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**Fiscal Policy and Economic Growth Nexus: Evidence
from Zambia**

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Abstract

Purpose: This study examines the short-run and long-run impact of the expansionary fiscal policy on economic growth in Zambia from 1991 to 2021.

Materials and Methods: The study employs the Vector Error Correction Model (VECM) and Auto Regressive Distributed Lag (ARDL) Models to examine the short-run and long-run impact of total public expenditure, total tax revenue and total public debt time series data on the gross domestic product (GDP) of Zambia from 1991 to 2021. The Keynesian theory informed our study, which presupposes that the unemployment problem might be solved by boosting government spending on consumption and that government spending was an exogenous factor that contributed to economic growth (Keynes, 1936; Singh & Sahni, 1984).

Findings: Both the VECM and ARDL Models show the existence of statistically significant long-run cointegration among public expenditure, external debt, tax revenue and GDP. Specifically, VECM estimates show that for a 1% increase, Tax revenues

have a positive long-run significant effect on Zambia's economic growth of 3.36%, while external debt and public expenditure have significant negative effects on the economic growth of 1.17% and 0.003% in Zambia respectively. The ARDL model estimates indicate that, in the short run, an increase in tax revenue of 1% increases GDP growth by 1.92%, while a rise in government expenditure and external debt by 1% results in a decline in Zambia's economic growth by 0.003% and 6.14% respectively.

Implications to Theory, Practice and Policy: Given the foregoing findings, the therefore study recommends that the Government of Zambia should widen the tax base to mobilize more tax revenues and reduce the budget deficits emanating from high government expenditures. External public debt should also be reduced.

Keywords: *Expansionary Fiscal Policy, Economic Growth, Public Debt, Zambia, Keynesian, Classical Theories*

JEL Classification: C1, H20, H21

1.0 INTRODUCTION

This study investigates the fiscal policy-economic growth nexus from the Zambian perspective. Specifically, this study examines the short-run and long-run impact of the expansionary fiscal policy on economic growth in Zambia using the vector error correction (VEC) and autoregressive distributed lag (ARDL) models. All governments globally have an obligation to ensure the economic well-being of their citizens, and in order to meet that obligation, governments pursue two macroeconomic objectives, namely sustainable economic growth and development (Garba & Abdullahi, 2013). This is done through the fiscal policy instrument where they mobilize resources through taxes, fees, commissions and debt, and these resources are then utilised to bring about economic growth. The paths of economic growth are significantly influenced by fiscal policies, which include taxing and spending by the government. One of the channels used to promote economic growth is government spending. Furthermore, most developing countries use public expenditure as the main instrument in the promotion of economic growth (Acemoglu & Robinson, 2012; Musaba et al., 2013).

Government expenditure can potentially augment economic growth in a number of ways. Government spending promotes long-run economic growth from investments in healthcare, education, and infrastructure projects, which can increase productivity and human capital (Acemoglu & Robinson, 2012). Prohibitive taxation policies can affect the motivation to work, save, and make investments. Tax cuts, particularly on income and corporate profits, may encourage investment and entrepreneurship, which would promote economic expansion (Congressional Budget Office, CBO, 2020). Fiscal stimulus programmes, including tax breaks or more government spending, can boost aggregate demand during economic downturns or recessions (Blanchard, 2019; CBO, 2020). This position is supported by Keynesian economists, who believe that an economy on a downward spiral would continue on that path unless there is an intervention by the government in an economy to fuel economic growth (Blanchard, 2019). The Keynesians thus postulate that an expansionary fiscal policy by either stimulation of consumption and investment through tax cuts or an increase in government expenditure leads to economic growth. On the contrary, classical economists hold the view that expansionary or contractionary fiscal policies are not necessary because the market is self-regulatory with flexible adjustments of prices and wages, which keeps the economy near the natural level of real GDP. Therefore, the overarching goal of this study is to examine the impact of the expansionary fiscal policy on economic growth in Zambia.

