}$ are recorded in Appendix (A21) under the Stepwise regression model.

Table 8 gives a summary of the asymmetric test results for all the dependent variables.

Table 8: Long-run asymmetry test results

Variables (both POS and NEG)	**F-statistic**	**P-value**	**Decision**
LNY	13.86419	0.007	Reject
LNGC	13.44069	0.009	Reject
LNTR	15.46328	0.0004	Reject
LNPD	5.505023	0.0251	Reject
INF	42.23979	0.0000	Reject

Source: Author's own table generated using asymmetry test results

From the Wald test result, the P values of the F-statistic for all the variables are less than 0.05. Therefore, we reject the null hypothesis H_0, no long-run nonlinear relationship. This means that there was evidence of a long-run asymmetry between the dependent variable (household consumption) and the independent variables (government consumption, tax revenue, public debt, real GDP, and inflation). Hence fiscal policy and public debt had an asymmetric relationship with household consumption. This clarified that the magnitude of change in the dependent variable, when the independent variables increase, is not the same as when they

decrease, confirming a long-run asymmetric relationship between the dependent and the independent variables. It was not possible to test for the presence of short run asymmetry because the parsimonious model captured inflation as the only factor that significantly affects household consumption in the short run.

NARDL Model

The long-run and short-run NADL model results are reported and discussed as per the sections below.

Long-run NARDL

The long-run NARDL model helped evaluate the long-run asymmetric relationship between the dependent and the independent variables. Table 9 gives a summary of the long-run NARDL results as obtained from EViews. As explained in the lag selection section, one lag was selected to be included in the model. However, the regression output of the long run NARDL model that was automatically generated gave parsimonious results that did not have the lagged values of the variables.

Table 9: Long run NARDL coefficient estimates

NARDL Long Run model

Dependent Variable: D (LNHC)

Selected Model: ARDL (1, 0, 0, 0, 1, 0, 0, 0, 0, 1, 1)

Sample: 1971 2018

Included observations: 46

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNGC_POS	-0.011280	0.004936	-2.285420	0.0295
LNGC_NEG	0.003567	0.004613	0.773315	0.4454
LNTR_POS	0.100057	0.086613	1.155223	0.2571
LNTR_NEG	-0.265383	0.136711	-1.941198	0.0617
LNPD_POS	-0.100001	0.037246	-2.684891	0.0117
LNPD_NEG	0.093767	0.071132	1.318208	0.1974
LNY_POS	-0.034529	0.008096	-4.264909	0.0002
LNY_NEG	0.001340	0.008332	0.160827	0.8733
INF_POS	0.028542	0.024872	1.147554	0.2602
INF_NEG	-0.061919	0.014011	-4.419446	0.0001

R^2	94.9%
Adjusted R^2	92.42
Durbin Watson statistics	2.413

Source: Author's own table generated using EViews

From the long-run NARDL results, it was found that in the long run, positive changes in government expenditure (LNGC_POS) have a significant impact on household consumption (LNGC_POS: -0.01128) which is statistically significant at 5% level P-value: 0.0295. This can be interpreted that, 1 % increase in government consumption expenditure led to a 0.01% decline in household consumption. However, negative changes in government consumption did not have a significant impact on household consumption. For the case of tax revenue, the results revealed that positive changes in tax revenue (LNTR_POS) had no significant effect on household consumption. However, negative changes in tax revenue (LNTR_NEG) had a negative relationship with household consumption as its coefficient implies -0.265383; (P-

value: 0.0617). This meant that if tax revenue decreases by 1%, household consumption expenditure increases by about 0.27 %.

In the long run, positive changes in public debt (LNPD_POS) also significantly affected household consumption (-0.100001) P-value of 0.0117, revealing that if public debt increases by 1%, household consumption decrease by 0.1%. For the control variables, positive changes in real GDP negatively impacted household consumption though the effect was slightly low (-0.034529, P-Value, 0.0002). From the LNY_POS coefficient, it can be said that if real GDP increases by 1%, household consumption decreases by about 0.03%. On the other hand, negative changes in real GDP did not significantly affect household consumption. For the case of inflation, only its negative changes (INF_NEG) had a significant impact on household consumption (-0.061919; P-value, 0.0001), and we can say that in the long run, if inflation decreases by 1%, household consumption increases by about 0.06 %.

R^2 tells models goodness of fit. An R^2 of 0.94948 revealed that the independent variables combined, explains approximately 95% variation in household consumption in Kenya from 1971 to 2018. The F Statistic (37.58), which is larger than 5 and with an F probability of 0.0000, meant that all the independent variables combined are statistically significant in explaining household consumption behaviour. Durbin–Watson statistics 2 means that there is no autocorrelation detected in the samples.

Short-run NARDL

The short-run impacts of fiscal policy and public debt on households' consumption were estimated and recorded in Table 10 below.

Table 10: Short-run model estimates (the ECM results)

NARDL Error Correction Regression
Dependent Variable: D (LNHC)
Selected Model: ARDL (1, 0, 0, 0, 1, 0, 0, 0, 0, 1, 1)
Case 3: Unrestricted Constant and No Tre
Sample: 1971 2018
Included observations: 46

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.624068	0.472944	9.777196	0.0000
D(LNTR_NEG)	0.152435	0.123149	1.237805	0.2254
D(INF_POS)	0.004441	0.010527	0.421923	0.6761
D(INF_NEG)	-0.039484	0.008644	-4.568048	0.0001
MD	0.049862	0.009756	5.110862	0.0000
ECT	-1.122589	0.114589	-9.796660	0.0000

Source: Author's own table generated using EViews

The automatically generated short-run model omitted various variables. The variables (positive and negative changes of real GDP, positive and negative changes of government consumption, positive and negative changes of public debt, and the positive changes of tax revenue) were omitted to indicate that they had no significant effect on household consumption in the short run. Moreover, in the short run, negative changes in tax revenue (D (LNTR_NEG) had no significant effects on household consumption, likewise the positive changes in inflation (D (INF_POS)). Looking at the coefficient of the negative changes in inflation (D(INF_NEG);-0.039484), it can be said that in the short run, if inflation decreases by 1%, household consumption increases by about 0.04%, as this was statistically significant at level (P-value;0.0001). Therefore, we can conclude that, in the short run, only the negative changes in inflation affected household consumption.

From the results estimated, it was also evident that, in the short-run, fiscal policy (government consumption expenditure and tax revenue) and public debt did not affect household

consumption. The dummy variable MD was statistically significant, revealing that household consumption was higher from 1992 to 2018 than from 1971 to 1991. This could insinuate that, in the short run, the change of governance from a single party to a multiparty country significantly affected household consumption in Kenya.

The Error Correction Term (ECT) captures the speed of adjustment towards equilibrium, and it also shows the amount of disequilibrium corrected in the model each year. The ECT (-1.122589) is negative and significant; P-value (0.0000) hence confirming that even after a short run shock the variables are able to converge back to equilibrium in the long run.

5.3 Post-estimation model diagnostic tests

Several model diagnostic tests are carried out and explained in this section. Breunch-Godfrey Language multiplier (LM) was adopted in testing for serial correlation. The null hypothesis $H_{0,}$ no serial correlation, was tested against the alternative H_1, presence of serial correlation. From the test results summarised in table 11, we can see that the probability value 0.0756 was greater than the 0.05 critical value. Thus we failed to reject the null hypothesis of no serial correlation.

Table 11: Post estimation diagnostic tests

Diagnostic test	Critical value	F-statistic value	Probability	decision
Serial correlation	0.05	3.396701	0.0756	Do not reject
Heteroscedasticity	0.05	0.545839	0.8919	Do not reject
Normality test		Jarque-Bera value (3.732862)	0.1546	Do not reject
Linearity test	0.05	4.408850	0.0446	Reject

Source: Author's own summary from diagnostic test results.

