THE IMPACT OF MACROECONOMIC POLICIES ON STOCK RETURNS: THE CASE OF MALAWI STOCK EXCHANGE

MASTER OF ARTS (ECONOMICS) THESIS

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DECLARATION

I, the undersigned, hereby declare that this dissertation is my own original, not submitted to any other institution for similar purposes. Where work of others has been utilised and accordingly acknowledged.

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CERTIFICATE OF APPROVAL

I, the undersigned, certify that this thesis represents the student's own work and effort and has been submitted with my approval.

Signature_____Date_____

Spy Munthali, PhD

Supervisor

DEDICATION

I dedicate this dissertation to my parents, Mr and Mrs Chalera, for their profound support and encouragement throughout my academic journey.

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ABSTRACT

Changes in the macroeconomic environment of many countries throughout the world have had a significant impact on stock market behaviour. Financial markets play a critical part in economic development in today's globe. Economic participants keep an eye on the economy as well as the stock markets. As a result, the study looked at the short- and long-term effects of macroeconomic variables on stock market performance on the Malawi Stock Exchange (MSE). As well as the causal relationship, that exists between stock market and macroeconomic variables including interest rate, money supply, government spending, gross domestic product (GDP), real effective exchange rate, and inflation. For a dataset spanning 1997q1 to 2013q4, I employed the Autoregressive Distributed Lag Model (ARDL). The estimated bounds test for cointegration demonstrates that the variables have a long-run relationship. Except for government spending in the short run, the ARDL short and long runs reveal that the variables are highly significant in influencing the stock market. Except for the exchange rate, the paper found no causality between stock prices and the variables studied. As a result, the government and policymakers must focus on maintaining price stability, and high economic growth. Because such growth benefits the stock market in the long-run.

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LIST OF ACRONYMS AND ABBREVIATIONS

APT	Arbitrage Pricing Theory
ARDL	Autoregressive Distributed Lag Model
ADF	Augmented Dickey Fuller
FSI	Foreign Share Index
GOM	Government of Malawi
GDP	Gross Domestic Product
HIPC	Highly Indebted Poor Country
IMF	International Monetary Fund
LDC	Least Developed Countries
LIC	Low Income countries
LRR	Liquidity Reserve Requirement
MASI	Malawi All Share Index
MAT	Monetary Aggregate Targeting
MPC	Monetary Policy Committee
MSE	Malawi Stock Exchange
OMO	Open Market Operations
RBM	Reserve Bank of Malawi
WDI	World Development Indicator

CHAPTER ONE
INTRODUCTION OF THE STUDY

1.1 Introduction to the Study

Monetary and fiscal policies are the most important tools for influencing a country's economic orientation since they encourage economic performance, employment, and price stability. The central bank uses monetary policy to manage the expansion of the money supply by adjusting interest rates. Depending on the state of the economy, this strategy can be either expansionary or contractionary. The Reserve Bank of Malawi (RBM) uses the Open market operations (OMO), liquidity reserve requirements (LRR), and policy rates to apply monetary policy (Reserve Bank of Malawi, 1989). These three techniques have an impact on how money, is dispersed via the interest rate channel. When the central bank reduces interest rates, for example, investors borrow more money and invest more because the cost of financing falls. When interest rates are low, for example, investors are more likely to invest in the stock market. This, in turn, causes stock values to rise. The Great Depression of the 1930s was an excellent example of this. During that time, monetary authorities used contractionary monetary policy to lower the money supply. As a result, the unemployment rate rose, resulting in a significant drop in the economy and financial markets (Mankiw, 2010).

The linkage of macroeconomic variables and stock market prices is through exchange rates. For instance, an increase in import prices raises the foreign currency demand (dollars), after that, it affects the domestic currency. Any fluctuation in the Malawi kwacha, whether appreciation, or depreciation will affect the foreign investments. A falling Malawi Kwacha affects foreign investments as it decreases their net earnings and returns on investment, as a result, makes Malawi less attractive for investors. High real interest rate decelerates corporate earnings and affects the corporate earnings with a higher elasticity to interest rate change. The increase in the real interest rate will cause earnings to fall and stock prices to drop (Sivarethinamohan, et al., 2021).

Fiscal policy, on the other hand, is a mechanism for adjusting revenue and expenditure. Fiscal policy based on John Maynard Keynes's Keynesian theory of the 1930s, which proposed that raising or decreasing government spending would have a positive effect on the economy. Lowering taxes and increasing spending influence Inflation, employment, and the flow of money in the economy. There are two types of fiscal policy: expansionary and contractionary. During a recession, the government uses an expansionary fiscal policy to stimulate the economy by raising spending and lowering revenue collection (Federal Reserve, 2011). As a result, of lower taxes, consumers have more discretionary income to spend on goods and services, which boosts aggregate demand. Contractionary fiscal policy, on the other hand, slows down inflation. When the government raises taxes and cuts spending, the money supply shrinks, and consumers cut back on their purchases of goods and services, resulting in lower output and stable prices.

Measures affecting fiscal policy have an impact on all industries and businesses, including the stock market (Dixit & Lambertini, 2003). Consider what happened during the 1930s, for example, the US government concentrated on balancing the fiscal budget by implementing a contractionary fiscal policy (increased taxes and decreased expenditure). It overlooked critical factors of improving productivity and maintaining employment at its natural level in the process (Mankiw, 2010). As a result, customers were obliged to cut back on their stock purchases, causing financial markets to plummet.

Although the behaviour of monetary and fiscal policies on the macroeconomics is predictable in theory, the performance outcomes of changes in these policies are not always clear in practice. There is ambiguity about the responses of macro variables in different economies for a variety of reasons. The impact of monetary policy on financial markets has been studied empirically, but the results have been equivocal. According to Benanke and Kuttner (2005), there is a positive association between monetary policy and economic growth. Nizamani (2016), on the other hand, discovered a negative association between monetary variables including inflation, interest rates, and stock prices. This is because tightening monetary policy slows the economy, which has an impact on stock prices and dividend payments. Several academics have suggested that including fiscal policy while examining stock markets is important (Chatziantoniou, et al., 2013). Blanchard and Perotti (1999) discovered that expansionary fiscal policy (increasing expenditure while

lowering taxes) had a detrimental impact on private investment. Fiscal policy and stock prices have a favorable association, according to Laopodis (2009) and Ardagna (2009).

Furthermore, empirical data reveals that monetary and fiscal policies interact, and their impact on many economic phenomena should not be ignored (Chatziantoniou et al., 2013). Van Arle, et al., (2003) and Muscatelli (2002) discovered that when the two policies combined, they were unstable and responded differently when applied to individual countries versus aggregate countries. Nonetheless, Yuan and Ross (2014) found that interactions between fiscal and monetary policy had a favorable impact on the stock market.

Malawi's economy is classified as a small open economy with a highly volatile macroeconomic environment, with a Gross domestic product (GDP) of $5.8 billion, annual real GDP growth of 4.3 percent, and an average inflation rate of 20% since the 1990s (Chiumia & Malikane, 2015). With this economic backdrop in mind, the Reserve Bank of Malawi (RBM) has been using a Monetary Aggregate Targeting (MAT) framework and a flexible exchange rate system as a follow-up to the imposed Structural Adjustment Policies since the early 1990s (SAPs).

As part of the MAT framework, the RBM uses an inflation target that is consistent with reserve money to influence money supply growth (Chiumia & Malikane, 2015). Furthermore, the policy rates are set based on a periodic analysis of macroeconomic performance. As a result, to promote a more favourable economic climate, the authorities closely monitor interest rates and price levels. On a macro level, Malawi's fiscal policy helps in economic stability. On a micro level, tax revenues and government spending policies act as accelerators for private sector investment.

In recent years, however, there has been macroeconomic instability and budgetary imbalances. In 2011, for example, there was an economic slowdown, which resulted in fuel shortages, foreign exchange shortages, and revenue loss due to theft of public funds, all of which contributed to a recession in 2012. As a result, the government enacted tougher fiscal budgetary measures, potentially affecting the stock market, which is a crucial route for Malawi's economic growth prospects. For illustration, the stock market performed poorly between 2009 and 2010 because of the 2008 global financial crisis and domestic currency fluctuations (MSE, 2016). The Malawi

Stock Exchange (MSE) has had periods of high growth and low growth. For example, in early 2000's the stock market returns were very low due to a high rate of interest. The policy rate reached a record high of 78.53% in 2001 coincidently the stock market went down with low market activity. During the same period, the kwacha depreciated and the Treasury bill rate went up from 23.15% to 23.85% (MSE , 2002). We clearly see that macroeconomic shock affects the stock market returns in Malawi. Therefore, the main purpose of the study attempts to understand the impact of macroeconomic variables on the MSE.

1.2 Problem Statement

The Malawi Stock exchange (MSE) is a vital financial market through which Malawians with excess funds save and companies with shortage funds accumulate funds to raise their capital requirements. Ever since the financial sector was liberalised the MSE plays an important role economic growth and development. Since its establishment in 1997, the market has remained relatively small, has experienced delisting of a number of companies, has experienced highly volatile records and the market is still yet to reach its peak. The Malawi economic environment has been highly unstable in the past 30 years. Inflation inertia has remained high for the past two decades. It has averaged 20% since 1990, and the 2012 flotation of the Malawi Kwacha, combined with the intermittent supply of foreign exchange, exacerbated the problem. Policy rates have fluctuated over the years and this has further made lending rates of commercial banks to fluctuate especially in the early 2000's. This influenced the stock market was in some way, particularly in stocks where price movement had been dormant or declined, as both institutional and individual investors earned higher returns in treasury bills and term deposits (MSE , 2002).

Despite the MSE being highly volatile and having low market returns the market was the best performing company on African securities exchange association (ASEA) in 2017. The market has experience significant growth in face of a highly volatile macroeconomic environment. According to previous studies, highly volatile stock exchange and unstable macroeconomic environments sway away investors' confidence from trading in stock markets (Kiriu, et al., 2014). According to the studies conducted Corallo (2006), Laopodis (2009), Ardagna (2009), Yuan and Ross (2014), Chatziantoniou et al., (2013), and Demir (2019) monetary and fiscal policy decisions have a significant impact on the stock market. Interest rates, inflation, foreign direct investment,

government spending, GDP, exchange rates, and money supply, among other things, have a direct and indirect impact on stock market behaviour, according to these researches. Monetary and fiscal policies are critical since they have a significant impact on the overall economy. However, how these elements manifest themselves in the financial sector varies per country. This is one of the primary reasons to understand these implications in the Malawi economy, as well as other aspects. Other elements contributing to this position are the economy's openness and significant changes in macroeconomic conditions, as well as the relatively mild conduct of fiscal and monetary policies, as well as exchange rate policies.

Understanding the relationship between macroeconomic variables and the stock market is critical, as Gopinathan and Durai (2019) point out, because macroeconomic variables have a systematic effect on stock market returns. Clearly, there are strong links between the government's and Central Bank's fiscal and monetary policies, respectively, and the performance of the Malawi Stock Exchange (MSE), which, along with larger investment by enterprises and individuals, is the country's conduit of economic growth. As a result, it is critical to research and comprehend how the dynamics of policy-related shocks influence to the MSE platform. In this research, I will attempt to comprehend the responsibilities of these important macroeconomic variables (fiscal and monetary policy) in influencing stock market movements and, as a result, investor behaviour in Malawi.

1.3 Significance of study

The findings will have an impact on macroeconomic policy as well as investor understanding of how to invest (when to buy or sell stocks). As a result, the study is significant in the following ways. Primarily, the observations and conclusions will assist policymakers in making decisions that will have an immediate and long-term impact on financial markets. More specifically, the findings will help policymakers understand what drives the stock market and which macroeconomic policies have a direct impact on it. It should be noted that the stock market's performance has a significant impact on economic growth (Benanke and Kutner, 2005; Badr 2015). Malawi's financial sector is one of its most important sectors facilitating economic growth. As a result, policymakers must always consider the impact of both monetary and fiscal policy.

Aside from assisting policymakers, the findings of this study will be useful to investors in determining the best times to buy or sell stock based on their understanding of the macroeconomic environment. The GDP, for example, is one of the most important variables in this study. Investors must understand that stock prices reflect future profits; therefore, whenever investors anticipate a positive GDP, they purchase shares that increase in value. The rise in the stock market then generates a wave of optimism, influencing both business and consumer behaviour. This, in turn, leads to increased investment activity, which has an effect on the economy's real output (Prazak, 2018)

The findings are also significant for firms listed on the Malawi Stock Exchange (MSE) and potential firms looking to enter the stock market. The main reason for listing on the stock market is to be able to collect capital from the public, which has the potential to increase the firm's value (MSE, 2016). Firms will be able to monitor how the macroeconomic environment affects stock prices because of the findings. For example, if the paper discovers that the rate of inflation has a negative impact on the stock market, firms should make more information available to the public, allowing the public to spend more on stock markets rather than goods and services, exacerbating the rate of inflation. Foreign investors can also use the results about the impact of exchange rate by buying or selling shares. For example, if it discovered that exchange rates negatively affects the stock price, then investors should sell their investments encouraged by an increase in domestic consumption.

1.4 Research Objectives

The main objective of this study is to examine the impact of macroeconomic variables on stock market returns. This objective is further, sub-divided into four specific objectives.

1.4.1 Specific Objectives

- To determine if government expenditure, price level, exchange rate and, income have an influence on Malawi's stock market returns.
- To assess the impact of interest rates and money supply on the stock market in Malawi.
- To examine long-term effects and short-term effects of the mentioned monetary and fiscal policy variables on Malawi's stock market performance.

- To examine whether an interaction between the mentioned monetary (interest rate) and fiscal policy (government expenditure) variables on Malawi's stock market performance.

1.5 Study Hypothesis

- Government spending, price level, exchange rate, and income have no influence on stock market returns;
- Interest rates and money supply have no impact on stock market returns;
- There is no evidence of a long-run and short-run relationship between fiscal and monetary variables in influencing stock market performance.
- There is no evidence an interaction between the mentioned monetary (interest rate) and fiscal policy (government expenditure) variables on Malawi's stock market performance

1.6 Organisation for Scientific Research

The organisation of the research is as follows: The first chapter covers the study's introduction, the problem statement, the objectives, the hypothesis, and the study's scope and design. The second chapter is devoted to a review of Malawi's stock market. The third chapter examines related and pertinent literature. This chapter introduces a time series econometric model and outlines the research methods. The discussion of the empirical results are in Chapter 5. Chapter Six concludes with a summary of the findings and policy recommendations.