Research Background

According to Blanchard (2009), Fiscal policy is the “adjustment of government spending and taxes in order to achieve certain macroeconomic objectives such as economic growth, price stability, balance of payments equilibrium and exchange rate stability.” The ability of the government to tax and spend has an impact on citizens’ disposable income, corporations’ profits and the global business environment (Abata et al., 2009). By addressing market failure and promoting equity in income redistribution, government intervention through spending, regulation and initiatives improves allocative efficiency (Ross et al., 2009). This study aims to investigate how Zambia's expansionary fiscal policy affects economic growth. From the literature review, it is evident that several similar studies have been conducted ranging from studies focusing on the African continent (See for example; Oguanai & Ogunta, 2017; Ngakosso, 2018; Audu, 2012; Boballola & Amino, 2011; Ndubuisi, 2017) to the European and Asian continents (See for example; Al-shatti, 2014;

Macek & Junku, 2015; Shihab, 2014; Nawaz & Khawaya, 2016; Karagoz & Keskin, 2016; Najaf, 2016; Richter & Paparas, 2015). It is clear from the literature review that there is disagreement regarding how fiscal policy affects economic growth. Additionally, the literature review seems to suggest that so far, no study has been done on fiscal policy and economic growth nexus from the perspective of Zambia employing the Vector Error Correction Model (VECM) and Auto Regressive Distributed Lag (ARDL) Models. Therefore, this study fills this gap by exploring the impact of expansionary fiscal policy on economic growth in Zambia.

The Keynesian and classical economists¹ frequently disagree over whether or not an expansionary fiscal policy by the government fuels economic growth (Folster & Henrekson, 2001). Critics of expansionary fiscal policies contend that higher borrowing-financed government spending would crowd out private investment. The out effect happens when borrowing by the government drives up interest rates, which in turn discourages investment and borrowing by the private sector and counteracts the fiscal policy's stimulative effects (Blanchard, 2019). Therefore, to achieve sustainable economic growth, governments, especially those in developing nations, have turned to the use of expansionary fiscal policy, in which they increase public spending or reduce taxes as the means of achieving growth (Musaba et al., 2013; Munsaka, 2017). This is particularly clear in the case of Zambia where between 1991 and 2021, public spending increased along with domestic debt growth and its use to finance budget deficits.

According to Musaka (2017) and the Government of Zambia, GRZ (2021), Zambia's public debt increased by US\$ 26.36 billion or 98 per cent from approximately US\$600 million in external debt in 2006 to US\$26.36 billion by the end of June 2021. As of the completion of the Heavily Indebted Poor Countries (HIPC) initiative, which Zambia decided to implement in 2000 with the debt stock of US\$ 6.3 billion at a time which was later reduced to US\$ 600 million in 2006. Shortly after the HIPC initiative in 2005, Zambia's debt started growing and reached US\$6.3 billion by August 2016. The debt stock continued to increase reaching US\$ 26.44 Billion exclusive of interest arrears and US\$26.96 billion when interest arrears are taken into account (GRZ, 2016; GRZ, 2021). Additionally, there has been an increase in government spending. In 2021 total government expenditure was K111.9 million from K40, 640 million at year end in 2014. The fiscal deficit was financed by debt in addition to the K83,915.2 million collected in taxes. It should be noted that the government of Zambia has been pursuing an expansionary fiscal policy, as evidenced by the country's increasing debt stock on an annual basis (IMF, 2015; GRZ, 2021). With regard to tax, there are differing theories and empirical findings regarding how taxes affect economic growth. Proponents of tax cuts assert that a high tax rate is harmful to investment and, consequently, to economic growth. They also claim that high taxes prevent people from reaping the benefits of their own creativity (Charmley, 1986; Judd, 1989; Barro, 1999; King, 1990). Furthermore, Engen and Skinner (1996) contend that taxes stunt economic expansion by "detering investments, affecting labour supply, lowering growth productivity, lowering capital's marginal productivity, and lowering the effective utilisation of human capital."

¹ It is worth noting that although there is an ongoing debate between Keynesians (Proponents of John Maynard Keynes) and Classical economists (Proponents of Adam Smith) regarding the effect of fiscal policies on growth, Keynesian models assume a short-run time horizon, whereas the Classical models assume a long-run time frame. Furthermore, whereas Keynesian models are more concerned with unemployment, the Classical models are more concerned with inflation (Mitchell, 2005; Blanchard, 2019).