The study used the Harvey test to investigate if the model suffered from heteroscedasticity. The null hypothesis H_0; there is no heteroscedasticity problem in the model, or the model is homoscedastic was tested against $H_{1;}$ there is heteroscedasticity in the model. Harvey F-statistical probability value 0.4720 is greater than 0.05; therefore, we failed to reject the null hypothesis of H_0; no heteroscedasticity problem in the model. Jarque-Bera statistic test was used to test for normality. The null hypothesis $H_{0,}$ the error terms are normally distributed, was

tested against H_1; the error terms are not normally distributed. From the test, a histogram that was generated was found to be bell-shaped, and the Jarque-Bera statistic was greater than 0.05, meaning it was not significant. We also failed to reject the null hypothesis H_0; the error terms have a normal distribution and concluded that the error terms are normally distributed.

Moreover, a linearity test was conducted to determine if the model was correctly specified. Using the Ramsey RESET regression specification error test, the null hypothesis H_0, there is a linear relationship between the dependent and the independent variables, was tested against H_1; there is no linear relationship between the dependent and independent variables. The Ramsey RESET f test probability value 0.04456 is less than 0.05. Hence, we reject the null hypothesis H_0; there is a linear relationship between the dependent variable and the independent variables favouring H_1; no linear relationship between the dependent variable and the independent variables, so we conclude that the model was well specified.

Also, the model stability test was executed by plotting recursive CUSUM and CUSUMSQ statistics against the breakpoints. This was to help determine whether all the parameters in the model were stable. Both CUSUM and CUSUMSQ are plotted within 5% critical bounds, as shown in figure 6;

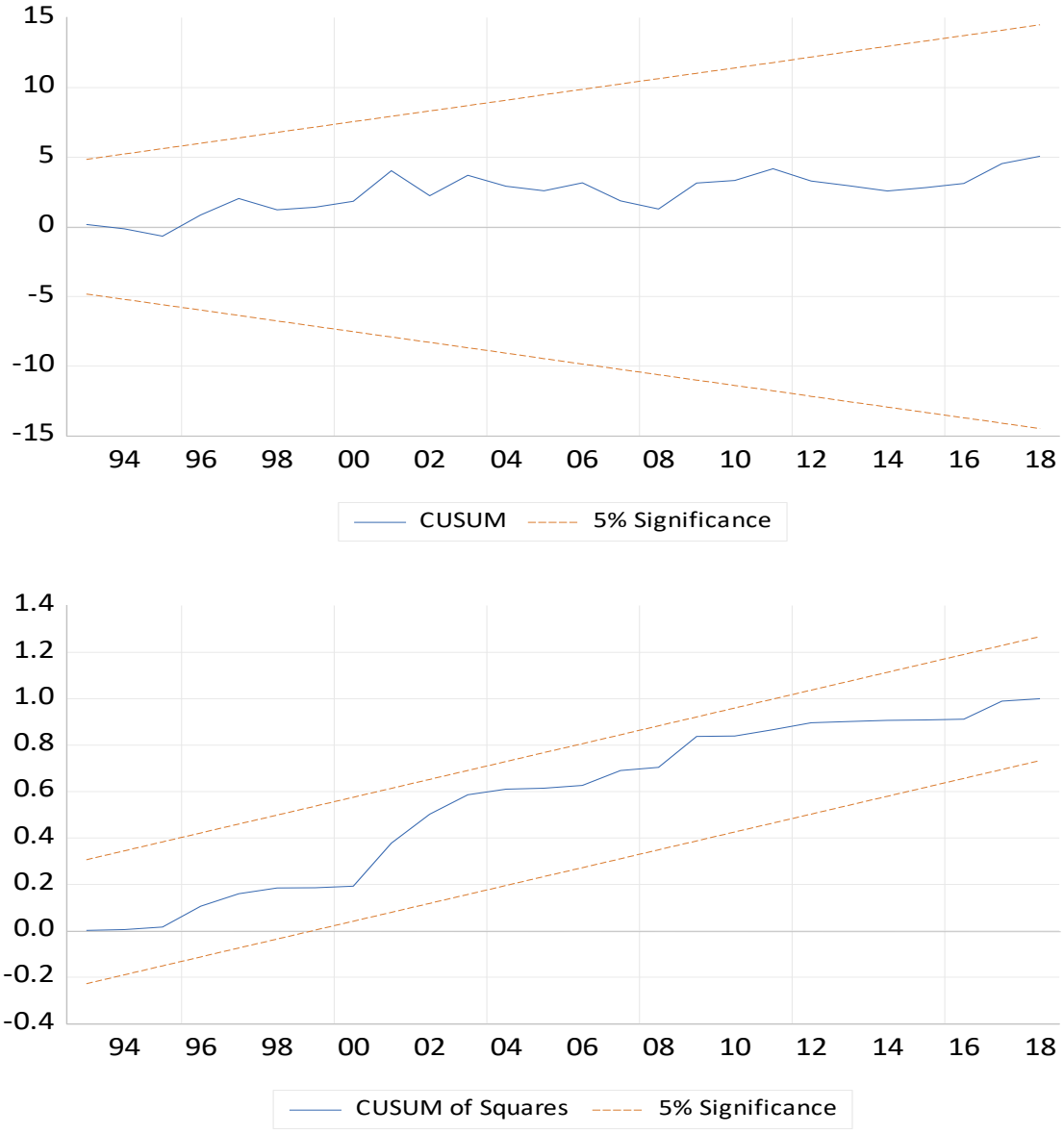

Figure 6: CUSUM and CUSUM of square

Source: Author's own graphs generated from EViews

From the CUSUM and CUSUMSQ graphs, it is clear that both lie within 5% critical bounds. So, we reject the null hypothesis that the parameters in the model are unstable and conclude that all the parameters used in the regression model are stable.

Finally, cumulative dynamic multipliers for fiscal policy were used to check the pattern of adjustment of the dependent variable (household consumption) to its new long-run equilibrium

following the positive and negative unitary shocks in government consumption and tax revenue.

Note;

1. The horizontal axis of the multiplier graphs shows years, and the vertical axis captures the positive and the negative changes of the independent variable.

2. The continuous black line shows how the dependent variable adjusts due to the independent variable's positive changes.

3. The black discontinuous line shows how the dependent variable adjusts due to negative shocks of the independent variable.

4. The discontinuous red line is the asymmetric plot and it portrays the difference between the dynamics multiplier of negative and positive changes in the regressors.

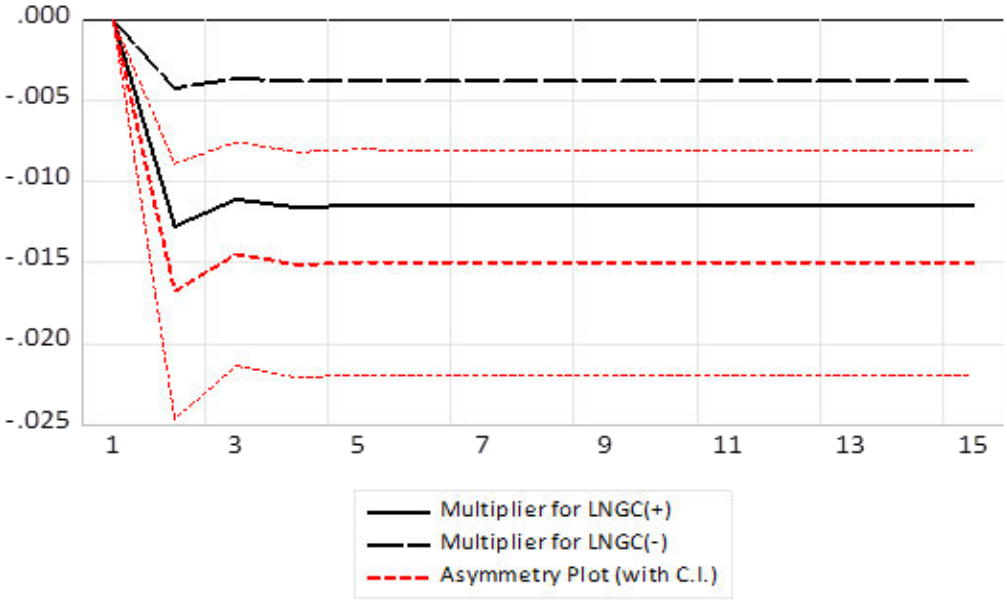

Figure 7: Dynamic Multiplier, Government consumption expenditure on household consumption