CHAPTER TWO

AN OUTLOOK ON THE MALAWI ECONOMY AND THE MALAWI STOCK EXCHANGE

2.1 Introduction

This chapter examines the evolution of Malawi's monetary and fiscal policies since 1990 in relation to the performance of the Malawi Stock Exchange.

2.2 Malawi's Economic Outlook

Malawi is small open landlocked economy with a Gross Domestic Product (GDP) of US$11.96 billion (World Bank, 2020). The economy is heavily reliant on agriculture, which employs 85 percent of the labour force and generates 80 percent of the country's foreign exchange earnings (Chiumia & Malikane, 2015). Consumption is extremely high, accounting for 97.6 percent of GDP on average since 2000. This is due to the country's reliance on imports. As Chiumia and Malikane (2015) pointed out, the country's main imports include fuel, fertilizer, and pharmaceuticals.

In addition, Figure 1 shows a graph of inflation from 1990 to the present. We observe that price levels were volatile between the 1990s and the early 2000s. They slowed from 2005 to 2011, and then increased to 24 percent in 2012. In 2019, they averaged 9.3 percent (Statista, 2020). In Malawi, historically, inflation rates tend to improve with a decrease in food inflation and an increase in tobacco sales fuelled by tobacco sales between October and March of each fiscal year (Chavula, 2016).

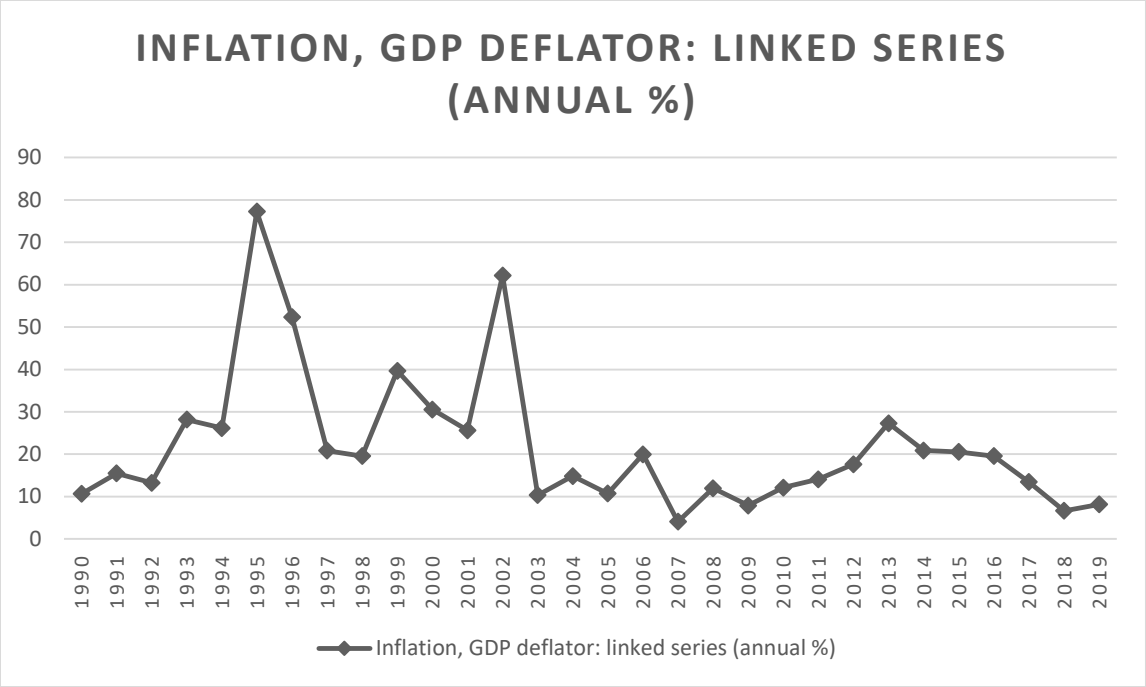

Figure 1 Graph of inflation Rates, 1990-2019

Data Source: World Development Indicators (2019)

Since 1964, Malawi has followed a number of exchange regimes and experienced frequent devaluations in an effort to improve export competitiveness and the balance of payments (BOP) (Mangani, 2021). The Kwacha was devalued in 1994, resulting in a depreciation of up to 62 percent by December of that year. In order to prevent further depreciation, the Malawi kwacha was pegged to the US dollar in 2006 at MK139/US$. This exchange rate fix was costly because it reduced foreign reserves and caused import cover to fluctuate between 2009 and 2013. For example, import cover decreased from 1.3 months in September 2008 to 1.1 months in January 2009 before increasing to 1.6 months in July 2009 (Mangani, 2021).

To finance fiscal activities, the Malawi government, borrows or collects revenue. Debt financing or borrowing has been at the heart of fiscal expenditure in Malawi; for example, public-sector expenditure in some fiscal years can be as high as 35 to 37 percent of GDP (GoM, 2005). Malawi's debt levels continue to rise, making it a highly indebted poor country (HIPC). Her external debt stood at $1.78 billion in 2015, accounting for 37 percent of her GDP. Malawi has recently

accumulated external debt from other countries, including China and India. This has put her at high risk of debt in the future. Table 1 shows the key indicators for Malawi between 1990 and 2017. Tax revenue decreased from 123 percent to 17 percent, while government expenditure increased from 12 percent to 80 percent of GDP.

Table 1:Key Economic indicators 1990-2017

Key Indicators	1990	2017
Population (2017)	Approx. 9.4 Million	Approx. 18.0 Million
Per capita GDP (2017, current U.S dollars)	199	300.31
Tax Revenue as % of GDP	123%	17.29 %
Government Expenditure as % of GDP	12.3%	80.11 %
Government Spending (billions of dollars, 2017)	0.09	0.88

Source: World Bank/IMF (2016)

2.3 The Malawi Stock Exchange

Malawi Stock Exchange (MSE) was founded in 1994. It began operations in 1996 with the goal of raising capital for publicly traded companies and encouraging domestic savings through stock trading. Currently, the MSE has 16 domestic companies and 1 foreign company (See Appendix B). The MSE has shown signs of growth since its inception. The number of listed companies, the volume of shares traded, market capitalization, and liquidity have all increased. Four industries dominate it: banking, manufacturing, real estate, and telecommunications. In keeping with the ever-changing technological world, the market has recently gone digital. There are three stock market indices on the MSE: Malawi All share Index (MASI), The Domestic Share Index (DSI) and the Foreign Share Index (FSI). Stock market indices track share price movements.

2.4 Monetary Policy in Malawi

Monetary policy is critical to the country's economic management. The Reserve Bank of Malawi (RBM) is in charge of it in Malawi. According to the RBM Act of 1989, its primary functions are to control the money supply, influence credit, interest, and exchange rates in order to promote economic growth, employment, and price stability (Reserve Bank of Malawi, 1989). Malawi's

monetary policy is divided into five phases: pre-reform (1964-1986), first reform (1987-1993), post-reform (1994-2004), and de facto exchange rate peg period (2005-2012) and recent reform (2012 to date) (Ngalande, 2015).

Malawi experienced financial repression, or the pre-reform period (1964-1986), when the economy was characterized by credit controls, RBM reporting to the Treasury, and monetary policy subordination (Ngalande, 2015). This exposed the country's economy to domestic and external imbalances, prompting the government to implement Structural Adjustment Policies (SAPs) in 1981. The RBM implemented periodic interest rate increases, restructuring of state-owned enterprises, liberalization of industrial output prices, periodic devaluation of the Malawi Kwacha, increases in trade taxes, and foreign exchange rationing between 1981 and 1986 (Chirwa, 2005).

This was followed by the reform period, which lasted from 1987 to 1994. During this time, the financial sector and interest rates were liberalized; there was little government intervention; business competition increased, and the financial sector became more efficient (Bittencourt, et al., 2012). Following the repeal of the Reserve Bank of Malawi Act in 1989, this financial liberalisation ensured the independent conduct of monetary policy. In June 1989, the credit ceiling was removed, and the Liquidity Reserve Requirement (LRR) ratio, open market operations, treasury bills, sales and purchases of foreign exchange, and the bank rate were implemented (Bittencourt, et al., 2012).

In recent years, the performance of monetary policy in relation to the economy has varied. From 10.3 percent in 1986 to 16 percent in 2018, the policy rate has risen. Lending rates have also risen from 18.1% in the 1980s to 38% in 2014. Since the 1980s, the rate of money supply growth has fluctuated. It was 17.6 percent between 1980 and 1986, then 22.3 percent between 1987 and 1993, and finally 34.9 percent between 1994 and 2007. Following that, it fell to 27.8 percent in 2012 before rising to 31.3 percent in 2013. In 2014, it fell to 29.9 percent (RBM, 2016).

Changes in policy rates have an impact on the entire economy, both positively and negatively. I begin by examining how bank rates have affected the stock market. The lending rate of a

commercial bank fluctuated in 2000 due to changes in bank rates (MSE , 2002). For example, lending rates were 47.5 percent at the start of the year before adjustment to 48 percent in June. In August, the rates reduced from 48 percent to 45 percent, in response to a drop in the bank rate from 47 percent to 44.5 percent per year. In response to an increase in the bank rate, to 50.23 percent, lending rates increased to 53 percent at the end of the year. The increase in bank rates increased the demand for time and savings deposits, increasing the return on these products. This influenced the stock market was in some way, particularly in stocks where price movement had been dormant or declined, as both institutional and individual investors earned higher returns in treasury bills and term deposits (MSE , 2002).

Since the 1980s to the early 2000s, inflation rates have been extremely volatile. Between 1980 and 1989, the rate averaged about 16.6 percent due to structural adjustment policies. The average inflation rate during the reform period (1990-94) was 20 percent. Between 1995 and 1999, it averaged around 41.8 percent. Furthermore, between 2000 and 2002, the rate averaged 26.8 percent (Chirwa, 2005). The impact of a highly inflationary environment on the stock market is as follows: when inflation rates are high, it negatively affects stock market performance because high rates of inflation reduce real income and thus reduce the marginal propensity to save. Investing in stocks is about saving, and investment suffers in a high inflationary environment because of income spent on consumption (MSE , 2002).

The change in exchange rate policy is another important policy instrument linked to the stock market. Every three months, the RBM holds a Monetary Policy Committee (MPC) to review the economy's monetary stance and assess the country's economic performance. The RBM influenced the exchange rate through foreign currency sales and purchases, but only to a certain extent. In 1998, the RBM adopted the free-floating exchange rate as opposed to the previous fixed exchange rate (Mangani, 2011). Between 2005 and 2012, the economy established a de facto exchange rate peg, and the bank began implementing expansionary monetary policy by lowering the bank rate. Between 1994 and 2004, the economy was able to accommodate the use of a diverse range of monetary instruments, as well as a free-floating exchange rate.

Since the 1980s, the exchange rate has fluctuated. The Malawi Kwacha was worth MK1.3 per US dollar in 1980 and has since depreciated to MK728 per US dollar (RBM, 2019). Between 2009

and 2012, the country's foreign exchange reserves depleted. There were changes in the stock market between 1994 and 2014. The impact of the Malawi kwacha depreciation on the stock market is neither immediate nor direct because it occurs through foreign investment portfolios. The constant volatility of the Kwacha discourages foreign investors because it erodes the initial investment when an investor wants to sell off his or her portfolio (MSE , 2002).

Figure 2, which depicts the trend in market capitalization, shows that during periods of depreciation of the Malawi Kwacha, market capitalization slowed compared to periods of appreciation of the Malawi Kwacha. For example, market capitalization fell between 2010 and 2012

Figure 2: Graph of Market Capitalizaion in Malawi Kwacha and US Dollar Values(1996-2019)
Source: Malawi Stock Exchange Market (http://www.mse.com)

The stock market performed poorly between 2009 and 2010 because of the 2008 global financial crisis and currency fluctuations (RBM, 2012). The stock market began to improve between 2012 and 2014, following the devaluation of the currency and the implementation of a free-floating exchange rate. Malawi has had a more liberalized exchange rate since 2012. This has resulted in not only a more reliable market, but also a more positive impact on the stock market. RBM in 2012 predicted a positive long-term impact.

Despite various economic shocks to the Malawian economy, stock indices have shown an upward trend. For example, the Malawi All Share Index (MASI), which includes both domestic and foreign-listed companies, has risen from 100 to over 32,000 points as of December 2019. The graph in Figure 2.3 shows that market indices have been rising on average, albeit with some fluctuations. Market indices, for example, fell between 2008 and 2012. The 2008 global financial crisis and the 2011 economic insecurity caused this fall.

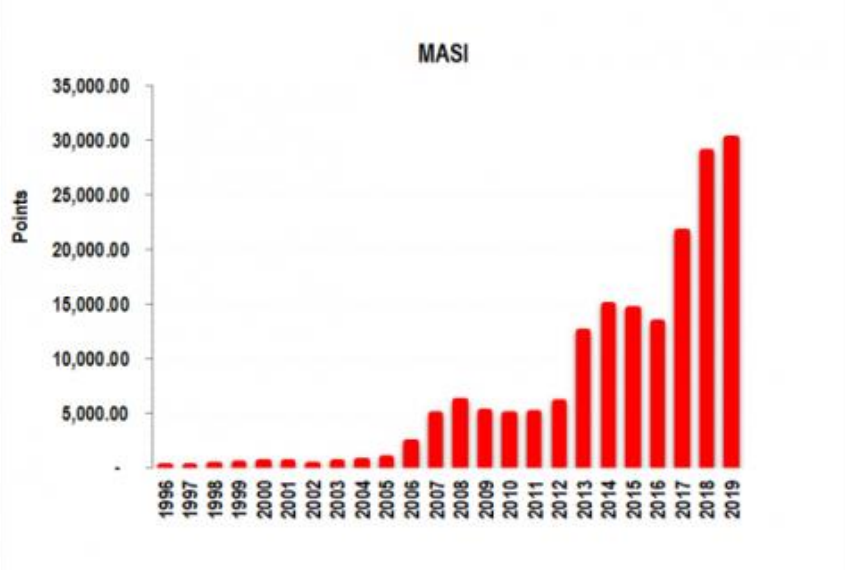

Figure 3: Malawi All Share index (1996-2019)
Source: Malawi Stock Exchange Market Indices.