On the other hand, those who favour a higher tax rate contend that tax revenue pays for public services and goods like infrastructure, education, and healthcare. They argue that higher taxes are desirable because they help to fund public goods, which in turn generate income for business owners (Banerjee & Newman, 1993; Galor & Zeira, 1993; Benabou, 1996; Aghion & Bolton, 1997). Additionally, Romer and Romer (2010: 56) explain that "taxation sustains economic growth and strengthens global competitiveness, provides stable and predictable fiscal circumstances that help accumulate funds for social and physical infrastructure finance needs, reduces long-term dependence on foreign aid, and supports good governance by strengthening the accountability of government." Due to the theoretical and empirical debate surrounding this topic, Ogbuagu (2015) advises that country specific studies should be done on the significance of understanding the connection between fiscal policies and economic growth.

This study is necessary given that Zambia's public expenditures have increased significantly from K40,640 million in 2014 to K111.9 million as of December 2021. The growing public spending has been primarily funded by tax revenue and partially through debt. In 2021, Government revenue was K83.9 million compared to government spending of K111.9 million. This deficit was partially funded by debt, suggesting that an expansionary fiscal policy could have a significant impact on the macroeconomic goals (GRZ, 2021). The Zambian government has justified the need for additional debt as necessary to fund the development of the road energy, health and water infrastructure along with the provision of other basic social services. Muyaba (2017) explains that the foregoing reasons made the government of Zambia to borrow three Eurobonds totalling US\$3 billion, issued between 2012 and 2015, necessary and justifiable (GRZ, 2014). This government position is supported by the Keynesian theory, which holds that raising government spending through an expansionary fiscal policy will result in higher economic growth (Keynes, 1936; Nworji et al., 2012). The theory also holds that increasing government spending will help to stimulate demand, which in turn will increase economic growth. Therefore, in this sense, government spending is seen as a tool for fostering economic development and growth (Romer & Romer, 2010; Uchenna & Evans, 2012).

In light of the foregoing, the general objective of this study is to analyse the effects of an expansionary fiscal policy on Zambia's economic growth using time series annual data from 1991 to 2021. The three (3) specific objectives of this study are (i) to determine how government spending affects economic growth, (ii) to determine how government taxes impact economic growth, and (iii) to investigate how government debt affects economic growth in Zambia. The three (3) specific objectives are anchored on three (3) corresponding hypotheses:

Hypothesis 1

H_0 : Government expenditure has a negative effect on economic growth.

H_1 : Government expenditure has a positive effect on economic growth.

Hypothesis 2

H_0 : Government tax revenue have a negative effect on economic growth.

H_1 : Government tax revenue have a positive effect on economic growth.

Hypothesis 3

H_0 : Total Government debt has a negative effect on economic growth.

H₁: Total Government debt has a positive effect on economic growth.

Undertaking this study on Fiscal Policy and Economic Growth Nexus- Evidence from Zambia is justified on several fronts, which include filling knowledge gaps, aiding in achieving development goals, structural transformation and debt sustainability, among others. From the literature review, it seems that there are no studies that have been conducted so far on fiscal policy and economic growth nexus from the perspective of Zambia employing both the Vector Error Correction Model (VECM) and Auto Regressive Distributed Lag (ARDL) Models. Therefore, this study fills this gap. Reducing poverty, raising living standards, and attaining sustainable economic growth are frequently difficult tasks for developing economies like Zambia. By encouraging equitable growth and development, sound fiscal policy can be helpful in tackling these issues. To diversify their economies away from traditional industries like mining and agriculture and towards more dynamic and sustainable sectors, many developing economies, including Zambia, are going through structural change. By offering incentives for investment in new infrastructure and industries, fiscal policy can help facilitate this transition. The limited fiscal capacity and susceptibility to external shocks of developing economies typically pose issues to the sustainability of debt. Preventing debt crises and maintaining macroeconomic stability need a thorough analysis of how fiscal policy affects debt dynamics, sustainability and economic growth.

It is envisaged that the results of this study will help policymakers make informed decisions about which of the three fiscal policy pillars; government spending, tax revenue, and debt delivers economic growth most effectively in developing countries in general and Zambia in particular. The next section focuses on the literature review. Section three delves into the methodological approaches adopted in this study while section four focuses on the results and discussion of the findings. Section five concludes the study and makes recommendations.

2.0 LITERATURE REVIEW

Theoretical Review

There are several theories that explain how fiscal policy and economic growth are interrelated. We briefly discuss four theories in this study.