Source: Own generated figure from EViews

Figure 7 portrays an asymmetric adjustment of household consumption to positive and negative shocks of government expenditure. The multiplier for the positive changes in government expenditure shows that household consumption reacts negatively to the positive shocks of

household consumption. However, the effects of negative shocks of government consumption on household consumption are negligible and insignificant; hence only the positive changes on government expenditure have a significant impact on household consumption in Kenya. From the shape of the dynamic multiplier, it is also evident that the response of household consumption to the positive or negative shocks of government expenditure is more pronounced in the long run than in the short run, where their effect is insignificant. The asymmetry line also indicates that the magnitude of decrease in household consumption dominates as it gives an overall negative relationship between government expenditure and household consumption, revealing that expansionary fiscal policy (through government expenditure) crowds out household consumption as it was earlier observed in the model estimate results. Nevertheless, the dynamic multiplier for tax revenue represented in figure 8 shows a different reaction of household consumption to positive and negative changes in tax revenue.

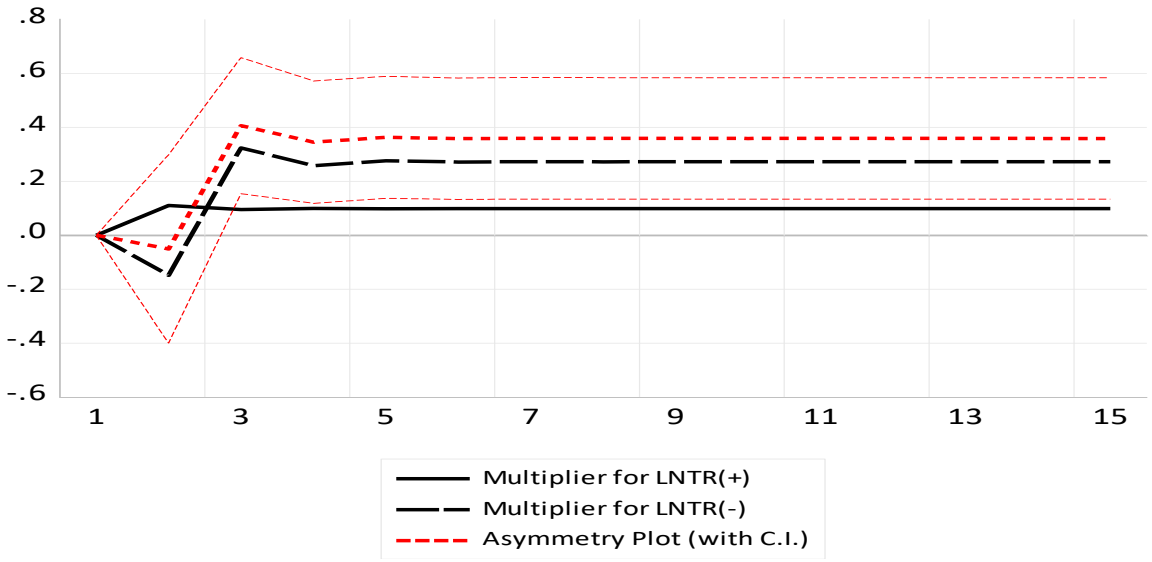

Figure 8: Dynamic multiplier, tax revenue on Household consumption

Source: Author's Own generated figure from EViews

The multiplier for the positive and negative changes in tax revenue indicates that household consumption responds positively to the negative shocks of tax revenue. However, the effects of the negative shocks of tax revenue on household consumption are far higher and more evident in the long run. The overall effect of tax revenue is observed as the asymmetry line depicts a positive response of household consumption to tax revenue shocks. These results also

clarify that when tax revenue is used as the expansionary fiscal policy tool, household consumption is crowded in. The effect of the positive change in tax revenue is also observed to be negligible both in the short run and in the long run.

In conclusion, the overall effect of fiscal policy on household consumption in Kenya is positive, as was observed on the household consumption graph in chapter one, Figure 1. This can further be explained by comparing the overall impacts of government expenditure and tax revenue in their dynamic multipliers. The overall crowding-out effect of government consumption expenditure is small (-0.015) compared to the overall crowding-in effect of tax revenue (0.36); hence the crowding-in effect of fiscal policy dominates.

5.4 Discussion of the results

The results from the analysis section show that, in the long run, contractionary fiscal policy (decrease in government consumption and an increase in taxes) does not affect household consumption. Thus, we failed to reject H_0; the contractionary fiscal policy does not crowd out household consumption in Kenya as lowering government expenditure or increasing taxes did not significantly affect household consumption. On the other hand, when using government consumption expenditure and tax revenue to implement expansionary fiscal policies, two different conclusions were reached. An increase in government consumption was found to crowd out household consumption in Kenya, meaning that expansionary fiscal policy (through a rise in government expenditure) crowded out household consumption. Per contra, expansionary fiscal policy (through a decrease in tax revenue) was found to crowd in household consumption as negative changes in tax revenue (LNTR_NEG) had a significant positive impact on household consumption. These findings are not conclusive on whether expansionary fiscal policy crowds in or crowds out household consumption as both effects are experienced depending on which fiscal policy tool is used. Therefore it was difficult to reject or fail to reject the null hypothesis H_0**;** the expansionary fiscal policy does not crowd in household consumption in the long run.

On the issue of government expenditure crowding-out household consumption, various studies found government consumption able to crowd out household consumption, such studies

included; Uutoni (2020), Ofori-Abebrese and Pickson (2018), Abada(2016), Banday and Aneja (2019), and Sunge et al,. (2015). The findings of this study are only in support of the crowding-out effect of fiscal policy when government expenditure is used as the fiscal policy tool. However, when using tax revenue as a proxy of fiscal policy, this study supported Sunge et al., (2015) and Khanfir (2019) as they found out tax revenue crowds in household consumption. This makes the findings in this study inconclusive as far as the long run effects of expansionary fiscal policy are concerned.

In the long run, increased public debt was found to crowd out household consumption, hence supporting the classical economists' argument that public debts are bad because they lower the purchasing power of people in the future (Buchanan, 1958). The findings supported previous studies, which were for the idea that public debt crowds out household consumption and those studies included, Sunge et al., (2015), Ofori-Abebrese and Pickson (2018), and Kusairi et al., (2019).

REH only holds if household consumption expenditure remains the same as tax revenue and public debt change. From the long-run regression model results, household consumption is observed to increase with negative changes in tax revenue and decrease with positive changes in public debt. Therefore, we failed to reject the null hypothesis H_0**:** Ricardian Equivalence Hypothesis does not hold in Kenya and conclude that in the long run Kenyan's do not behave in the Ricardian way.

For the control variables, positive changes in real GDP were found to have a negative impact on household consumption which contrasts with the theories behind real GDP growth. Theory suggests that an increase in real GDP should result from a rise in household consumption (Keynes, 1936)(Keynes, 1936)(Keynes, 1936)(Keynes, 1936). The increase in GDP is an indication of an increase in aggregate demand, whose effect should be seen via a high consumption level of the people in any economy (Keynes, 1936). This necessitates further investigation to determine what factors could be behind this unusual relationship between real GDP and household consumption. As expected, in the long run, negative changes in inflation led to an increase in household consumption. The finding was in line with the economic theories that argue that lowering inflation rates boosts household consumption as this tends to increase the purchasing power of households (Rowan, 1983).