The MSE celebrated its 20th anniversary in 2016. Nonetheless, MPICO successfully issued rights, Britam Insurance Company was delisted, and the MASI performed poorly, declining from previous years. Most of the listed companies' stocks underperformed as a result of a difficult economic environment, including the 7.84 percent depreciation of the Malawi Kwacha and high interest rates (the 91-day Treasury bill rate increased from 23.15 percent to 23.82 percent) (MSE, 2016). As a result, the year 2016 was marred by low market activity, with a 25.2 percent decrease in the number of transactions from 1,220 in 2015 to 913 in 2016 (RBM, 2016).

The MASI also fell precipitously, from -2.2 percent in 2015 to -8.5 percent in 2016. Volumes of stocks transacted and shares traded also fell, with the number of shares traded falling by 83.3 percent from 2.4 billion in 2015 to 0.4 billion in 2016. The value of shares traded fell by 87.2

percent, from MK48.6 billion in 2015 to MK6.2 billion in 2016. These poor figures resulted from listed companies' poor financial performance in 2015, which affected their 2016 performance (MSE, 2017)

2.5 Malawi's Fiscal Policy

During the fiscal year 2002/03, the economy experienced negative growth, 14 percent inflation, a decline in the exchange rate, and a 20% increase in domestic debt (GoM, 2005). However, the stock exchange's performance was negative, with the MASI losing 31.68 percent (MSE , 2002). This bleak economic outlook prompted some fiscal restraint during the fiscal year 2003/04. As a result, there was 4.5 percent growth, 9.6 percent inflation, and debt increased to 25 percent of GDP (Banda, 2007). As a result, market performance on the MSE improved. For example, there was a 475.5 percent increase in share volume and a 212.2 percent increase in share value in Malawi's government implemented fiscal reforms beginning with the fiscal year 2004/05. For example, tax reforms restored investor confidence and resulted in a stable Kwacha. Furthermore, the growth rate increased from 3.5 percent in 2003/04 to 7 percent in 2006/07. Domestic interest rates as a percentage of the budget reduced from 21.3 percent in the 2003/04 fiscal year to 9.8 percent in the 2006/07 fiscal year. Between 2004 and 2007, domestic debt as a percentage of GDP fell from 20.4 percent to 10.8 percent. In 2005, the stock market performed better than in 2003. The share value increased by 13.58 percent as the share prices of most traded stocks increased (MSE , 2005). The stock market continued to improve in 2007, with many counters experiencing significant growth. There were a large number of trade shares, and the market had a higher turnover in 2610 transactions compared to 712 transactions in 2006. Similarly, share volume increased by 483.97 percent in 2007 compared to 2005. (MSE, 2007).

In 2011, the MSE's performance improved. It recorded the best figures since its inception in 1996, with a large volume of shares transacted – a 557.14 percent increase in share volume over 2010 trading. However, the exchange rate continued to depreciate by 7.9 percent per year (MK150/US$ in December 2010 and MK163/US$ in December 2011). Inflation rose from 6.6 percent in January 2011 to 8.9 percent in December of that year. Between 2011 and 2012, the country experienced fuel shortages, currency depreciation, and high inflation. This followed by a poor stock market performance. For example, the currency fell from MK163/US$ in December 2011 to MK337/US$

in December 2012, while inflation increased from 8.9% in 2011 to 33.3 percent in 2012. Although the stock market returned 12.03 percent in 2012, compared to 8.4 percent in 2011, the volume of shares traded in US dollars decreased due to the depreciation of the Malawi Kwacha (MSE, 2011).

The country had a transitional administration in 2014. It attempted to implement new policies in order to boost donor confidence. Malawi's revenue collection as a percentage of GDP was higher than that of other low-income countries (LIC) because of the new government's improved revenue collection. The VAT collection, tax audits of large taxpayers improved, government spending increased and the tax base broadened. For example, during the Fiscal Year (FY) of 2014/15, the government spent 26% of the GDP budget on wages, 15% on interest payments, and only 20% on development. However, the MSE did not performed well, and the market return decreased to 18.79 percent in 2014, down from 108.31 percent in 2013. During the 2014/15 fiscal year, the volume of shares traded also decreased (MSE, 2014).

In light of both the effects of changes in government spending and revenue collection, we can see that the Malawi economy has been overly dependent on high revenue collection, borrowing, and high government expenditure from 1996 to 2016. Higher tax revenues and increased domestic borrowing funds the government. This has an effect on the stock market because the increase in spending will result in better living conditions for the vulnerable, as the negative effects of fiscal policy will be mitigated (Nico Asset Managers, 2016). Individual investors have disposable income that they can use to purchase stock market shares, causing their value to rise. High government debt, on the other hand, means high domestic borrowing and high revenue collection, which leads to high interest rates, which negatively affects stock market performance.

2.6 Chapter Summary

The preceding chapter provides a discussion on an overview of the Malawi Stock Exchange. It also provides an overview of the Malawi’s fiscal and monetary policy in terms of the stock market.

CHAPTER THREE
LITERATURE REVIEW

3.1 Introduction

This chapter's goal is to review both theoretical and empirical literature on the impact of macroeconomic variables on stock market returns. The Capital Asset Pricing model will be the focus of the theoretical literature. Finally, I will explain the empirical literature on the relationship between stock market and macroeconomic variables: various conclusions and the direction this study takes.

3.2 Theoretical Framework

A number of theories link macroeconomic variables to stock market returns. In this section, I will discuss two of them, which are the Arbitrage Pricing Theory devised by Ross (1976) and the efficient market hypothesis developed by Samuelson (1965) and Fama (1970).

3.2.1 Arbitrage Pricing Theory (APT)

There are numerous theories that attempt to explain the relationship between macroeconomic variables and stock market returns. In terms of asset pricing research, the Capital Asset Pricing Model is the most significant innovation. William Sharpe (1964) developed it from Harry Markowitz's early work on portfolio theory. The CAPM calculates the rate of return on a publicly traded company's stock. It assets that asset expected returns vary only by their systematic risks and not by a firm's unsystematic risk as measured by beta (Madura, 2013).

Mathematically The CAPM is as follows:

$R_j = R_f + \beta_j(R_m - R_f)$……(1)

Where R_j=return on stock j is influenced by R_f=prevailing risk-free rate, R_m=market return, and β_j=stock j beta (this measures the covariance between R_j andR_m, which reflects the asset's sensitivity to general stock market movements). Despite the ability to estimate the firm's beta and market risk premium, the CAPM does not allow for numerous risk factors, such as economic factors as pointed out by Ross (1976) through the Arbitrage pricing theory (APT).

The APT is a straight line between expected return and risk (McMillan, 2011). One of the primary benefits of using the APT is that it allows a researcher to incorporate risk factors and then estimate the betas for each asset. Unlike the CAPM, which contends that asset prices or expected performance are determined by a single common factor, the APT contends that asset prices are influenced by a variety of macroeconomic factors (Gatsimbazi, et al., 2018).

I display the APT as follows:

$E(R_{it}) = R_{if} + \beta_i X_t + \varepsilon_t$.....(2)

Where:

$E(R_{it})$ Is the expected return of stock *i* at time *t*,

R_{if} Is the risk free rate at time period t

X_t Is a vector of the predetermined economic factors or the systematic risk

β_i Measures the sensitivity of the stock to each economic factor X_t

ε_t Is the error term, represents unsystematic risk or the premium for risk associated with assets that undiversified.

3.2.1.1 The APT's assumptions

According to Ross (1976), they hypothesized that there is a positive relationship between an asset's expected returns $E(R_{it})$ and its risk measure β_i. Assuming that all asset prices in the market competitive, the expected performance rises as investors accept more risk (Gatsimbazi, et al., 2018).

One of the APT's common drawbacks is that it does not specify the economic factors that a researcher may include in a study. These economic factors make calculating the betas for each economic factor difficult. However, these complexities distinguish the APT model in terms of macroeconomic variables and stock markets. As a result, I use the APT in the research because it allows the researcher to incorporate important economic factors that can help explain the expected return on stocks.

Madura (2013) divides stock market prices into three categories: economic factors, market-related factors, and firm-specific factors. In this study, we will focus on economic factors such as interest

rates, economic growth, exchange rates, and so on. As a result, in the paper, the APT is used, and the theory will serve as the primary reference point for the research.

3.2.2 Efficient Market Hypothesis

The Efficient Market Hypothesis (EMH) evolved from the theory of rational expectations on securities pricing. Samuelson (1965) and Fama (1970) developed it independently. Samuelson (1965) assets that in every competitive market, there are buyers for every sellers and if one is sure that prices will rise, and then it means prices have already risen. On the other hand, Fama (1970) assets that an efficient market is market in which prices fully reflect all available information and this assists firms to make well-informed investment decisions. The EMH's main assumption is that financial market securities prices fully reflect all available information. Stock market traders use the available information to evaluate prices and this makes them not to outperform the overall market without accepting higher risk (Vamvakaris, et al., 2017). According to the EMH, the rate of return on a security is equal to the sum of the capital gain (change in price) and any cash payments divided by the initial purchase price of the security.

Mathematically the EMH is as follows:

$R = \frac{P_{t+1} - P_t + C}{P_t}$ ..... (3)

Where

R Is the rate of return on the security held at time, $t\ to\ t+1$

P_{t+1} Is the price of the security at time,$t+1$ (this is the end of holding period)

P_t Is the price of the security at time t (this is the beginning of the holding period)

C is the cash payment (coupon/dividend payment) in period, t to $t+1$

To forecast about future return the individual is aware of P_t and C, but is uncertain about, P_{t+1}. Thus P_{t+1} becomes P^e_{t+1} and the formula (2) becomes

$R^e = \frac{P^e{}_{t+1} - P_t + C}{P_t}$ .....(4)

The individual holding the security is not fully aware of future prices; he believes future prices are equal to the best forecasts based on current information. Thus, future expectations are rational in the sense that

$P^e_{t+1} = P^{of}_{t+1}$ thus $R^e = R^{of}$

Where *of* is the best forecast and R^e and P^e_{t+1} are not observed. Demand and supply analysis is used to form expectations about future prices, equating the equilibrium between demand and supply such that the expected return on security R^eequals the equilibrium R*, which equates the quantity of security demanded to the quantity supplied, R^e=R*. External risks and liquidity influences influence the equilibrium returns on the security. Then, using the equilibrium condition, an equation is derived to describe pricing behavior in an efficient market by replacing R^e with R^{of} in the rational expectations equation; yielding $R^{of} =$ R*. This equation explains how current financial market prices will be set so that the optimal forecast of a securities return using all available information equals the securities equilibrium return.

Proponents of EMH argue that the theory is in into three parts. The paper distinguishes the EMH's weak, semi-strong, and strong forms (Fama, 1970). The weak form of EMH asserts that historical price movements fully reflect the information contained in them. For example, the volume of stocks traded and the previous stock's price. The semi-strong form asserts that prices fully reflect all publicly available information, including the implementation of new accounting policies, acquisitions, and dividend pay-outs. Finally, in its strongest form, EMH asserts that prices reflect all information, including inside information.

When used in practice Fama (1970) developed the EMH, which stated that an efficient market is one in which relevant information about changes in macroeconomic factors is fully reflected in current stock prices, and thus investors would not earn abnormal profits in such markets (Naik & Padhi, 2012). The primary goal of this research is to understand the effects of macroeconomic variables on stock market returns in Malawi. The Efficient Market Hypothesis and Arbitrage Pricing Theory can directly assist us in establishing a theoretical link between macroeconomic variables and the stock market. The EMH and APT take into account the impact of macroeconomic variables on the current stock market (short-run effects).

According to Naik and Padhi (2012), the two theories explain how factors such as real output, money supply, and interest rate can influence stock price via the simple discount. This means that the stock's value is equal to the present value of expected future dividends. These dividends reflect actual economic activity based on available data. As a result, there may be a close relationship

between stock prices and anticipated future economic activity. According to (Mankiw, 2010), the stock market and future economic activity are seen through the stock market as the leading indicator of economic activity, or the stock market leads economic activity; and the potential impact the stock market has on aggregate demand through aggregate consumption and investment, implying the stock market lags economic activity.

However, later developments have called into question the existence of an efficient market since the cost of information existed (Grossman & Stiglitz, 1980). They also contended that the return on investment must be greater than the cost of information, or the proclivity to invest will vanish. Later, De Bondt and Thaler (1985) argued that January stocks were higher than other months, demonstrated solely by available data. As a result, efficiency cannot exist in the stock market characterized by volatility (Schiller, 2003). Furthermore, The EMH claims that stock market behaviour is unpredictable, but the long-term relationship between macroeconomic variables and stock prices reveals that stock market movements are predictable, making it difficult for policymakers to trust the EMH (Babayemi, et al., 2013). Adding to this, Naik and Padhi (2012) argue vehemently on the flaws the EMH, claiming that macroeconomic variables do influence stock returns by affecting stock prices.

3.3 Empirical Review

Many authors inspired by Fama's (1981) work to focus on the effects of monetary policy on stock market performance. The examination of fiscal policy on the stock market, as well as the interaction of monetary and fiscal policies, has grown in popularity in recent years. Despite the existence of literature demonstrating that, the application of monetary policy has implications for fiscal policy, resulting in an interaction between the policies in affecting the economy and, by extension, the stock market. Because studies on developing countries are scarce, studies on developed countries were included.

3.3.1 Effects of Monetary Policy on Stock Returns

Fama (1981) investigated the relationship between stock returns in the United States and macroeconomic activity. He discovered a link between stock returns and GDP, money supply, capital expenditure, industrial output, and interest rates. He discover a negative relationship with inflation. Chen et al., (1986) discovered similar results when they examined the relationship

between economic forces and the US stock market using monthly data from 1953 to 1983. They used Arbitrage Pricing Theory (APT) to model the relationship between stock market returns and various macroeconomic variables. The findings revealed that economic forces influence the discount rate, firm cash flow, and future dividends. The study also concluded that the risk premium, industrial production, and yield curve changes were important in explaining the US stock market, and that there is a strong correlation between macroeconomic variables and the US stock market.