Keynesian Theory

John Maynard Keynes (1883 to 1946), a British political economist, put forth the Keynesian Theory in 1935, arguing that "increased government spending boosts economic growth by injecting purchasing power into the economy" (Keynes, 1936; Mitchell, 2005). Keynes' unemployment problem might be solved by boosting government spending on consumption. He also believed that government borrowing from the private sector could help to alleviate economic downturns because it would allow the government to spend the borrowed money back into the private sector. As a result, he believed that government spending was an exogenous factor that contributed to economic growth and could be used to accelerate it (Singh & Sahni, 1984).

Wagner's Law

Adolph Wagner (1835–1917), a German political economist, put forth Wagner's Law, also known as the "law of increasing expansion of public and state activities" (Shonchoy, 2010). According to Wagner's law, "there is a long-run tendency for the share of public expenditure to increase relative to national income as real income increases" (Wagner, 1883). Unlike Keynes, Wagner contends

that economic expansion and a corresponding rise in government spending go hand in hand (Garba & Abdullahi, 2013). Wagner, therefore, views public spending as an endogenous factor brought on by economic expansion. Therefore, public spending is viewed as an ineffective fiscal policy tool for boosting growth.

Harrod Growth Theory

English economist Harrod Roy Forbes (1900 to 1978) is credited with the Harrod Growth theory. Harrod concentrated examined how fiscal policy could be used to achieve economic growth and employment while stabilising the economy (Blume & Sargent, 2015). Harrod (1964,1973) argued that fiscal policy can be used to achieve long-term economic growth goals by changing taxes while leaving spending unchanged. He also argued that government policies can be used to stabilise and grow the economy. According to Harrod (1964), changes in tax rates have an impact on elements of aggregate demand, which affects economic growth without affecting spending.

Solow – Swan (Endogenous) Growth Theory

The Solow-Swan (1956) theory helps to analyse how a tax policy affects an economy in steady-state equilibrium in the long term. It was created by Solow and Swan in 1956 and is regarded as a significant contribution to the theory of economic growth (Koutun & Karabona, 2013). The theory provided the initial theoretical link between economic growth and tax revenue. According to the theory, "total economic output is a product of labour and capital... the main drivers of economic growth are the rate of saving, the rate of population growth, and the rate of technological advancement" (Solow-Swan, 1956, p. 17; Jones, 2002). Therefore, tax policy has no impact on long-term economic growth in a steady-state growth economy.

The thrust of each of the foregoing theories can be summed up as follows: Wagner's (1883) law views the rise in government expenditure as a result of economic growth. Harrod's (1964) growth model focuses on the reduction of government taxes as the tool to achieve growth, whereas the Solow-Swan (1956) growth theory views economic growth to be the result of saving rates, population growth rate and the rate of technological advancement and as a result they do not resonate with this research. However, the Keynesian theory resonates well with this study as it better explains the methodological approach to this study, and it is for this reason that this study shall adopt the Keynesian theory to explain the connection between expansionary fiscal policy and economic growth in Zambia.

Empirical Review of Related Literature

Osamor et al. (2023) conducted a study on tax revenue and economic growth nexus in the Nigerian economy for the period 1981 to 2019. Employing the Vector Error Correction Model (VECM), the study found a causal relationship between real GDP and various tax components. The study recommends that the tax base should be widened and that regulatory authorities mandated to collect tax revenue should be strengthened to enforce tax compliance.

Tahin (2022) did a study on the impact of Kosovo's fiscal policy on economic expansion. According to this study's empirical findings, fiscal policy impacts growth positively. Symoom (2018) examined the impact of fiscal policy on economic growth using empirical data from the four South Asian nations of Bangladesh, India, Pakistan, and Sri Lanka. He used panel data from 1980 to 2016 and used the Error Correction Model (ECM) and Autoregressive distributed lags

(ARDL) models. The results showed that real GDP growth in these countries is not significantly impacted by either government spending or tax revenue.

Ngakosso (2018) conducted a study on quarterly data from 1989 to 2015 to analyze fiscal policy and economic cycles using a Huart-developed mathematical model. According to the study, counter-cyclical restraint fiscal policy was preferred over restrictive fiscal policy. Furthermore, neither debt repayments nor accumulated arrears were brought on by pro-cyclical expansionary fiscal policy.