The short-run ECM findings show that fiscal policy (both expansionary and contractionary) does not affect household consumption. Public debt was also not captured on the parsimonious model as a factor affecting household consumption in the short run. These findings indicated that fiscal policy and public debt do not significantly affect household consumption, insinuating that, in the short run, households behaved in a Ricardian way as they do not alter their consumption due to adjustments in fiscal policies. The null hypothesis H_0**;** the Ricardian Equivalence Hypothesis that does not hold in Kenya, was rejected, and it was concluded that REH holds in the short run.

The dynamic multiplier graphs gave a clear picture of the overall effect of fiscal policy (government expenditure and tax revenue). In the short run, their impact was negligible but more pronounced in the long run. Again, the crowding-in effect of fiscal policy is seen to dominate as the effects of decreasing tax revenue led to the crowding-in effect on household consumption which was far higher than the crowding-out effect resulting from government expenditure. Hence, confirming that, in the long run, fiscal policy crowds in household consumption in Kenya. The reduction of taxes induces a positive effect on household disposable income, leading to increased household consumption. This supports the Keynesians AIH, which postulates that households increase their consumption of goods and services as their disposable income increases (Keynes, 1936).

The current study improved the existing literature on the relationship between fiscal policy and household consumption and the REH examination by adopting a different methodology that allowed for asymmetry on the independent variables. However, the results differed from the existing findings. In the long run, the findings on whether fiscal policy crowds in household consumption were inconclusive and only dependent on the fiscal policy tool that the government adopted. The results on the expansionary fiscal policy via increased government consumption revealed that in Kenya, increasing government expenditure does not crowd in household consumption as it was expected, but rather crowds out household consumption. Only tax revenue was found able to bring about a crowding-in effect on household consumption, suggesting that keeping taxes at low levels could work better in crowding-in household consumption in bad times.

It was fascinating to discover that fiscal policy never had a significant impact on household consumption in the short run, but only inflation had a significant effect on household consumption in Kenya. This suggests that maintain low inflation rates in Kenya is crucial.

5.5 Conclusion

This chapter conferred the analysis and the findings of the study. The results were compared with existing theories and literature, and apart from real GDP, the rest of the findings were in line with the literature. In the long run, fiscal policy and public debt were found to impact household consumption significantly. To be more precise, increasing government consumption was found to crowd out household consumption while lowering taxes had a crowding-in effect on household consumption. Moreover, rising public debt was found to crowd out household consumption in the long run. This revealed that in the long run, REH did not hold in Kenya. On the other hand, fiscal policy and public debt did not affect household consumption in the short run.

Chapter 6:

Conclusion and policy recommendation

6.1 Introduction

The current chapter is crucial as it brings all the elements of this study together and gives a clear link between the purposes and the intent of the study, the literature, and the theories that align with the findings of the study, and finally summarises the whole research process applied. Moreover, the discussion outlines the study's key findings while pointing out the significance of this study. The limitations encountered in the research are also well-outlined here and various policy recommendations are made.

6.2 Summary and conclusion

The study aimed to examine the asymmetric effects of fiscal policy and public debt on household consumption in Kenya with specific aims of investigating whether fiscal policy crowds in household consumption and testing whether REH holds in Kenya. The study examined the implications of expansionary fiscal policies and contractionary fiscal policies on household consumption, both in the short run and in the long run using the nonlinear ARDL model. However, no empirical study used the same method as many of the studies reviewed used the ARDL model to examine the relationship between fiscal policy and household consumption. This study was the first to evaluate the impacts of fiscal policy on household consumption using the NARDL model. The main advantage was that it was able to assess expansionary and contractionary fiscal policy impacts on household consumption separately, which had not been done before.

Kenya has undergone various financial, structural, and macroeconomic reforms since the early 1970s. These reforms include regime changes (regime change from a single-party country to a multiparty country in 1992) and fiscal policy reforms, which are put forward every year. Time-series data ranging from 1971 to 2018 was analysed using EViews 10(x64) statistical software. Descriptive statistical analysis was carried out on the data, and the time series data was found not normally distributed, which necessitated log transformation of the data. After estimation of the model, the study used several statistical analysis tools, such as Breunch-Godfrey Language

multiplier (LM) test for serial correlation, Ramsey RESET test for linearity of the model, Harvey test for heteroscedasticity, Jarque-Bera statistic test for normality, and finally, CUSUM and CUSUMSQ tests of model stability.

A consumption model was estimated with household consumption being used as the dependent variable, while government consumption, tax revenue, public debt, real GDP, and inflation were the independent variables. Government consumption expenditure and tax revenue were used as a proxy of fiscal policy, while public debt was a proxy for government debt. Real GDP and inflation were used as the control variables in the model.

Expansionary fiscal policy (through an increase in government expenditure) had a significant crowding-out effect on household consumption. In contrast, expansionary fiscal policies (through a decrease in tax revenue) had a significant crowding-in effect on household consumption. From the dynamic multiplier observation, the crowding-in effect of tax revenue exceeded the crowding-out effect of government expenditure. Thus, in the long run, fiscal policy had a crowding-in effect on household consumption in Kenya. The findings on the crowding-in effect of fiscal policy on household consumption were consistent with Sunge et al., (2015), who found fiscal policy able to crowd in household consumption.

In the long run, government expenditure, tax revenue, and public debt significantly impacted household consumption, leading to the conclusion that REH does not hold in Kenya in the long run. These findings were consistent with Anderson et al.,(2016), Banday and Aneja (2019), Kusairi et al., (2019), Belingher and Moroianu (2015), Anderson et al., (2016), Khanfir (2019), and Merko et al.,(2020) which found fiscal policy and public debt to play a significant role in economic stabilisation.

Positive changes in public debt negatively affect household consumption in the long run. These findings revealed that Kenyans do not treat public debt as net wealth. Hence confirming that, in Kenya, increasing public debts to finance the increasing unproductive government expenditures is jeopardising household consumption, which in the long run negatively impacts real GDP growth. Low inflation was found to be able to boost household consumption both in the long run and short run and therefore, policies that support lowering inflation to boost economic performance both in the short run and in the long run should be adopted.

In the short run, fiscal policy and public debt in Kenya had no significant effect on household consumption. The results supported the REH, which urges that expansionary policies do not affect household consumption as consumers increase their current savings because they anticipate a future tax increment to compensate for the present tax cuts (Barro, 1974). Saraswati and Wahyudi (2018) and Ayunasta et al., (2020) support the idea of fiscal policy and public debt not to crowd in or crowd out household consumption. From this observation, it can be said that adopting any fiscal policy measure to boost household consumption in the short term may not be helpful, and it would be better to use other policies known to have an immediate impact on household consumption, such as monetary policies.

These research findings are vital in Kenya, for they can inform on the best way to follow in times when the government has to use fiscal policy tools to boost household consumption. These findings are also of great benefit because they inform the government to concentrate on cutting taxes or giving tax holidays in bad times to boost consumption in the long run rather than increasing government expenditure.

6.3 Policy recommendations

- The government needs to watch the enormous growth of government expenditure because it is seen to severely affect the economy of Kenya in the long run and it is subjecting the country to continuously operate under a budget deficit, hence putting the government into excess debt.
- Long-term policies that control redundant government expenditures, encourage high accountability, and severe punishment on corruption cases should be put in place to prevent the wastage of public funds.

6.4 Limitations of the study

As usual, researchers encounter many challenges in their research. Below are some of the limitations which the researcher came across in this study:

- Household disposable income data in Kenya could have helped observe the implications of tax adjustments on consumption directly. However, household disposable income data was not available.
- The tax revenue data available included grants, so it is not pure tax revenue.