Benanke and Gertler (2000) discovered evidence that asset prices have a negative impact on the stock market, causing central banks to react to changes in stock market performance. However, such findings were central to a study by Corallo (2006), who used a VAR framework to test the effect of monetary policy on asset prices in Germany and the United Kingdom. The researchers discovered that the interest rate channel plays an important role in the transmission of monetary policy. The paper discovered a positive relationship between interest rates and stock prices in the UK economy. An increase in interest rates will cause stock prices to rise and the domestic currency to appreciate. However, in Germany, the author found a negative and insignificant relationship between interest rate and stock price. The results agreed with Thorbecke (1997), who predicted a positive relationship between monetary policy and stock market returns.

Bjornland (2008) analysed the transmission of monetary policy in a small open economy by employing Structural Vector Autoregressive analysis (S-VAR). He incorporated an event study to see the reaction of stock price variables to changes in exchange rates. The study found that stock prices react instantaneously to inflation-targeting news, and that a rise in interest rate leads to a fall in the stock prices by 5 percent. He also found that exchange rates react immediately to change in monetary policy. A contractionary monetary policy, for example, causes the real exchange rate to rise. This contradicts the findings of Damankeshideh and Shanasaei (2013), who discovered that the exchange rate has an unpredictable impact on stock market returns. Furthermore, Zia and Rahman (2011) and Jamil and Ullah (2013) found no short-run or long-run relationship between stock prices and the exchange rate.

Nizamani et al., (2016) used the S-VAR approach to investigate the effectiveness of monetary policy in Pakistan. They chose three monetary policy transmission channels: interest rates, credit, exchange rates, and asset prices. Concentrating on the asset price channel, they used a stock market index against variables such as money supply, inflation, interest rate, and exchange rate. They discovered a negative relationship between the interest rate and the stock market index because tightening monetary policy slows the economy, affecting dividend payments and thus lowering asset prices. The findings were consistent with those of Naikh and Padhi (2012), who used a Vector Error Correction Mechanism (VECM) and discovered that both the exchange rate and the interest rate had no effect on stock prices. They also discovered a positive relationship between money supply and industrial production, as well as that inflation has a negative impact on the stock market.

Jurkšas and Paškevičius (2017) studied the long-run causality between asset prices (stock prices, real estate and government securities) and macroeconomic variables in Lithuania. The main purpose of the study was to answer the question if it is possible to predict future asset returns accurately, thus being able to predict the future asset bubbles and financial turbulence. The authors adopted the Autoregressive distributed lag model (ARDL) to assess the causality between macroeconomic variables such as gross domestic product, foreign direct investment, consumer price index, money supply, and interest on asset prices. The study found that the results model forecast showed that the most precise predictions are obtainable in real estate market, while forecasted returns of stock and government securities are not so accurate, especially the further forecast horizon. The possibility to understand driving factors behind changes of asset prices and to predict future return is of a particular importance not only for investors and businesspersons, but also for the policy makers who are responsible for making substantiated decisions regarding monetary and fiscal policies they conduct (Jurkšas & Paškevičius , 2017).

Demir (2019 analysed the effects of macroeconomic factors on stock market fluctuations on Turkish Stock Market index. The study used dataset between (2003q1-2017q4) and adopted the ARDL model. It used macroeconomic factors (real gross domestic product, the real effective exchange rate, portfolio investment inflows, Brent crude oil price, foreign direct investment and interest rate. The study found that the GDP, exchange rate, portfolio investment and foreign direct

investment raised the stock market index while interest rate and crude oil negatively affected the stock market index (Demir, 2019).

Govati (2009) investigated the effects of macroeconomic volatility on stock returns in the Malawian economy using the Malawi All Share Index, interest rate, money supply, exchange rate, and industrial production index. Using a Generalized Autoregressive Heteroskedastic Process, GARCH (1, 1) method, the study discovered that macroeconomic variables have no effect on stock market volatility. For example, the exchange rate and industrial production have an impact on average returns and volatility, but they do not have asymmetric effects (Govati, 2009). The study did not address the impact of fiscal policy (as measured by tax and expenditure or fiscal deficit) on stock market performance. Thus, the goal of our research is to include a fiscal policy variable as well as to investigate how prices and income affect the Malawi stock market.

Similarly, Wawanya et al., (2016) examined MSE performance by understanding exchange rate performance using a Vector Error Correction Mechanism (VECM). The study used variables such as inflation, interest rate, exchange rate, and real growth rate (GDP). According to the study, other variables such as interest rate and growth rate have no effect on the Malawi stock market. According to the study, this is due to the market's infancy and underdevelopment.

Finally, the empirical literature presented above demonstrates that the relationship between monetary policy variables and stock markets is both positive and negative. According to Benanke and Kuttner (2005), the influence of macroeconomic variables on stock prices is difficult to observe, but the relationship is through changes in the cost of capital, subsequent changes in firm's investment opportunities, and other mechanisms. As a result, given the small size of the stock exchange and fluctuating macroeconomic conditions, the relationship is likely to produce different results for a small open economy like Malawi. Furthermore, the periods and methodologies used are likely to yield varying results.

3.3.2 Fiscal Policy's Influence on Stock Market Returns

Adrangi and Allender (1998) used the VAR approach to support classical economic theory. They studied the US economy and discovered that deficit reductions have a positive impact on future corporate profits; the lower the deficit, the higher the future tax burden; interest rates and the value of the dollar fall, resulting in an increase in corporate profits due to high domestic and export revenues. Strong sales are likely to result in high net earnings, which will raise equity prices (Adrangi & Allender, 1998).

Blanchard and Perotti (1999) deduced the dynamic impact of fiscal policy variables such as government expenditure and taxes on economic activity in the United States of America. Using a mixed S-VAR/event study, they found that expansionary fiscal policy (rise in government expenditure and drop in taxes) influences output positively; it affects positively on private consumption and negatively on private investment. However, when an increase in government spending and taxes occur simultaneously, the results show that both private consumption and investment are negatively affected (Blanchard & Perotti, 1999).

Between 1960 and 2004, Laopodis (2009) investigated the dynamic relationship between fiscal deficit, monetary policy, and stock market returns in the United States. Using a VAR framework, the study discovered that deficits are critical to the performance of stock markets. This contradicted the Ricardian equivalence proposition, which states that current deficits become irrelevant to rational investors' current portfolio substitution decisions if they correctly anticipate increased future taxation. The author also discovered that government revenue and spending variables increased stock market sensitivity. Laopodis went on to investigate the effects of inflation, as well as deficits, the federal funds rate, and stock prices, and discovered that the stock market reacts negatively to changes in inflation. This is consistent with previous research by Darrat (1988), who investigated the relationship between aggregate quarterly stock prices and monetary and fiscal policy in the Canadian stock market. According to the findings, fiscal deficits have a significant negative impact on current stocks. According to Laopodis' research, it is critical to use fiscal deficits when analysing the relationship between fiscal policy and stock prices because fiscal policy is a trade-off between government spending and revenue collection.

Sousa and Alfonso (2008) investigated the impact of fiscal policy on macroeconomic fundamentals in the United Kingdom, the United States, Germany, and Italy using a Bayesian Structural Vector Autoregressive approach. The study focused primarily on government revenue and spending on housing prices and stock price indices. According to the study, government-spending shocks have a minor negative impact on stock prices. Furthermore, it was discovered that government revenue shock has a small but positive impact on housing prices and resulting in a fall in stock prices. Using a VAR model, Alfonso and Sousa (2011) investigated the relationship between fiscal policy and stock prices. They discovered that government-spending shocks boost stock prices while government revenue shocks have small and limited effects. Government spending shocks boost stock prices, whereas government revenue shocks have small and limited effects.

Ardagna (2009), on the other hand, conducted a multi-country study to investigate the impact of fiscal stance on stock markets. He discovered, using a panel of OECD countries and data from 1960 to 2002 that stock market prices rise during periods of significant fiscal policy tightening and fall during periods of very loose fiscal policy. The study also discovered that during years of high government deficits, countries adopted low levels of government spending to stimulate the economy, which resulted in a decline in government debt and interest rates, leading to an increase in stock market prices (Ardagna, 2009).

The research findings presented base on economic and political contexts in the Western world. As a result, they may not accurately reflect the situation in a developing market like Malawi. Gupta et al. (2014) used a Time-Varying Parameter (TVP) VAR model to study the South African economy, and their findings varied across time. For example, the study discovered that during fiscal expansions (1970s–1980s), both stock and housing prices fall. In contrast, they discovered that since 2000, stock prices have risen in response to an expansionary fiscal policy. However, Ogbulu & Emeni (2015) examined the impact of fiscal policy on stock price performance using Ordinary Least Squares (OLS) and the Error Correction Mechanism and discovered that public expenditure had a significant and negative impact on stock prices, while government debt had a positive impact on prices (Ogbulu & Emeni, 2015).

Based on the studies discussed above, it is notable that only a few studies conducted on fiscal policy and stock prices, leaving room for future research. As demonstrated above, some studies found a positive significant relationship between fiscal policy and stock markets, while others found a negative significant relationship. As a result, the purpose of this research is to investigate the impact of fiscal policy on the Malawian stock market.

3.3.3 The Interaction of Fiscal and Monetary Policy.

Lawal et al., (2017) investigated the impact of fiscal and monetary policy volatility on stock market behaviour in Nigeria. They used the Autoregressive Distributed Lag (ARDL) model and the Exponential Generalized Autoregressive Conditional Heteroskedastic (EGARCH) model to investigate the impact of monetary and fiscal policy on stock market performance. They also discovered a long-term relationship between Monetary-Fiscal policy and volatility in the interaction between the two policy frameworks. In contrast, Muscatelli et al., (2002) discovered that the output effects of fiscal policy are ambiguous, and that the fiscal policy response to price changes is difficult to detect. They also discovered that the nature of the two policies' interdependence is highly unstable.

To estimate the potential interaction, they used a Structural VAR framework. The paper discovered that the interaction between fiscal and monetary policy transmission was much greater for all countries when compared to studying individual countries where fiscal and monetary policy reacted differently from each other. This is consistent with Yuan and Chen (2015)'s finding that the interaction of the two policy instruments positively influences stock market returns in BRICS (Brazil, Russia, India, China and South Africa) countries via the inflation and interest rate channels. This study also discovered that while monetary policy shocks had a significant impact on real economic activity, fiscal policy had little influence on the economies.

Chatziantoniou et al. (2013) used a structural VAR approach to examine the impact of monetary and fiscal policy on stock market returns in developed economies such as the United Kingdom, Germany, and the United States. In this research, the authors used money supply, inflation, government spending, the global economic activity index, and stock market indices. They discovered that the relationship is both direct as well as indirect. Each policy affects the UK

economy directly, and the interaction of the policies affects the stock market. In terms of the German economy, the study discovered that monetary policy affects the stock market. Money supply, for example, had a positive impact on stock market returns but had no direct impact via interest rates. It also discovered that there is no direct relationship between fiscal policy and stock market returns, but it discovered evidence that changes in stock market returns induced by fiscal and monetary policy instruments, particularly interest rates. The US economy demonstrated that money supply influences the stock market via the interest rate channel, but no evidence that fiscal policy influences the stock market.

Nwaogwugwu (2018), on the other hand, used the ARDL model to examine the effects of monetary and fiscal policy on the Nigerian stock market. The variables used in the study included broad money, interest rates, government spending, tax revenue, and GDP. It discovered that monetary variables such as money supply and interest rate have significant short and long-run effects on the stock market. Government spending and revenue, on the other hand, have significant short and long-term effects on the stock market (Nwaogwugwu, 2018).

3.4 Conclusion

The preceding chapter examines the theoretical and empirical literature on the relationship between economic factors and the stock market. To gain a better understanding of how market efficiency might affect the relationship between macroeconomic factors and stock market returns, the Arbitrage pricing theory and the efficient market hypothesis are used. According to the empirical studies, existing literature on the Malawian economy has focused on monetary policy and stock market volatility, with little or no relationship to fiscal policy and the possibility of a fiscal-monetary policy interaction. For example, Govati (2009) and Wawanya et al. (2016) all focused on the stock return of the Malawi stock exchange without investigating its effects either or both fiscal and monetary policies.

CHAPTER FOUR

RESEARCH METHODOLOGY

4.1 Introduction

The goal of this chapter is to go over the model specifications and econometric approach used to examine the relationship between fiscal and monetary policy and the Malawi stock market.

4.2 Model Specification

The study's goal is to look at how macroeconomic variables affect stock market returns. The Arbitrage Pricing model used in the study. The following equation model expresses the relationship stock market returns and selected macroeconomic variables:

$$R_t = \beta_0 + \beta_{1t} gdp_t + \beta_{2t} cpi_t + \beta_{3t} rer_t + \beta_{4t} ms_t + \beta_{5t} g\exp_t + \beta_{6t} i_t + \varepsilon_t \quad (5)$$

Where:

R_t= stock return at time t, gdp= Gross domestic product, cpi = Consumer price index

rer =Real effective exchange rate, ms = Money supply, $gexp$= government expenditure

i = Short-term interest rate, ε_t = error term, $\beta_0 - \beta_6$=the parameters to be estimated

Except for the stock market return and short-term interest rate, the equation (5) above are natural logarithm. The ARDL model equation is as follows:

$$R_t = \beta_0 + \beta_{1t} \mathrm{Lngdp}_t + \beta_{2t} \mathrm{Lncpi}_t + \beta_{3t} \mathrm{Lnrer}_t + \beta_{4t} \mathrm{Lnms}_t + \beta_{5t} \mathrm{Lngexp}_t + \beta_{6t} i_t + \varepsilon_t \quad (6)$$

4.3 Variables and Expected Outcomes

In this research, I use six macroeconomic variables from previous theoretical and empirical studies to help explain the relationship between macroeconomic variables and stock market returns. Van Arle et al. (2003) used a Structural VAR analysis in previous studies, incorporating variables such

as real stock market returns, changes in the GDP ratio, changes in the short-term interest rate, consumer price index, and real output growth. Chatziantoniou and colleagues (2013) examined global economic activity, GDP, inflation, government spending, money supply, interest rates, and stock market returns. Bjornland (2008) employed stock market returns, the exchange rate, inflation, and the unemployment rate. Lawal et al. (2017) used a stock market index, money supply (M2), interest rate, real GDP, and government spending as variables. Lawal et al. (2017) used a stock market index, money supply (M2), interest rate, real GDP, government expenditure, and consumer price index (CPI). This study uses the following variables: GDP (as a proxy for income), real effective exchange rate, Consumer price index (as a proxy for inflation), short-term interest rate, government spending, broad money (M2 as a proxy for money supply), and stock market returns (as calculated using the Malawi All Share Index).