- The researcher could not find data on government transfer payments in Kenya, and so only government expenditure and tax revenue were used to proxy fiscal policy.

6.5 Area of further study

- Having used secondary data in the current study, the results of this study could be improved by using primary data.
- A different method of data analysis could also be used to validate the findings of the current study.
- An investigation of the relationship between real GDP and household consumption in Kenya needs to be carried out.

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APPENDICES

UNIT ROOT TEST RESULT OUTPUTS

A1.ADF TEST FOR HOUSEHOLD CONSUMPTION

Null Hypothesis: LNHC has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=1)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-1.216948	0.6595
Test critical values:	1% level	-3.577723	
	5% level	-2.925169	
	10% level	-2.600658	

A2. ADF TEST FOR HOUSEHOLD CONSUMPTION AFTER DIFFERENCING

Null Hypothesis: D(LNHC) has a unit root

Exogenous: Constant

Lag Length: 1 (Automatic - based on SIC, maxlag=1)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-7.850830	0.0000
Test critical values:	1% level	-3.584743	
	5% level	-2.928142	
	10% level	-2.602225	

A3.ADF TEST FOR GOVERNMENT EXPENDITURE

Null Hypothesis: LNGC has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=1)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.677375	0.0006
Test critical values:	1% level	-3.626784	
	5% level	-2.945842	
	10% level	-2.611531	

A4.ADF TEST FOR TAX REVENUE

Null Hypothesis: LNTR has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=1)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.240949	0.1951
Test critical values:	1% level	-3.577723	
	5% level	-2.925169	
	10% level	-2.600658	

A5. ADF TEST FOR TAX REVENUE AFTER DIFFERENCING

Null Hypothesis: D(LNTR) has a unit root

Exogenous: Constant

Lag Length: 1 (Automatic - based on SIC, maxlag=1)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.654929	0.0000
Test critical values:	1% level	-3.584743	
	5% level	-2.928142	
	10% level	-2.602225	

A6.ADF TEST FOR PUBLIC DEBT

Null Hypothesis: LNPD has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=1)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-1.672248	0.4385
Test critical values:	1% level	-3.577723	
	5% level	-2.925169	
	10% level	-2.600658	

A7. ADF TEST FOR PUBLIC DEBT AFTER DIFFERENCING

Null Hypothesis: D(LNPD) has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=1)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.646712	0.0000
Test critical values:	1% level	-3.581152	
	5% level	-2.926622	
	10% level	-2.601424	

A8. ADF TEST FOR REAL GDP

Null Hypothesis: LNY has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=1)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.729913	0.0000
Test critical values:	1% level	-3.584743	
	5% level	-2.928142	
	10% level	-2.602225	

A9.ADF TEST FOR INFLATION

Null Hypothesis: INF has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic - based on SIC, maxlag=1)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.147680	0.0001
Test critical values:	1% level	-3.577723	
	5% level	-2.925169	
	10% level	-2.600658	

A10. PP TEST FOR HOUSEHOLD CONSUMPTION

Null Hypothesis: LNHC has a unit root

Exogenous: Constant

Bandwidth: 6 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-0.859181	0.7924
Test critical values:	1% level	-3.577723	
	5% level	-2.925169	
	10% level	-2.600658	

*MacKinnon (1996) one-sided p-values.

A11.PP TEST FOR HOUSEHOLD CONSUMPTION AFTER DIFFERENCING

Null Hypothesis: D(LNHC) has a unit root

Exogenous: Constant

Bandwidth: 12 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-9.409034	0.0000
Test critical values:	1% level	-3.581152	
	5% level	-2.926622	
	10% level	-2.601424	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	0.002503
HAC corrected variance (Bartlett kernel)	0.000812

A12. PP TEST FOR GOVERNMENT EXPENDITURE

Null Hypothesis: LNGC has a unit root

Exogenous: Constant

Bandwidth: 1 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-4.718370	0.0005
Test critical values:	1% level	-3.626784	
	5% level	-2.945842	
	10% level	-2.611531	

A13. PP TEST FOR TAX REVENUE

Null Hypothesis: LNTR has a unit root

Exogenous: Constant

Bandwidth: 16 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-2.194937	0.2108
Test critical values:	1% level	-3.577723	
	5% level	-2.925169	
	10% level	-2.600658	

A14. PP TEST FOR TAX REVENUE AFTER DIFFERENCING

Null Hypothesis: D(LNTR) has a unit root

Exogenous: Constant

Bandwidth: 22 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-6.620311	0.0000
Test critical values:	1% level	-3.581152	
	5% level	-2.926622	
	10% level	-2.601424	

A15. PP TEST FOR PUBLIC DEBT

Null Hypothesis: LNPD has a unit root

Exogenous: Constant

Bandwidth: 0 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-1.672248	0.4385
Test critical values:	1% level	-3.577723	
	5% level	-2.925169	
	10% level	-2.600658	

A16. PP TEST FOR PUBLIC DEBT AFTER DIFFERENCING

Null Hypothesis: D(LNPD) has a unit root

Exogenous: Constant

Bandwidth: 1 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-6.646898	0.0000
Test critical values:	1% level	-3.581152	
	5% level	-2.926622	
	10% level	-2.601424	

A17.PP TEST FOR REAL GDP

Null Hypothesis: LNY has a unit root

Exogenous: Constant

Bandwidth: 2 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-5.729312	0.0000
Test critical values:	1% level	-3.584743	
	5% level	-2.928142	
	10% level	-2.602225	

A18.PP TEST FOR INFLATION

Null Hypothesis: INF has a unit root

Exogenous: Constant

Bandwidth: 3 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-5.148949	0.0001
Test critical values:	1% level	-3.577723	
	5% level	-2.925169	
	10% level	-2.600658	

A19. LAG LENGTH DETERMINATION

VAR Lag Order Selection Criteria

Endogenous variables: HC Y GC TR PD INF

Exogenous variables: C

Date: 02/04/21 Time: 16:05

Sample: 1971 2018

Included observations: 44

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-786.9323	NA	1.81e+08	36.04238	36.28568	36.13261
1	-654.7452	222.3148*	2325227.*	31.67024	33.37333*	32.30182*
2	-625.6928	40.93745	3498005.	31.98604	35.14892	33.15898
3	-592.5447	37.66831	5137823.	32.11567	36.73834	33.82998
4	-537.8723	47.21708	3834242.	31.26692*	37.34939	33.52259

A20 ASYMMETRIC ARDL MODEL

Dependent Variable: LNHC
Method: ARDL

Sample (adjusted): 1973 2018
Included observations: 46 after adjustments
Maximum dependent lags: 1 (Automatic selection)
Model selection method: Akaike info criterion (AIC)
Dynamic regressors (1 lag, automatic): LNGC_POS LNGC_NEG LNTR_POSLNTR_NEG LNPD_POSLNPD_NEG LNY_POS LNY_NEG INF_POS INF_NEG
Fixed regressors: MD C
Number of models evaluated: 1024
Selected Model: ARDL(1, 0, 0, 0, 1, 0, 0, 0, 0, 1, 1)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LNHC(-1)	-0.122589	0.144617	-0.847674	0.4033
LNGC_POS	-0.012663	0.005447	-2.324594	0.0270
LNGC_NEG	0.004004	0.005245	0.763519	0.4511
LNTR_POS	0.112323	0.096742	1.161062	0.2548
LNTR_NEG	0.152435	0.186930	0.815466	0.4212
LNTR_NEG(-1)	-0.450351	0.172477	-2.611078	0.0140
LNPD_POS	-0.112260	0.042984	-2.611685	0.0139
LNPD_NEG	0.105261	0.081657	1.289062	0.2072
LNY_POS	-0.038762	0.009478	-4.089513	0.0003
LNY_NEG	0.001504	0.009333	0.161173	0.8730
INF_POS	0.004441	0.028695	0.154778	0.8780
INF_POS(-1)	0.027599	0.014869	1.856083	0.0733
INF_NEG	-0.039484	0.014403	-2.741445	0.0102
INF_NEG(-1)	-0.030025	0.022291	-1.346957	0.1881
MD	0.049862	0.031126	1.601916	0.1197
C	4.624068	0.596091	7.757320	0.0000

R-squared	0.949480	Mean dependent var	4.247772
Adjusted R-squared	0.924220	S.D. dependent var	0.117178
S.E. of regression	0.032257	Akaike info criterion	-3.761944
Sum squared resid	0.031216	Schwarz criterion	-3.125895
Log-likelihood	102.5247	Hannan-Quinn criteria.	-3.523676
F-statistic	37.58805	Durbin-Watson stat	2.413689
Prob(F-statistic)	0.000000		

A21 STEPWISE REGRESSION MODEL USED FOR ASYMMETRY TEST

Dependent Variable: D(LNHC)
Method: Stepwise Regression
Sample (adjusted): 1973 2018
Included observations: 46 after adjustments
Number of always included regressors: 12
Number of search regressors: 3
Selection method: Uni-directional
Stopping criterion: p-value = 0.05

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
C	4.478194	0.584340	7.663674	0.0000
LNHC(-1)	-1.090646	0.142187	-7.670491	0.0000
LNGC_POS	-0.008910	0.004875	-1.827706	0.0766
LNGC_NEG	0.007590	0.004862	1.561097	0.1280
LNTR_POS	0.164839	0.085581	1.926111	0.0627
LNTR_NEG(-1)	-0.341222	0.132014	-2.584745	0.0144
LNPD_POS	-0.108241	0.043190	-2.506176	0.0173
LNY_POS	-0.038130	0.009598	-3.972663	0.0004
LNY_NEG	0.002789	0.008091	0.344701	0.7325
INF_POS(-1)	0.031084	0.014002	2.219961	0.0334
INF_NEG(-1)	-0.067858	0.012597	-5.386879	0.0000
D(INF_NEG)	-0.039226	0.012368	-3.171600	0.0033

A22. ASYMMETRY TEST FOR GOVERNMENT CONSUMPTION (LNGC)

Wald Test:

Equation: Untitled

Test Statistic	Value	Df	Probability
t-statistic	-3.666154	33	0.0009
F-statistic	13.44069	(1, 33)	0.0009
Chi-square	13.44069	1	0.0002

Null Hypothesis: -C(5)/C(2)=-C(6)/C(2)

A23. LONG RUN ASYMMETRY TEST FOR TAX REVENUE

Wald Test:
Equation: Untitled

Test Statistic	Value	df	Probability
t-statistic	3.932338	33	0.0004
F-statistic	15.46328	(1, 33)	0.0004
Chi-square	15.46328	1	0.0001

Null Hypothesis: -C(7)/C(2)=-C(8)/C(2)

A24. LONG RUN ASYMMETRY TEST FOR PUBLIC DEBT(LNPD)

Wald Test:
Equation: Untitled

Test Statistic	Value	df	Probability
t-statistic	-2.346279	33	0.0251
F-statistic	5.505023	(1, 33)	0.0251
Chi-square	5.505023	1	0.0190

Null Hypothesis: -C(9)/C(2)=-C(10)/C(2)

A25. ASYMMETRY TEST FOR REAL GDP (LNY)

Wald Test:
Equation: Untitled

Test Statistic	Value	Df	Probability
t-statistic	-3.723465	33	0.0007
F-statistic	13.86419	(1, 33)	0.0007
Chi-square	13.86419	1	0.0002

Null Hypothesis: -C(3)/C(2)=-C(4)/C(2)

A26. LONG RUN ASYMMETRY TEST FOR INFLATION (INF)

Wald Test:

Equation: Untitled

Test Statistic	Value	df	Probability
t-statistic	6.499214	33	0.0000
F-statistic	42.23979	(1, 33)	0.0000
Chi-square	42.23979	1	0.0000

Null Hypothesis: -C(11)/C(2)=-C(12)/C(2)

A27. ASYMMETRIC LONG RUN MODEL

Levels Equation
Case 3: Unrestricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNGC_POS	-0.011280	0.004936	-2.285420	0.0295
LNGC_NEG	0.003567	0.004613	0.773315	0.4454
LNTR_POS	0.100057	0.086613	1.155223	0.2571
LNTR_NEG	-0.265383	0.136711	-1.941198	0.0617
LNPD_POS	-0.100001	0.037246	-2.684891	0.0117
LNPD_NEG	0.093767	0.071132	1.318208	0.1974
LNY_POS	-0.034529	0.008096	-4.264909	0.0002
LNY_NEG	0.001340	0.008332	0.160827	0.8733
INF_POS	0.028542	0.024872	1.147554	0.2602
INF_NEG	-0.061919	0.014011	-4.419446	0.0001

EC = LNHC - (-0.0113*LNGC_POS + 0.0036*LNGC_NEG + 0.1001
*LNTR_POS-0.2654*LNTR_NEG-0.1000*LNPD_POS + 0.0938
*LNPD_NEG-0.0345*LNY_POS + 0.0013*LNY_NEG + 0.0285
*INF_POS-0.0619*INF_NEG)

A28. BOUNDS TEST

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	6.543719	10%	1.83	2.94
K	10	5%	2.06	3.24
		2.5%	2.28	3.5
		1%	2.54	3.86

A29. ASYMMETRIC ARDL ECM

ARDL Error Correction Regression
Dependent Variable: D(LNHC)
Selected Model: ARDL(1, 0, 0, 0, 1, 0, 0, 0, 0, 1, 1)
Case 3: Unrestricted Constant and No Trend
Date: 05/19/21 Time: 00:08
Sample: 1971 2018
Included observations: 46

ECM Regression
Case 3: Unrestricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.624068	0.472944	9.777196	0.0000
D(LNTR_NEG)	0.152435	0.123149	1.237805	0.2254
D(INF_POS)	0.004441	0.010527	0.421923	0.6761
D(INF_NEG)	-0.039484	0.008644	-4.568048	0.0001
MD	0.049862	0.009756	5.110862	0.0000
CointEq(-1)*	-1.122589	0.114589	-9.796660	0.0000

R-squared	0.733436	Mean dependent var	0.006117
Adjusted R-squared	0.700115	S.D. dependent var	0.051013
S.E. of regression	0.027936	Akaike info criterion	-4.196727
Sum squared resid	0.031216	Schwarz criterion	-3.958208
Log-likelihood	102.5247	Hannan-Quinn criteria.	-4.107376
F-statistic	22.01154	Durbin-Watson stat	2.413689
Prob(F-statistic)	0.000000		

A30. SERIAL CORRELATION TEST

Breusch-Godfrey Serial Correlation LM Test:

Null hypothesis: No serial correlation at up to 1 lag

F-statistic	3.396701	Prob. F(1,29)	0.0756
Obs*R-squared	4.822968	Prob. Chi-Square(1)	0.0281