4.3.1 Stock Market returns

A stock market index assesses the performance of the stock market. This index indicates whether the stock market is increasing or decreasing in value. Malawi's stock market has three main indicators: the Malawi all share index (MASI), the Domestic Share Index (DSI), and the Foreign Share Index (FSI). I use the MASI dataset in our analysis because it captures both domestic and foreign share performance. Using MASI and CPI, I calculate real stock market returns using the following formula adapted from (Van Arle, et al., 2001)

$$SR = \frac{\log(MASI_t \times 100)}{CPI_t} - \frac{\log(MASI_{t-1} \times 100)}{CPI_{t-1}} \qquad (7)$$

Where; CPI_t=is the consumer price index in period t

CPI_{t-1}=is the consumer price index in previous period

$MASI$= is the Malawi all share index

This formula will allow me to compute stock market returns, which will serve as our dependent variable. MASI is collected Malawi Stock Exchange (MSE)

4.3.2 Exchange Rate

Exchange rate enters our empirical model because of its indirect impact on inflation. When an economy is predominantly export-led, a reduction in exports leads to exchange rate depreciation

and this negatively affects the domestic stock market (Kiriu, et al., 2014). For instance, when exchange rates depreciate, domestic inflation and stock prices go up, thereby forcing individuals to reduce spending on the stock market. Exchange rates, thus, negatively affect stock markets and I should expect a negative sign. In Malawi, the economy is heavily dependent on imports; in cases of exchange rate depreciation, exports tend to be cheaper than imports. Given that imports are strong in Malawi, I should therefore expect a depreciation of the Malawi Kwacha to reduce overall cash flows, and consequently a reduction in stock prices and negative returns on the stock market. I will use the real effective exchange rate. Measured by quarterly average rate at which Malawi Kwacha exchanges with one US dollar collected from World Development Indicators (WDI).

4.3.3 Government Expenditure

In this study, I use government spending to capture the fiscal policy relationship. The relationship between government spending and stock returns can be either negative or positive. Despite, fiscal policy comprising of government revenue, studies show that government revenue has little effect on asset prices (Chatziantoniou, et al., 2013). Furthermore, Darrat (1988) and Ewing & Payne (1998) advocate using fiscal deficit to represent fiscal policy. However, some government-revenue data points in Malawi are scarce, making it difficult to apply or calculate fiscal deficit. As a result, I use government spending to capture the relationship between fiscal policy and stock returns. Government spending measured quarterly collected from WDI.

4.3.4 Money Supply

The relationship between asset prices and the money supply is not simple. A rise in the money supply results in a surplus of money spent on the stock market (Picha, 2017). According to Fisher (1911), a high demand for stocks causes a rise in stock prices. A rise in the money supply is inflationary, and it causes stock prices to rise (Mishkin, 2004). This is because high inflation has an effect on real outcomes, lowering the marginal propensity to save and invest. On the other hand, an unregulated money circulation causes the inflation rate to rise, causing the discount rate to rise as well, hence lowering stock prices (Naik & Padhi, 2012). Ratanapakorn and Sharma (2007), Naik and Padhi (2012), and Rhaman et al., (2009) all discovered a positive relationship. I will use M2 as a monetary policy variable. Measured by quarterly average of money supply, collected from WDI.

4.3.5 Gross Domestic Product

Stock prices reflect the level of economic activity. When the stock market falls, I expect economic activity to fall as well (Mankiw, 2010). As a result, changes in the GDP cause changes in the stock market. As a result, I anticipate a positive sign for real GDP. Because stock markets reflect the present discounted value of all future dividends and dividend GDP growth, I anticipate that this year's GDP growth rate will have a positive impact on stock prices (Paolo, 2000). In other words, an increase in real activity will result in an increase in stock prices. Similarly, a drop in real output is mirrored in the stock market. Because the Malawi Stock Exchange has both domestic and international firms, I use GDP (constant 2010 US$) data. GDP (constant 2010 US$) measured quarterly and collected from WDI.

4.3.6 Interest Rate

I anticipate a negative correlation between interest rates and stock returns. An increase in interest rates is appealing to investors. As a result, they prefer higher-interest security (investments) over stock purchases. A high demand for higher-yielding securities reduces stock prices and returns. When interest rates fall, investment returns fall, forcing investors to invest their excess funds in the stock market. This, in turn, increases stock prices and returns. On the other hand, when interest rates rise the investors prefer to invest their money in non-fixed income securities such as bonds, this reduces investment on stock market and reduces firms profit, consequently the share price and the returns (Kiriu, et al., 2014). I will use a 91-day Treasury bill rate (as a proxy of domestic interest rate) because it provides us with an updated monthly interest rate. Measured as the quarterly average of the 91-day Treasury Bill Rate collected from RBM.

4.3.7 Inflation

The impact of inflation on stock markets is either negative or positive (Naik & Padhi, 2012). Different studies show a positive or negative impact. Fama (1981), Chen et al., (1986), and Naik and Padhi (2012), for example, discovered a negative relationship between inflation and stock returns. This negative outcome is based on Fama's conclusion, which states that through the money demand theory, real activity (GDP) is positively associated with stock return but negatively associated with inflation; thus, stock return will be negatively influenced by inflation (Naik & Padhi, 2012).

Inflationary pressures reduce real income and the marginal propensity to save. Because the stock market is a saving platform, a high rate of inflation has a negative impact on the market, causing stock prices to rise and the value to fall. Nonetheless, previous empirical studies have discovered a positive relationship between inflation and stock returns (Ratanapakorn and Sharma, 2007). The paper examines the relationship between price level and stock market using the consumer price index (CPI) collected from the WDI. Measured by quarterly percentage in consumer price index

4.4 Data Sources and Generation

I will use data that includes quarterly time measures of six independent macroeconomic variables and one dependent variable predicted to have a short and long run impact on the stock market. Market indices data is available on a monthly basis. However, some of the data I intend to use, such as GDP, CPI, government spending, and broad money, are only available on an annual basis. As a result, I use an interpolation method developed by Lisman and Sandee (1964) (See Appendix C) to convert the annual data into quarterly data and increase the number of observations. The method has the advantage of producing quarterly data that sums to the annual totals. The method will not be able to generate the quarterly series for the first and last years of the sample period due to the nature of the Z matrix generation. A workaround for this problem would be to reverse the sample's starting and ending periods. Another disadvantage of the method is that due to the arbitrary nature of the restrictions imposed in the Lisman and Sandee matrix L, the method does not fully retain the seasonal information in the data. This study is a time series that spans the years 1997 to 2014. The Reserve Bank of Malawi (RBM), the Malawi Stock Exchange (MSE), the International Monetary Fund (IMF), and World Development Indicators provided time series data for the explanatory variables (WDI). Stata software will perform the parameter estimation.

4.5 Estimation Techniques

To assess the long-run relationship between macroeconomic variables and stock returns, I will estimate an Autoregressive Distributed Lags Model (ARDL). Because most time series data sets are non-stationary, our first point of estimation will be to perform unit root tests to avoid spurious regressions. I will use two unit root tests to confirm stationarity: augmented Dickey-Fuller and Phillips-Perron unit root tests. The ARDL model was chosen because the series used are integrated to orders of 1 and 0. The bounds-cointegration technique will then be used to assess the long run

relationship, without knowing whether the variables are integrated of order zero or one, I (0) or I (1), respectively (Kripfganz & Schneider, 2016).

4.6 Unit Root Testing

I ran stationarity tests on the series used to make sense of the available data. The underlying concept of unit-root testing is to ensure that any further analysis of time series takes place after stationarity of the data. To capture the comparison, I used Augmented-Dickey Fuller (ADF) tests and Phillips-Perron (PP)

4.7 ARDL Bounds Cointegration Method

My analysis' goal is to determine the short-run and long-run impact of the variables on the stock market. As a general vector autoregressive (VAR) model of order p and Y_t , we use the Autoregressive distributed lag (ARDL) technique. where Y_t represent a vector of variables such that:

$$Y_t = \text{Stock Index, Money supply, GDP, CPI, Gov Spending, Exchange rate, interest rate} \quad (8)$$

Pesaran and Shin developed this cointegration technique (1999). Cointegration is a technique for examining long-run relationships between non-stationary variables. When performing cointegration, we must use the proper method by performing unit root tests. Cointegration in econometrics means that even if two or more variables are non-stationary individually, their linear combination can be stationary.

Several approaches determines a long-term relationship. The Engle and Granger (1987) test, for example, as well as the maximum likelihood-based Johansen (1991) and Johansen-Juselius (1990) tests are the commonly used methods. However, as an improvement on the previous long-run test, Pesaran, et al., (1996) and Pesaran and Shin (1999) developed the Bounds Cointegration test. Pesaran et al., (2001) modified the test further. The ARDL model, unlike the previous tests, does not require the same order of integration, which is to say I(1).

This test allows the order of integration to be either I(1) or I(0). Second, from the ARDL model will derive the Error Correction Model (ECM) via a linear function transformation that integrates short-run adjustments with long-run equilibrium without losing long-run information (Nkoro & Uko, 2016), Finally, and perhaps most importantly, the ARDL results are more compact than the results of other cointegration methods. In small samples, they produce robust results and extremely consistent estimates of long-run coefficients (Ilyas, et al., 2010).According to Pesaran et (2001) the basic ARDL model is represented below.

$$\Delta Y_t = \beta_o + \underbrace{\sum_{i=1}^{n} \beta_i \Delta y_{t-i} + \sum_{i=0}^{n} \delta_i \Delta x_{t-i}}_{short-run} + \underbrace{\varphi_1 y_{t-1} + \varphi_2 x_{t-1} + u_t}_{long-run} \quad (9)$$

Are β_i , δ_i the coefficients while φ_1 and φ_2 are the ARDL coefficients and u_t This is the term for disturbance. The ARDL model depicts both the short and long run components, with the long-run term also referred to as the Error correction term.

We further specify our model equation 6 into and ARDL with the following variables:

$$\Delta R_t = \beta_0 + \sum_{i=1}^{q} \beta_{1i} \Delta R_{t-i} + \sum_{i=0}^{q} \beta_{2i} \Delta LnGDP_{t-i} + \sum_{i=0}^{q} \beta_{3i} \Delta LnCPI_{t-i} + \sum_{i=0}^{q} \beta_{4i} \Delta LnGEXP_{t-i} +$$

$$\sum_{i=0}^{q} \beta_{5i} \Delta I_{t-i} + \sum_{i=0}^{q} \beta_{6i} \Delta LnMS_{t-i} + \sum_{i=0}^{q} \beta_{7i} \Delta LnRER_{t-i} + \varphi_1 R_{t-1} + \varphi_2 LnGDP_{t-1} + \varphi_3 LnCPI_{t-1}$$

$$+ \varphi_4 LnGEXP_{t-1} + \varphi_5 I_{t-1} + \varphi_6 LnMS_{t-1} + \varphi_7 LnRER_{t-1} + u_t \quad (10)$$

In the equation above the Δ stands for first difference operator, the β_0 is the intercept β_1 to β_5 is are the short run dynamics parameters and $\varphi_1$to φ_5 stand for long-run elasticities, q is the optimal lag length. The F-statistic (Wald Test) detects the long-run relationship.

The paper tests for the joint null hypothesis and compares it to critical values using the approach used in this study. According to Kripfganz and Schneider (2016), the critical values of lower and upper bounds provides for the asymptotic critical values depending on the number of regressors, their order of integration, and the deterministic components such as no intercept and no time trend, restricted intercept, unrestricted intercept, and so on.

Once the long-run relationship is established, the next stage is to estimate the long-run coefficients of the level equation 10 above as well as the short-run-dynamic coefficients using the ARDL error correction model (Davidescu, 2016). The model depicted in equation 11 below.

$$\Delta R_t = \beta_0 \sum_{i=1}^{q_1} \beta_{1i} \Delta R_{t-i} + \sum_{i=0}^{q_2} \beta_{2i} \Delta LnGDP_{t-i} + \sum_{i=0}^{q_3} \beta_{3i} \Delta LnCPI_{t-i} + \sum_{i=0}^{q_4} \beta_{4i} \Delta LnGEXP_{t-i}$$

$$+ \sum_{i=0}^{q_5} \beta_{5i} \Delta I_{t-i} + \sum_{i=0}^{q_6} \beta_{6i} \Delta LnMS_{t-i} + \sum_{i=0}^{q_7} \beta_{7i} \Delta LnRER_{t-i} + \lambda EC_{t-1} + \varepsilon_t \quad (11)$$

Where q_1, q_2, q_3, q_4, q_5 are the optimal lag lengths, λ represent the adjustment speed parameter, and EC is the Error Correction Term derived from the long run model, as shown in equation (11). The ARDL method has several advantages. For starters, it is appropriate for both large and small samples, and used when the independent variables are endogenous (Bosupeng, et al., 2019). Second, because the variables in the ARDL model are all part of a single equation, there are no endogeneity issues. Because all variables considered are endogenous, the model is free of residual correlation (Nkoro & Uko, 2016). Third, from the ARDL model I derive the Error Correction term (ECT) using a simple linear transformation that combines short run adjustments with long run equilibrium without sacrificing long run information. The associated ECM model adds enough lags to capture the data generation process in general to specific modelling frameworks. Finally, and most importantly, the approach to the cointegrating vector identification process when there are multiple cointegrating vectors (Nkoro & Uko, 2016).

4.8 Data Diagnostics

I run some tests before and after the short-run and long run dynamics to make sense of the data set. Pre-estimation will run specification tests, serial correlation tests, and stability tests. In post-estimation, autocorrelation, and CUSUM test for stability are applied.

4.8.1 Ramsey's RESET test

After running the regression model, it is critical to run a misspecification test to validate the function form used. To confirm the specification of our series, Ramsey's The Regression equation specification error test (RESET) is applied. The null hypothesis states that a fitted value in the regression function equals zero, as shown below.

$$HO: \gamma = O$$

If the null hypothesis is reject, it indicates that there are signs of misspecification in the data, particularly non-linearity.