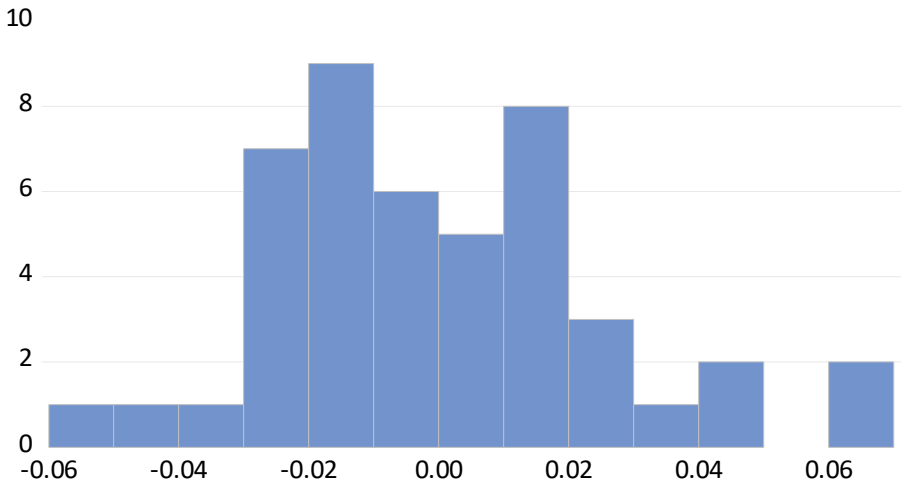
A31. HETEROSKEDASTICITY TEST

Heteroskedasticity Test: Breusch-Pagan-Godfrey

Null hypothesis: Homoskedasticity

F-statistic	0.545839	Prob. F(15,30)	0.8919
Obs*R-squared	9.862596	Prob. Chi-Square(15)	0.8283
Scaled explained SS	5.065656	Prob. Chi-Square(15)	0.9916

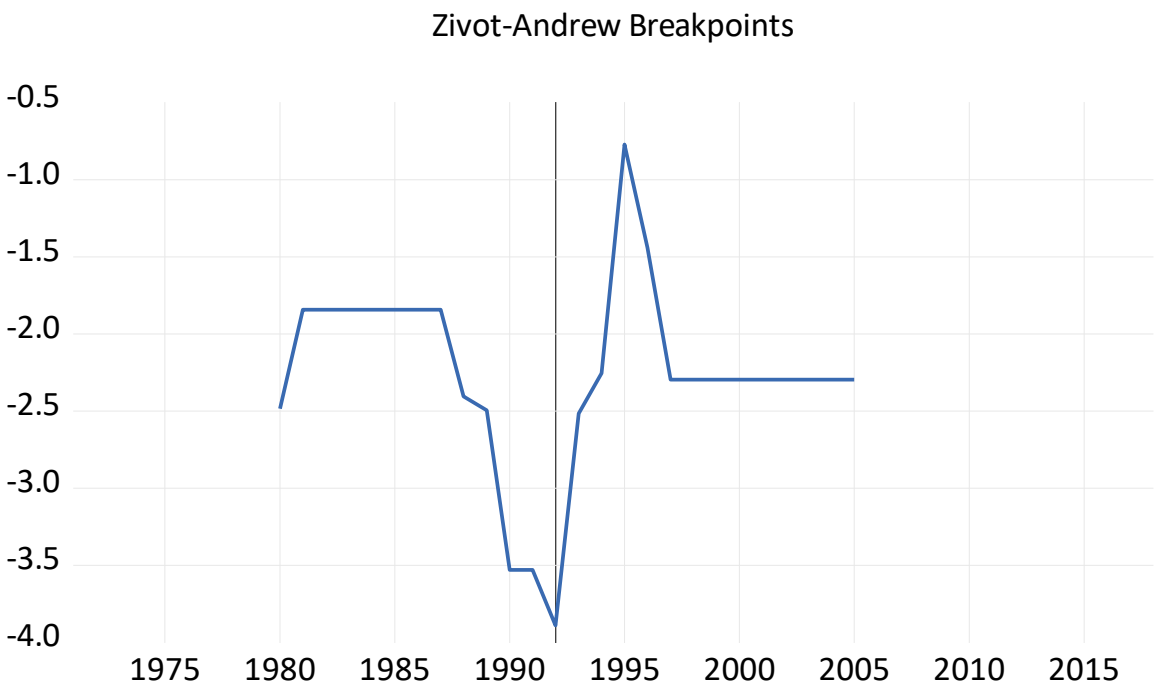
A32. NORMALITY TEST



Series: Residuals
Sample 1973 2018
Observations 46

Mean	-1.92e-16
Median	-0.004028
Maximum	0.069657
Minimum	-0.050168
Std. Dev.	0.026338
Skewness	0.666186
Kurtosis	3.415170
Jarque-Bera	3.732862
Probability	0.154675

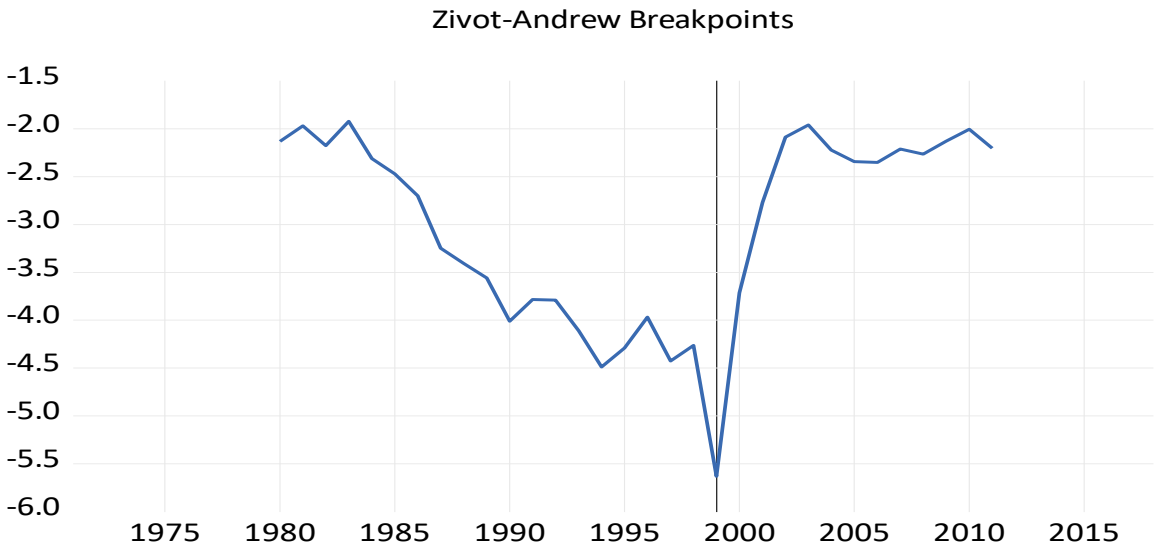
A33 Structural break test for government consumption



Chow Breakpoint Test: 1992
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1971 2018

F-statistic	1.053130	Prob. F(5,30)	0.4055
Log likelihood ratio	6.468479	Prob. Chi-Square(5)	0.2633
Wald Statistic	5.265648	Prob. Chi-Square(5)	0.3843

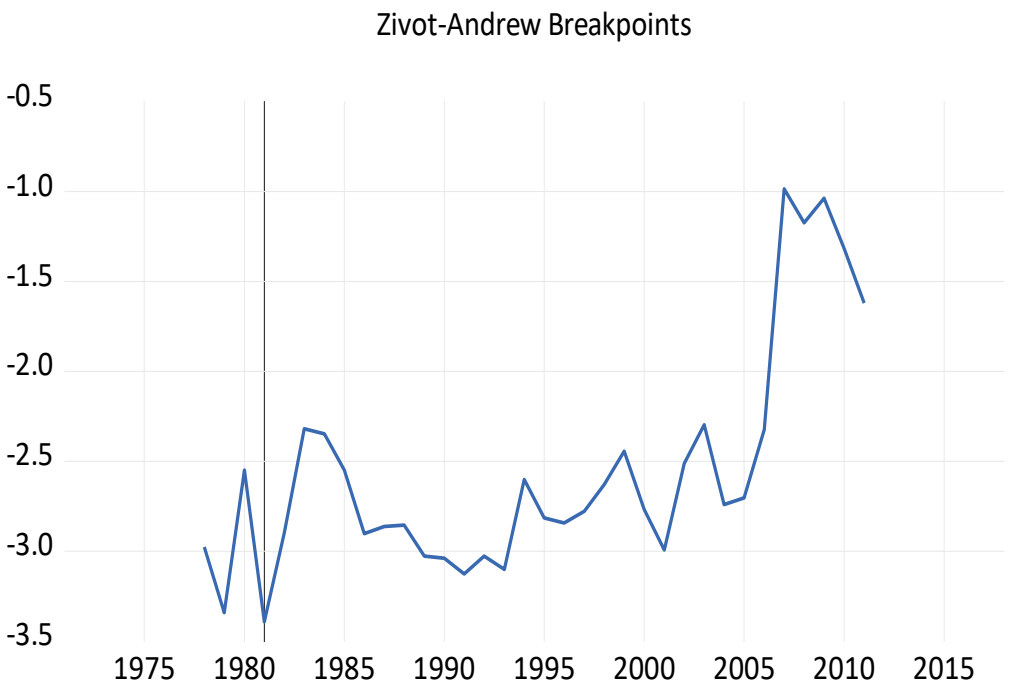
A34 structural break test for tax revenue.



Chow Breakpoint Test: 2000
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1971 2018

F-statistic	2.143103	Prob. F(5,30)	0.0874
Log likelihood ratio	12.21647	Prob. Chi-Square(5)	0.0319
Wald Statistic	10.71551	Prob. Chi-Square(5)	0.0573

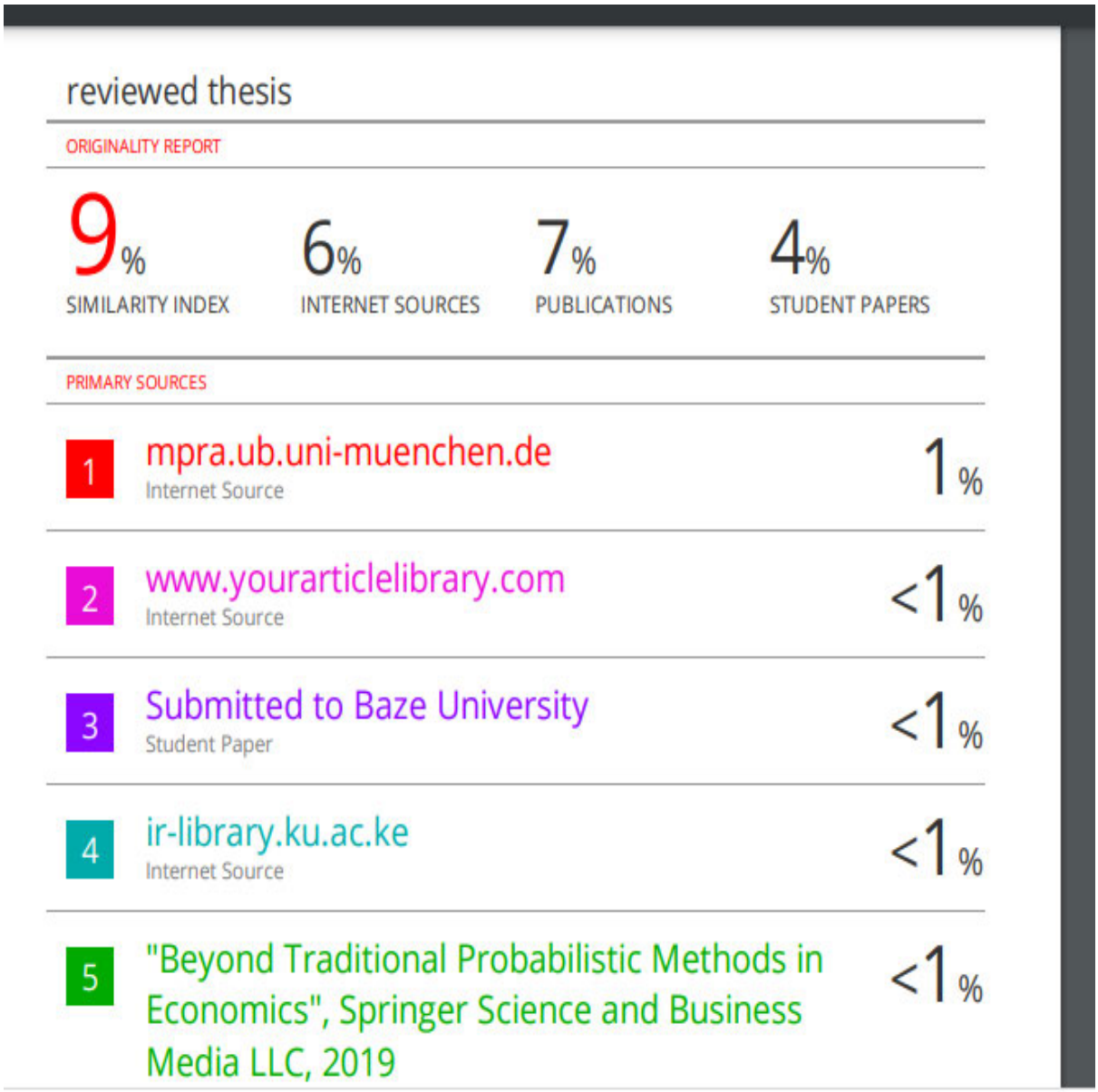
A35 Structural break test for public debt



Chow Breakpoint Test: 1981
Null Hypothesis: No breaks at specified breakpoints
Varying regressors: All equation variables
Equation Sample: 1971 2018

F-statistic	5.379559	Prob. F(5,30)	0.0012
Log likelihood ratio	25.60237	Prob. Chi-Square(5)	0.0001
Wald Statistic	26.89779	Prob. Chi-Square(5)	0.0001

A36. TURNITIN REPORT



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5	"Beyond Traditional Probabilistic Methods in Economics", Springer Science and Business Media LLC, 2019	<1%

A37. ETHICAL CLEARANCE

18 January 2021

Mrs Naomy Nthenya Muindi (217075444)
School Of Acc Economics&Fin
Pietermaritzburg

Dear Mrs Naomy Nthenya Muindi,

Protocol reference number: 00009753
Project title: Fiscal policy and public debt implications on household consumption. A case of Kenya.

Exemption from Ethics Review

In response to your application received on 14 January 2020your school has indicated that the protocol has been granted **EXEMPTION FROM ETHICS REVIEW.**

Any alteration/s to the exempted research protocol, e.g., Title of the Project, Location of the Study, Research Approach and Methods must be reviewed and approved through an amendment/modification prior to its implementation. The original exemption number must be cited.

For any changes that could result in potential risk, an ethics application including the proposed amendments must be submitted to the relevant UKZN Research Ethics Committee. The original exemption number must be cited.

In case you have further queries, please quote the above reference number.

PLEASE NOTE:
Research data should be securely stored in the discipline/department for a period of 5 years.

I take this opportunity of wishing you everything of the best with your study.

Yours sincerely,

[redacted] 18 January 2020

Prof Josue Mbonigaba
Academic Leader Research
School Of Acc Economics&Fin

A35. CERTIFICATE OF EDITING

Kim N Smit Editorial Services

Declaration of Professional Editing

28 May 2021

This letter serves to confirm that Naomy N Muindi submitted a dissertation to myself for editing. The dissertation is entitled, 'FISCAL POLICY AND PUBLIC DEBTS IMPLICATIONS ON HOUSEHOLD CONSUMPTION: A CASE OF KENYA'.

The following aspects were edited:

- Spelling
- Grammar
- In-text reference formatting only (Reference checking involves proofreading and perhaps some editing with regards to the simple formatting of the references into the referencing style required i.e. changing the order of the elements - author, date, title, series, place, publisher, journal, volume, issue, pagination etc.)

My involvement was restricted to language use and spelling, and referencing formatting (in-text). I did no structural re-writing of the content and did not influence the academic content in any way. The content and formatting of the final document submitted for examination remains the responsibility of the student.

Should you have any further queries, please do not hesitate to contact me.

Kind regards,

[redacted]