4.8.2 Stability Test

This test determines whether the number of cointegrating equations was correctly specified. If the process is stable, the moduli of the remaining r eigenvalues are strictly less than one for K, endogenous variables, and r cointegrating equations.

4.8.3 Lag Order Selection Criteria.

I first determined the optimal lag length before conducting analysis with the ARDL. The best lag length criteria include the Akaike Information Criteria (AIC), the Schwarz Information Criteria (SIC), and the Hannan-Q Information Criteria. The information criteria is used to obtain the right number of lags in a VAR (p), which minimizes the Information Criteria IC(p). My decision will be based on the AIC.

4.8.4 Serial Correlation LM Test and Whites' Heteroskedasticity

The ARDL model requires that the series be free of autocorrelation because it produces biased results. As a result, before proceeding with the analysis, I will use the Serial Correlation LM test to check for autocorrelation. To resolve the presence of heteroskedasticity, I used Whites' Heteroskedasticity method. If serial correlation is found, I will add a sufficient number of lags to remove the serial correlation and make the errors I (0) before continuing with the analysis (Stock & Watson , 2002).

4.9 Conclusion

The methodology described above explained the time-series model used in this study. To assess the impact of macroeconomic variables on stock market returns, I used the Autoregressive Distributed Lags Model (ARDL). Using the Augmented Dickey-Fuller (ADF) and Phillip-Perron tests, I will perform unit root testing to ensure a stationary series. I will also choose the best lag length for the series and test for signs of serial correlation using the Serial Correlation LM test and White's Heteroskedasticity to rule out autocorrelation and heteroskedasticity. This analysis will

allow us to meet the study's objectives and reach a conclusion about the impact of fiscal and monetary policies on stock market returns.

CHAPTER FIVE

RESULTS AND DISCUSSION

5.1 Introduction

This chapter presents and discusses the estimation of the Autoregressive Distributed Lags Model (ARDL), used to model both fiscal and monetary policy variables on the stock market returns. First, I will go over the diagnostic test results.

5.2 Unit Root Test

Before proceeding to the ARDL model, I performed a unit root test to ensure variable stationarity. Tables 2 show that the comparison between Augmented Dickey-Fuller (ADF) and Phillip-Perron (PP) tests suggested different orders of integration.

In Table 2, except for the 91-day Treasury bill rate (interest rate) and stock market returns, the variables are in logs. Tables 2 show the results of two Unit Root Tests. According to the Augmented Dickey-fuller and Phillips Perron tests results. Levels had a probability value of less than 5% for the log of government expenditure (LGOV), log of real exchange rate (LREER), interest rate (INT), log of money supply (LMS), log of gross domestic product (LGDP), and log of consumer price index (LCPI). As a result, I was unable to reject the null hypothesis of no unit root. However, after including a first difference operator, the t-values of the above variables are greater than 5%, indicating that all variables became stationary after first differencing and thus followed the order of integration I (1). Both tests show that the stock market returns (R) were significant at 5% at levels (0), indicating that the order of integration was I (0).

Table 2:Augmented Dickey-Fuller Results and Philips Perron (PP test) Results

VAR	**ADF(level)**	**Prob**	**1st Diff**	**Prob**	**Order**	PP(level)	**Prob.**	**1st Diff**	**Prob.**	**Order**
LGDP	1.51	0.99	-3.67	0.00**	I(1)	-1.23	0.99	-7.97	0.00**	I(1)
LCPI	-2.33	0.16	-3.53	0.00**	I(1)	-1.543	0.22	-8.14	0.00**	I(1)
LM1	-1.03	0.74	-6.53	0.00**	I(1)	0.08	0.96	-11.65	0.00**	I(1)
LGOV	-1.18	0.68	-5.07	0.00**	I(1)	-1.29	0.63	-5.49	0.00**	I(1)
INT	-1.51	0.50	-5.99	0.00**	I(1)	-2.41	0.14	-12.7	0.00**	I(1)
LREER	-1.29	0.63	-4.47	0.00**	I(1)	-1.32	0.61	-5.43	0.00**	I(1)
R	-3.96	0.00**			I(0)	-7.614	0.00**			I(0)

***Significant at 1%; **Significant at 5%; *Significant at 10%

5.3 ARDL Bounds Cointegration procedure

The F-statistics was found to be 38.37 and was compared to the Pesaran et al (2001) critical values at 1%, 5%, and 10% significance levels, and the results show that the F value is indeed greater than the critical values at all levels of significance, indicating that our series has cointegration (a long run-relationship).

5.4 Estimation of the Long-run and Short-run model

5.4.1 Long run Model

The model for the ARDL long run relationship uses the Akaike information criterion as follows: ARDL (2 2 4 2 3 2 3). The long run results shown in the table 4 below.

Table 3: Estimates of Long-run Model ARDL (2 2 4 2 3 2 3)

Dependent: R (stock return)			
Regressor	**Coefficient**	**Standard Error**	**p-value**
LGDP	0.141	0.083	0.097*
LCPI	0.064	0.025	0.017**
LMS	-0.064	0.026	0.018**
LGOV	0.037	0.016	0.027**
INT	0.0009	0.0003	0.009**
LREER	-0.028	0.013	0.04**

***Significant at 1%; **Significant at 5%; *Significant at 10%

The long run results show that there is significance at 1, 5, and 10%. This means that in the long run, the variables affect stock market performance.

The stock market return coefficient of 0.14 of log GDP (LGDP) shows that a 1% increase in GDP results in 0.14 percent increase in the stock market. The findings of the present study confirm the empirical findings in the existing literature as expected. Stock markets benefit from active and growing domestic economies regardless of their development path (Kiriu, et al., 2014). The positive relationship between economic growth and stock market returns is also found in other studies such as Kiriu et al., (2014), Ho (2017) and Demir (2017).

The log of the Consumer Price Index (LCPI) shows that a 1% increase in the consumer price index results in a 0.064 percent increase in the stock index. The coefficient is positive and significant. As noted from the literature review section, some previous studies found a positive relationship (Ratanapakorn and Sharma, 2007). This is quite contrary to other studies that determined a negative relationship (Naik & Padhi, 2012).

Similarly, a 1% increase in the log of money supply (LMS) causes a 0.064 percent drop in the stock index. This is quite contrary to our empirical expectations of a positive impact of money supply on stock market returns. This is because Malawi is predominantly import-based economy

and any rise in money supply causes a rise in consumption of consumer goods other than investment in stocks. This is similar to Mishkin (2004) observation that money supply drives up the rate of inflation and share prices this is likely to force people to reduce investments on stock markets because high rates of inflation tend to make people spend more on consumer goods rather than financial goods such as stocks and bonds.

According to the log of government expenditure (LGOV), a 1% increase in spending results in a 0.037 % increase in stock market returns. As expected, the government expenditure exerts positive influence on the stock market in Malawi. However, the coefficient is very small this reveals that government consumption expenditure are higher than government investment. According to Ofori-Abrebese et al., (2011) it is government-investment that drives stock market up rather than government consumption expenditure. The coefficient of LGOV is statistically significant but it is not economically significant in Malawi.

While holding all other variables constant, a 1% increase in the interest rate (INT) results in a 0.009% increase in stock market return. This is quite contrary to expected results as an increase in interest rate makes investors to prefer term deposits as opposed to buying stock (Demir, 2019). The small coefficient would mean that interest is not one of the main determinants for investing on the MSE.

The log of real effective exchange rate (LREER), a 1% increase in exchange rate (appreciation) results in a 0.028 percent decline in the stock market. The result show that stock market is affected negatively by an appreciation of the Malawi kwacha. This is because Malawi is predominantly import based economy and when the currency appreciates, most people prefer buying imports as opposed to buying stocks or bonds.

5.4.2 Short run Model

Table 5 shows the results of the ARDL model's error correction representation. In the short run, gross domestic product is most significant with a positive coefficient at the 1% level of significance. This result is similar to the long-run model. The coefficient is 0.43, this means that holding all other variables constant a 1% increase in $\Delta LGDP_t$ reads to a 0.43% increase in the stock

market. The coefficient is small and we can conclude that in Malawi, economic growth contribute little to stock market development.

In the short run, the consumer price index is significant at 1%, but it has a 0.59 percent negative impact on stock market returns. This result is contrary to the long-run model result of a positive influence. It is consistent with expected empirical results of a negative impact. Fama (1981) and Naikh & Padhi (2012) confirm that higher rate of inflation raises the production cost of firms and negatively impacts the profitability level and also the real economic activity; however since economic activity is positively related with stock markets returns, an increase in inflation reduces stock prices and returns.

Money supply is significant in influencing stock market performance in the short run, as shown by a P-value of less than 5% and a negative coefficient of approximately 0.11 percent. This is also similar to the long-run model results. In an ideal situation, money supply positively influences the stock return because higher money supply stimulates economic activity and raise stock price.

Government spending has no effect on the stock market in the short run because the P-value is greater than the 5% significance level. The coefficient is 0.037 and insignificant. As noted from our long-run model government expenditure coefficient is very small and though it is significant, the p-value shows that it shows that government expenditure is not economically significant in influencing the stock market in Malawi.

Interest rates are statistically significant at 5%, and stock market returns have a negative coefficient of about 0.001 percent. The result is different from the long-term impact, which was positive. The result of the short-run is according to expected sign of negative. This means that in the short run interest rate negatively and significantly influence the stock return in Malawi. Since higher interest rate raises the rate of investment, it reduces the number of firms or individuals that release their money to buy shares on the stock market. This reduces demand for shares and forces price of shares and stock returns to go down. In Malawi, both institutions and individual investors prefer investing in treasury bills and term deposits as they get higher returns in comparison to stock market (MSE , 2002).

The real effective exchange rate is also statistically significant at 5%, but with a positive coefficient of approximately 0.04 percent of the stock market return. This means that a 1% increase in the real effective exchange rate will result in a 0.04% increase in stock market returns. This result is different from the negative coefficient of the long-run model. In the short run, the stock market is affected positively by an appreciation of the domestic currency, but the coefficient is too small meaning that only few stock market investors respond to the positive domestic exchange rate. This is also the reason why in the long-run the impact becomes negative as the economy's consumption on goods and services is higher than investment in financial assets such as shares.

Table 4:Error correction Model Representation of ARDL (2 2 4 2 3 2 3) with stock returns as the dependent variable

Regressor	Coefficient	Standard Error	p-value
Constant	-3.967	2.17	0.076*
$\Delta LGDP_t$	0.438	.150	0.006***
$\Delta LCPI_t$	-0.595	.052	0.000**
ΔLMS_t	-0.107	.050	0.040**
$\Delta LGOV_t$	0.018	.030	0.540
ΔI_t	-0.001	.000	0.045**
$\Delta LREER_t$	0.047	.000	0.045**
$ECM_t(-1)$	-1.74	0.110	0.000***

***Significant at 1%; **Significant at 5%; *Significant at 10% $R^2 = 0.97$, $Adj.R^2 = 0.92$

The coefficient of the error correction term is negative and significant, confirming the series' long run relationship (there is long-run convergence). The stock market return coefficient is -1.74 and significant at the 1% level. The coefficient indicates that the series enters the long run equilibrium at a rate of 1.74 percent. The negative value indicates that the divergence is decreasing, and the value equal to -1 indicates that the error correction occurs in one period. When the value is greater than 1 and less than 2 (with a negative sign and significant), it indicates that the equilibrium will be adjusted in a dampening manner, which means that the error correction process will fluctuate around the long run value (Narayan & Smyth, 2006)

5.5 An Interaction between interest rate and government expenditure

The fourth objective was to test the interaction between fiscal policy variable (government expenditure) and the monetary policy variable (interest rate) in influencing the stock market returns in Malawi. The results of the long run model is p-value of 0.129 and a coefficient of less than 0.001% this shows that in long term the interaction does not exist and that the p-value is not significant at 5% level of significance. In addition, in the short-run, the p-value is 0.02 and the coefficient is very small. This shows that in the short-run the interaction exist in influencing the stock market however, the small coefficient shows that it is not an important interaction. According to Mehmetoglu & Jakosen (2017), the interaction term must be significant and the coefficient must be large to conclude that an interaction exists.

5.6 Diagnostic test (post-estimation)

5.6.1 Serial correlation

I ran two serial correlations to see if there was an issue with the model. The probability value for the Breusch-Godfrey LM test for serial correlation is 0.52, which is 52 percent higher than the 5% significance level. As a result, when the P-Value is greater than 5%, I cannot reject the null hypothesis of no serial correlation. The Durbin-Watson test statistic is 1.82, indicating that no serial correlation exists.

5.6.2 Heteroskedasticity

I also used the White's test for heteroskedasticity to perform the test for heteroskedasticity. The test results show that the probability value of the chi-square is 0.44 or 44 percent, which is greater than the 5% significance level, indicating that I cannot reject null hypothesis of homoscedasticity. Therefore, the series does not have any problems.

5.6.3 Normality

I used the Jarque-Bera normality test to perform the normality test. The results show a chi-square of 0.729 or 79%, which is clearly greater than the 5% significance level. This means I cannot rule out the null hypothesis of normality.

5.6.4 Stability test

The study adopts the cumulative sum (CUSUM) and cumulative sum of squares of recursive residuals (CUSUMSQ) stability testing procedures to determine whether the selected ARDL model is stable. The plot deviates outside the boundary and then returns to stability. The two solid lines in the CUSUM graph below are within the 5% significance level over time, as shown in the figures below. The CUSUMSQ graph, on the other hand, shows that the plot deviates from the outside but quickly returns to stability. As a result, the model is stable.

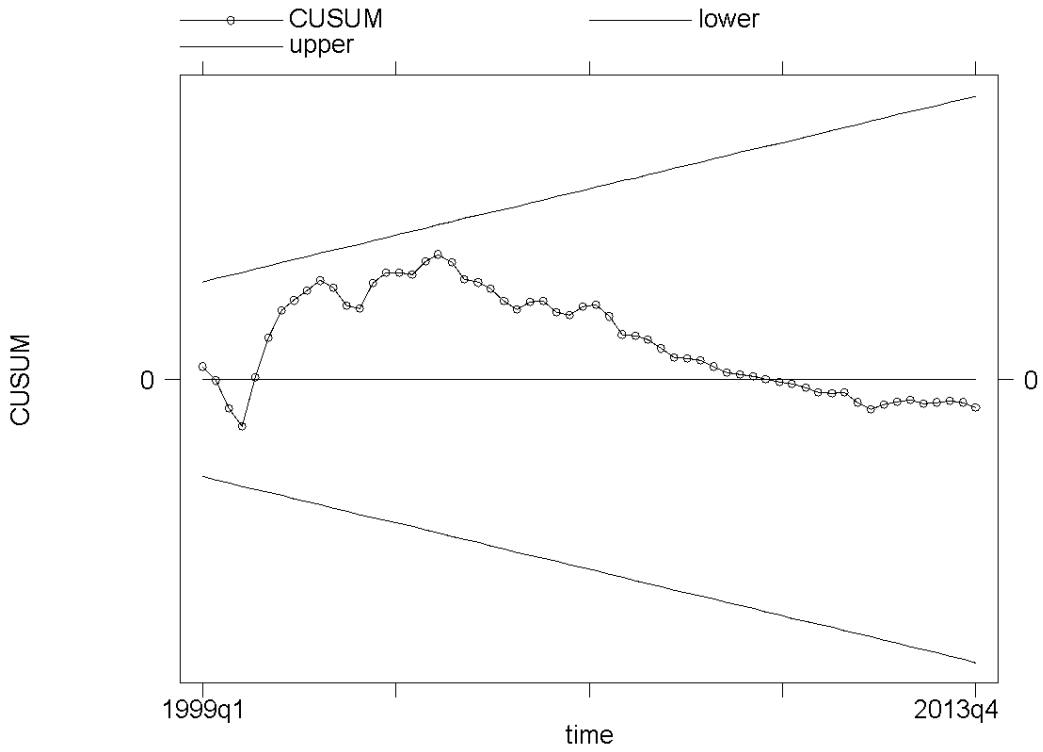

Figure 4: Plot of CUSUM for coefficients' stability of ARDL

Source: Author's estimates from data 1997q1-2013q4

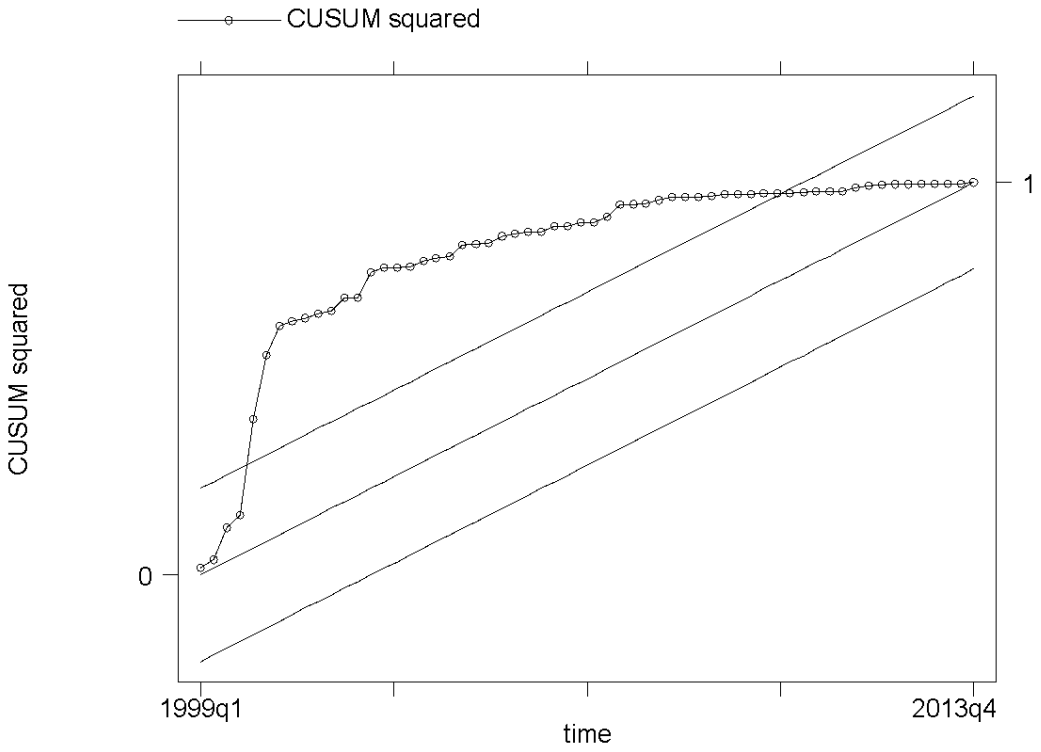

Figure 5: Plot of CUSUMSQ for coefficients' stabiltiy of ARDL model

Source: Author's estimates from data 1997q1-2013q4

5.7 Granger causality

Table 5: Results of Granger causality

Dependent Variable	Ho: Does not Granger Cause	Prob>Chi	Decision
R	D.LGDP	0.374	No causality
R	D.LMS	0.884	No causality
R	D.LCPI	0.154	No causality
R	D.LREER	0.041	Causality
R	D.LGEXP	0.377	No causality
R	D.I	0.486	No causality
R	ALL	0.113	No causality

In contrast to the alternative, the Null hypothesis holds that the lagged value of GDP, money supply, consumer price index, and interest rate do not cause stock market returns. The probability values at the 5% level of significance is greater. I thus cannot reject null hypothesis for all variables, except for the exchange rate. This is similar to the findings of Tsoukalas (2003), who discovered that the exchange rate has a significant impact on stock market prices. In addition, Attari & Safdar (2013) also concluded similar non-causality between GDP and stock market returns; this means the two variable move independent of each other. However, they concluded that inflation and interest rate cause stock market returns.

5.8 Chapter Summary

The preceding chapter used the bounds testing procedure to discover the existence of a long run-relationship in the series. This prompted us to employ an Error Correction Model, which concluded that the variables have both short and long run influence. The study also revealed a long run relationship and a high rate of adjustment in the series. Furthermore, the study performed a diagnostic test to determine the results can be taken seriously; this revealed that the data is free of autocorrelation and heteroskedasticity, and that the model is normal (JB test) and stable (CUSUMSQ test). The study also reveals that, with the exception of exchange rate there is no causality (granger cause).

CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS.

6.1 Conclusion and Policy Implications.

The paper investigated the impact of monetary and fiscal policy variables on Malawian stock market behaviour. I used the Autoregressive Distributed Lags Model (ARDL) to analyse data on the Malawian economy from 1997Q1 to 2013Q4. GDP, exchange rate inflation, government spending, money supply, interest rate, and the variable of interest, stock market returns are the macroeconomic variables investigated in our study. I investigated cointegration (the long run relationship), the short run model, the error correction term, and granger causality. The findings demonstrate the significance and comprehension of Malawi stock market returns. The Granger Causality Test results show that, with the exception of exchange rates, there is no significant relationship between GDP, inflation, government spending, money supply, interest rate, and stock market. The cointegration test determined the long run relationship, and the results clearly show that there is a long-run positive relationship between macroeconomic variables and stock prices.

The study's first objective was to determine the impact of government spending (a proxy for fiscal policy) on stock market returns. The study discovered that government spending had a positive and significant long-run influence on the stock market, but had no influence in the short run. Furthermore, the study discovered no causal relationship between the stock market and the fiscal policy variable. When government spending has a significant positive impact on the stock market, it indicates that the economy consumes more than it invests. Government expenditure frequently exceeds government investment in small open economies like Malawi. Government investment, on the other hand, stimulates economic activities such as stock exchange demand. As a result, the government must encourage local businesses to invest by providing tax breaks and exemptions typically granted to foreign firms. This will increase private-sector employment while also helping to reduce government spending.

The study also looked at the relationship between interest rates, money supply (a proxy for monetary policy), and stock returns. Interest rates and money supply both influenced the stock

market in the short and long run. In the long run, interest rates have a significant but minor positive impact on the stock market. In the short run, interest rates had a significant negative impact on the stock market. Money supply, on the other hand, has a negative and minor impact on the stock market. With these findings, it is critical to emphasize the importance of implementing prudent macroeconomic policies in order for the economy to reap the greatest benefits from the stock market. To begin, given the negative impact that interest rates have on the development of the stock market, the Reserve Bank of Malawi should ensure that any changes in policy rates have an impact on the stock market because such changes affect firms' present value of future net cash flows (Lawal, et al., 2018). Firms are less likely to invest in the domestic economy when the cost of capital is very high. Furthermore, when interest rates are high, individual investors avoid investing on the stock market. As a result, policymakers must closely monitor the impact of interest rate changes on the wealth channel.

Policymakers should be aware that high interest rates slow private investment growth and reduce capital investment. They should therefore aim for lower rates in order to encourage more people to invest in financial avenues such as stock markets, thereby increasing their value. They should also implement tax breaks to encourage more stock market investment. These tax breaks allow investors to increase capital investment.

The findings revealed that GDP (as a proxy for income) had a positive effect on the stock market because it had a significant value in both the short and long run. To get the most out of the stock market, the government and policymakers should keep the economy on track. In the long run, the price level was positive and significant, but in the short run, it was negative and significant. The rate of inflation had a negative impact on the stock market. Inflationary pressures reduce consumer disposable income, used for savings and investment. Maintaining a tight monetary policy and reducing government spending can deal with this decline in savings and investment. Malawi's central bank should focus on maintaining stable price levels and a higher rate of growth. This is because high living costs are harmful to economic growth and may have a negative impact on the stock market (Hunjra et al. 2014).

Furthermore, exchange rates had a short-term negative impact on the stock market but a long-term positive impact. Because of the negative impact that exchange rates have on stock market development, the market may have few foreign investors who can convert dividends into other currencies. It is critical for the economy to attract foreign investment to the stock market by establishing a platform for foreign investors to invest in the exchange. One way to accomplish this is to increase access to foreign capital inflows. According to Ofori-Abebrese et al., (2011), the presence of foreign investors on the capital market encourages capital accumulation and better corporate governance, which reduces the cost of internal and external finance indirectly.

These findings can help investors analyse macroeconomic variables patterns and forecast trends in the short and long run. To attract more investors to the stock market, the policymakers must keep exchange rate stable and predictable, maintain price stability through regulation of money supply and interest rate and aim for high economic growth. Before investing on the stock market, potential investors should use the results to forecast future. When policymakers keep prices stable, the result is a more consistent growth rate and a positive stock market. Maintaining price stability will ultimately be the best policy recommendation for any economy's stable and continued economic growth (Hunjira, et al., 2014).

6.2 Limitations of the Study.

Because the Malawi Stock Exchange has a small number of listed companies, the results may not provide a clear picture of shareholder behaviour on the market. Furthermore, despite the fact that agriculture generates the majority of Malawi's income, there are no agricultural players on the stock market. This means that, despite being critical to the country's economic growth and development, this sector has no bearing on the stock market. The lack of data on tax revenue, which would have allowed us to use the fiscal deficit to explain the impact, has prevented the study from fully explaining the impact of fiscal policy on the stock market. The paper does not dwell on the specifics of fiscal policy measures. The studies look at how discretionary fiscal policy, specifically government spending shocks, affects stock market returns.

Second, the paper focused on GDP, inflation, interest rates, currency exchange rates, money supply, and government spending. However, many other factors, such as market-related factors,

firm-related factors, and other economic factors, have an impact on the stock market. This enables us to broaden our research to include other relevant factors, not just macroeconomic ones, in order to determine whether any other significant factors influence stock market returns.

6.3 Areas of Further Study

Because the Malawi Stock Exchange is still relatively small, more research can consider individual stock exchanges in comparison to other stock market performance variables such as market capitalization, volume traded, and value traded. Although this study used macroeconomic variables, literature shows that several other macroeconomic variables, such as international variables, microeconomic factors, and market-based variables, influence stock market performance. Other studies should examine the effects of rule-based fiscal policy on stock market returns. Other studies may investigate how variables like dividend pay-out and earnings, affect individual stock prices. Other studies may include a global activity index to examine how a financial crisis affects the Malawi stock market. Further research may increase the number of observations up to 2020 to see how the time compares to the time used in this study.

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APPENDIX A: RESULTS

Figure 6: ARDL Model For the selection by lag length

ARDL(2,2,4,2,3,2,3) regression

Sample: 1998q1 - 2013q4 — Number of obs = 64
R-squared = 0.9846
Adj R-squared = 0.9751
Log likelihood = 178.74955 — Root MSE = 0.0190

D.r	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
ADJ						
r						
L1.	-1.743219	.1105754	-15.76	0.000	-1.966878	-1.519559
LR						
logY	.1414085	.0831261	1.70	0.097	-.0267299	.3095469
logi	.064318	.0258096	2.49	0.017	.0121132	.1165229
logG	.0373397	.0162396	2.30	0.027	.0044921	.0701873
logM	-.0645761	.026254	-2.46	0.018	-.1176799	-.0114723
logR	-.0288871	.0138565	-2.08	0.044	-.0569145	-.0008598
i	.0009051	.0003266	2.77	0.009	.0002445	.0015657
SR						
r						
LD.	.8202735	.0745974	11.00	0.000	.6693859	.971161
logY						
D1.	.4381843	.1503483	2.91	0.006	.1340762	.7422924
LD.	-.2487852	.1824912	-1.36	0.181	-.6179085	.1203381
logi						
D1.	-.5959409	.0523171	-11.39	0.000	-.7017623	-.4901195
LD.	-.1103024	.0716774	-1.54	0.132	-.2552836	.0346788
L2D.	-.4913706	.0657857	-7.47	0.000	-.6244347	-.3583064
L3D.	-.0849173	.037562	-2.26	0.029	-.1608935	-.0089411
logG						
D1.	.0187784	.0303904	0.62	0.540	-.0426919	.0802488
LD.	-.0770813	.0347691	-2.22	0.033	-.1474085	-.0067541
logM						
D1.	-.107505	.0506582	-2.12	0.040	-.2099709	-.005039
LD.	.0740484	.0454265	1.63	0.111	-.0178353	.1659322
L2D.	-.0485506	.0399592	-1.22	0.232	-.1293757	.0322745
logR						
D1.	.0472284	.0382491	1.23	0.224	-.0301376	.1245945
LD.	-.0901224	.0424335	-2.12	0.040	-.1759523	-.0042924
i						
D1.	-.0014511	.0007001	-2.07	0.045	-.002867	-.0000351
LD.	.0001955	.0006021	0.32	0.747	-.0010224	.0014134
L2D.	.0007208	.0004297	1.68	0.101	-.0001483	.0015899
_cons	-3.96749	2.173831	-1.83	0.076	-8.364479	.4294992

Pesaran, Shin, and Smith (2001) bounds test

H0: no level relationship F = 38.367
Case 3 t = -15.765

Finite sample (6 variables, 64 observations, 17 short-run coefficients)

Kripfganz and Schneider (2020) critical values and approximate p-values

	10%		5%		1%		p-value	
	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)
F	2.151	3.532	2.552	4.098	3.473	5.387	0.000	0.000
t	-2.422	-3.875	-2.775	-4.297	-3.476	-5.130	0.000	0.000

do not reject H0 if
either F or t are closer to zero than critical values for I(0) variables
(if either p-value > desired level for I(0) variables)
reject H0 if
both F and t are more extreme than critical values for I(1) variables
(if both p-values < desired level for I(1) variables)

decision: no rejection (.a), inconclusive (.), or rejection (.r) at levels:

	10%	5%	1%
decision	.r	.r	.r

Figure 7: ARDL Bounds Test for long run relationship

Selection-order criteria
Sample: 1998q2 - 2013q4 Number of obs = 63

lag	LL	LR	df	p	FPE	AIC	HQIC	SBIC
0	223.633				4.0e-11	-6.90897	-6.82869	-6.70486
1	258.64	70.014	36	0.001	4.2e-11	-6.87745	-6.31551	-5.44869
2	376.177	235.07	36	0.000	3.2e-12	-9.46593	-8.42233*	-6.81252*
3	416.334	80.314	36	0.000	3.1e-12	-9.5979	-8.07264	-5.71985
4	470.426	108.18*	36	0.000	2.0e-12*	-10.1722*	-8.16532	-5.06954

Endogenous: r D.logY D.logM D.logi D.logR D.i
Exogenous: _cons

Figure 8: Lag length criteria

```
White's test for Ho: homoskedasticity
         against Ha: unrestricted heteroskedasticity

         chi2(63)     =     64.00
         Prob > chi2  =    0.4412

Cameron & Trivedi's decomposition of IM-test
```

Source	chi2	df	p
Heteroskedasticity	64.00	63	0.4412
Skewness	24.78	24	0.4180
Kurtosis	0.73	1	0.3938
Total	89.50	88	0.4353

Figure 9: White's Heteroskedasticity test

```
Durbin-Watson d-statistic( 25,    64) =  1.829561

.
. estat bgodfrey, lags (1)

Breusch-Godfrey LM test for autocorrelation
```

lags(*p*)	chi2	df	Prob > chi2
1	0.349	1	0.5547

H0: no serial correlation

```
Jarque-Bera normality test:  .6308 Chi(2)  .7295
Jarque-Bera test for Ho: normality:
```

Figure 10:Durbin-Watson Autocorrelation test and Jarque-Bera Normality Test

APPENDIX B: COMPANIES LISTED ON THE MALAWI STOCK EXCHANGE

Company	Code	Date Listed	Sector
ICON Properties	ICON	December, 2018	Property
Airtel Malawi Plc	AIRTEL	February, 2020	Telecommunications
NICO Holdings Limited	NICO	November, 1996	Insurance & Banking
Blantyre Hotels Limited	BHL	March, 1997	Hospitality
FDH Bank Plc	FDH	August, 2020	Banking
FMB Capital Holdings	FMBCH	September, 2017	Financials
Illovo Sugar Malawi Ltd	ILLOVO	November, 1997	Manufacturing
Standard Bank	STANDARD	June, 1998	Banking
Press Corporation Limite	PCL	September, 1998	Food Manufacturing, Property Trading & Banking
Old Mutual	OML	July, 1999	Insurance
National Bank of Malaw	NBM	21 August, 2000	Banking
Sunbird Tourism	SUNBIRD	8 December, 2002	Hospitality
National Investment Trust Limited	NITL	21 March, 2005	Financials
NBS Bank	NBS	25 June, 2007	Banking
Malawi Proper Investment Compa Limited	MPICO	2007	Property
Telekom Networks Mala	TNM	3rd November, 2008	Telecommunication

APPENDIX C: LISMAN AND SANDEE INTERPOLATION METHOD

The data set for 1997-2013 was transformed using a Lisman and Sandee method of interpolation to obtain quarterly values from annual totals. According to the method, assuming I have the following annual totals $X_{1,}X_{2,}X_{3,}$ and 1, 2, 3 are successive years, I can, thus, create the following vector matrix.

$$Z=\begin{bmatrix} X_1 \\ X_2 \\ X_3 \end{bmatrix} \qquad \text{eq.1}$$

According to the method, Lisman and Sandee formulated restrictions and derived the following matrix which is used to generate quarterly estimates consistent with annual targets. This 4 x 3 matrix and the 3 x 1 matrix above is used to generate the quarterly estimates

$$L=\begin{bmatrix} 0.073 & 0.198 & -0.021 \\ -0.010 & 0.302 & -0.042 \\ -0.042 & 0.302 & -0.010 \\ -0.021 & 0.198 & 0.073 \end{bmatrix} \qquad \text{eq.2}$$

Therefore, in order to find the quarterly estimates, I calculate that if this were Q=L x Z, the resulting answer would be a 4 x 1 matrix which are quarterly estimates. Below is Q_{ij} matrix in mathematical form.

$$\begin{matrix} Q_{12} \\ Q_{22} \\ Q_{32} \\ Q_{42} \end{matrix} = L \times \begin{bmatrix} X_1 \\ X_2 \\ X_3 \end{bmatrix} \qquad \text{eq.3}$$

Where Q_{ij} **i** represents the quarter and **j** represents the year.

The methods represent the true figures in the absence of quarterly data. For our data, the series had 15 observations; the method enabled it to increase to 68 observations. Thus, the method is very good in terms of increasing the number of observations

APPENDIX D: DATASET

Date	MASI	GDP	CPI	GOVT EXPEN	91-DAY TB RATE	M1	STOCK RETURNS	REER
1997Q1	100.00	1.0083	3.365994	0.107	7.21823	1.63E+09	0	**172.219**
1997Q2	100.35	0.9854	2.792552	0.12926	5.90444	1.16E+09	0.244569	**182.084**
1997Q3	98.60	0.9886	3.03979	0.12862	6.41356	1.24E+09	-0.11906	**175.589**
1997Q4	137.57	1.0177	4.092257	0.10512	8.71377	1.89E+09	-0.30256	**162.841**
1998Q1	154.39	1.0531	4.557734	0.06375	10.25427	2.51E+09	-0.09229	**142.878**
1998Q2	176.48	1.0406	3.59909	0.06562	8.60908	2.10E+09	0.260922	**138.343**
1998Q3	210.95	1.0438	3.835463	0.06594	8.59468	2.28E+09	-0.05252	**130.390**
1998Q4	220.68	1.0625	5.25208	0.06469	10.21197	3.05E+09	-0.30036	**104.771**
1999Q1	246.49	1.0844	4.557734	0.0601	13.30776	3.39E+09	0.136537	**119.289**
1999Q2	246.08	1.0782	3.59909	0.05864	13.29072	2.69E+09	0.256459	**130.304**
1999Q3	283.31	1.0718	3.835463	0.05928	13.388	2.84E+09	-0.05924	**133.903**
1999Q4	337.58	1.0656	5.25208	0.06198	13.59352	3.80E+09	-0.29861	**135.495**
2000Q1	337.82	1.0896	8.348317	0.06144	13.55881	4.75E+09	-0.31974	**147.131**

2000Q2	364.93	1.1104	7.461495	0.05726	13.36088	4.18E+09	0.068967	**146.193**
2000Q3	488.54	1.1104	7.648822	0.06046	13.18072	4.35E+09	0.001589	**128.508**
2000Q4	518.40	1.0896	8.89859	0.07084	13.02959	5.24E+09	-0.0832	**115.312**
2001Q1	578.38	1.0437	10.13836	0.07417	13.78376	5.83E+09	-0.0601	**115.853**
2001Q2	578.38	1.0374	9.437934	0.06524	14.4033	5.13E+09	0.03486	**128.439**
2001Q3	488.77	1.047	9.577544	0.063	14.35146	5.38E+09	-0.01499	**156.729**
2001Q4	458.74	1.0719	10.54847	0.06759	13.63148	6.56E+09	-0.04767	**179.586**
2002Q1	315.87	1.0614	11.49612	0.08823	12.80465	7.20E+09	-0.05053	**174.585**
2002Q2	360.04	1.026	10.92256	0.09488	13.22702	6.18E+09	0.025757	**158.595**
2002Q3	307.98	1.0324	11.10514	0.09584	12.84014	6.52E+09	-0.01297	**157.928**
2002Q4	313.40	1.0802	12.03245	0.09105	11.66819	8.20E+09	-0.03052	**142.327**
2003Q1	292.08	1.1312	12.59646	0.0753	11.68007	9.35E+09	-0.01916	**121.653**
2003Q2	327.58	1.1062	11.82306	0.07092	13.01618	8.08E+09	0.027403	**116.227**
2003Q3	472.47	1.1126	12.09736	0.07284	12.89618	8.32E+09	0.004489	**108.159**
2003Q4	457.27	1.15	13.40222	0.08094	11.32757	1.01E+10	-0.03868	**96.657**

2004Q1	478.64	1.1812	14.16354	0.08415	9.02993	1.18E+10	-0.01729	**96.099**
2004Q2	489.47	1.1562	13.08366	0.07644	9.43736	1.08E+10	0.028015	**98.845**
2004Q3	552.57	1.1626	13.37074	0.07868	9.4108	1.11E+10	-0.00376	**100.611**
2004Q4	583.48	1.2	15.00682	0.09073	8.95191	1.27E+10	-0.03709	**99.433**
2005Q1	667.86	1.2249	16.39349	0.10051	8.32197	1.35E+10	-0.02329	**100.173**
2005Q2	788.65	1.1936	15.33831	0.0926	8.50342	1.21E+10	0.024953	**99.659**
2005Q3	872.49	1.2096	15.5245	0.09356	8.35846	1.28E+10	-0.001	**99.017**
2005Q4	906.85	1.2719	16.94042	0.10333	7.89615	1.56E+10	-0.02561	**103.312**
2006Q1	1127.23	1.2926	16.39349	0.11215	7.87818	1.58E+10	0.015527	**98.524**
2006Q2	1865.04	1.2322	15.33831	0.10462	8.40054	1.23E+10	0.035457	**93.989**
2006Q3	2123.90	1.245	15.5245	0.11134	8.32246	1.40E+10	-0.00049	**97.337**
2006Q4	2310.67	1.3302	16.94042	0.13189	7.64882	2.08E+10	-0.02652	**98.797**
2007Q1	2722.41	1.4103	19.95254	0.12733	6.80375	2.35E+10	-0.04423	**97.715**
2007Q2	3908.86	1.3582	19.08497	0.0994	7.05814	1.72E+10	0.020614	**95.700**
2007Q3	4332.68	1.3742	19.31639	0.10868	7.05718	1.83E+10	-0.0012	**95.080**

2007Q4	4849.79	1.4573	20.63233	0.15459	6.80093	2.68E+10	-0.01624	**92.104**
2008Q1	5548.10	1.5155	21.69815	0.19029	6.33146	3.55E+10	-0.01084	**93.028**
2008Q2	6013.18	1.453	20.80113	0.16034	6.3476	3.07E+10	0.013097	**92.597**
2008Q3	6321.26	1.469	21.02194	0.16002	6.32776	3.25E+10	-0.00189	**94.996**
2008Q4	5989.73	1.5625	22.34676	0.18935	6.27318	4.09E+10	-0.01741	**111.165**
2009Q1	4721.56	1.6447	23.47369	0.24509	6.29874	4.48E+10	-0.01681	**115.210**
2009Q2	4672.70	1.5864	22.59599	0.24424	6.3817	3.70E+10	0.009189	**108.319**
2009Q3	4962.21	1.596	22.83992	0.24712	6.35354	3.97E+10	-0.00154	**104.361**
2009Q4	5042.97	1.6729	24.19023	0.25355	6.21602	5.25E+10	-0.01363	**101.122**
2010Q1	4672.04	1.7635	24.91564	0.25388	5.93156	6.07E+10	-0.0082	**99.276**
2010Q2	4814.71	1.7302	23.64212	0.24872	5.8429	5.06E+10	0.01281	**101.586**
2010Q3	4780.84	1.7334	24.37469	0.24232	6.11746	5.29E+10	-0.00735	**101.193**
2010Q4	4750.97	1.7729	27.06756	0.23508	6.73808	6.75E+10	-0.02328	**97.945**
2011Q1	4863.41	1.8218	27.34834	0.25647	6.09638	7.95E+10	-0.00178	**98.488**
2011Q2	4912.30	1.803	24.21971	0.27664	4.91678	6.91E+10	0.027041	**97.005**

2011Q3	5027.27	1.8158	25.35919	0.2776	5.35454	7.35E+10	-0.01016	**94.724**
2011Q4	5378.87	1.8594	30.69559	0.25929	7.3823	9.22E+10	-0.03813	**96.811**
2012Q1	5667.12	1.8603	33.65054	0.222	8.82998	1.02E+11	-0.01572	**98.075**
2012Q2	5983.34	1.8082	29.1172	0.22182	7.44338	8.56E+10	0.027429	**80.894**
2012Q3	5926.44	1.8242	30.38198	0.21734	7.38834	8.86E+10	-0.0084	**69.901**
2012Q4	6015.51	1.9073	37.36584	0.20884	8.6683	1.11E+11	-0.03534	**65.247**
2013Q1	6344.58	1.9718	33.65054	0.21499	11.41096	1.32E+11	0.017764	**60.624**
2013Q2	6914.45	1.9156	29.1172	0.22682	11.58774	1.19E+11	0.028129	**64.721**
2013Q3	10604.97	1.922	30.38198	0.23098	11.59094	1.24E+11	-0.00224	**72.323**
2013Q4	12531.04	1.9906	37.36584	0.22721	11.42036	1.47E+11	-0.03513	**63.621**