Ndubuisi (2017) examined the dynamic link between Nigeria's fiscal policy and economic expansion. Time series data from 1985 to 2015 were used in the study. The study employed the Ordinary Least Squares (OLS), Vector Error Correction (VEC) and Johansen co-integration models. The outcome demonstrated that Nigeria's fiscal policy had a significant long-run impact on economic growth. Oguanai and Ogunta (2017) studied the effects of fiscal policy variables on economic growth in Sub-Saharan African (SSA) countries. The findings showed that while production costs hampered economic growth, distortionary taxes increased the rate of growth. The study also revealed that although taxes had a positive effect on growth, taxes had a negligible overall effect on Africa's economic expansion.

Najaf (2016) investigated how shocks to fiscal policy affected the Indian economy. Secondary data from 1981 to 2010 were used in the study. The Johansen co-integration test model, variance decomposition, and vector error correlation (VEC) models were used. The study found that there were significant long-term relationship between GDP and fiscal policy variables. Nawaz and Khawaja (2016) used the Solow growth model to examine how fiscal policy affects economic growth. Employing panel data from 56 nations, the findings indicated that fiscal policy in developed nations had a positive effect on economic growth and had a negative impact on economic growth in developing nations.

Karagoz and Keskin (2016) employed the Bayesian Vector Auto Regression (BVAR) method to examine the impact of fiscal policy on Turkey's macroeconomic aggregates from 2003 to 2015. The study found that the macroeconomic variables GDP, external debt, stock market index, inflation, and interest rates were all relatively unaffected by government revenues and spending. Richter & Paparas (2015) conducted an empirical analysis on the influence of fiscal policy on economic growth in the European Union (EU). Their research used the Ordinary Least Squares method and data for the years 1995 to 2008. The empirical data demonstrated that taxation and spending, the two components of fiscal policy, have an impact on economic growth.

Macek and Junku (2015) investigated the effects of fiscal policy on economic growth based on institutional circumstances in the Organization for Economic Cooperation and Development (OECD) countries from 2000 to 2012. The Least Square (LS) method was employed in the study. The findings revealed that government spending had a positive impact on economic growth in nations with lower financial transparency while having a negative impact in nations with higher financial transparency. The study also found that taxation was detrimental in nations with strong institutional frameworks. Thus, this study demonstrated that institutional factors affect how fiscal policy affects economic growth.

Al-shatti (2014) conducted research in Jordan to examine how fiscal policy affects economic growth. The study created a mathematical model to analyze the data spanning the years 1989 to 2013 in an effort to meet its goal. The results demonstrated that Jordan's economic development

was positively impacted by fiscal policy, costs, and tax revenues. However, the study found that there was a negative correlation between government capital spending and economic development. Shihab (2014) carried out a further investigation in Jordan, looking at the causal connection between economic growth and policy. Using Granger Methodology, and using data from 2000 to 2012, the findings indicated that changes in the budget deficit could be explained by changes in economic growth. The study further established unidirectional granger causality from the fiscal policy to Jordan's economic growth.

Khan and Zaman (2012) conducted a study on the relationship between fiscal variables and economic growth in Pakistan between 1980 to 2010. The findings of this study demonstrated that while tax revenues had a positive impact on real economic growth, government spending had a significant negative impact. The study also found that real economic growth is significantly negatively impacted by the size of the budget deficit.

Audu (2012) examined the impact of fiscal policy on the Nigerian economy by Utilizing data from 1970 to 2010. The study employed the co-integration vector error correction model. The study found that there was a bidirectional causality between fiscal policy and GDP in Nigeria. Using data from 1977 to 2009, Boballola and Amino (2011) investigated the effect of fiscal policy on economic growth in Nigeria. An improved Dickey-Fuller model was used in the study, and then an Engle-Granger joint integration test was conducted. This study found that production expenditures had a positive impact on economic growth, and the joint-integration test supported the existence of a long-term relationship between fiscal policy and economic growth.

Alesina and Ardagna (2009) examined large shifts in fiscal policy focusing on taxes and government expenditure in OECD countries. Using data from 1970 to 2007 to examine fiscal stimuli and fiscal adjustment, the study found that, tax cut-based fiscal stimuli were more likely to boost growth than spending increase-based stimuli.

Table 1: Summary of some Related Studies Reviewed

Authors	Types of Study (Period)	Sample Countries	Finding	Gap in Literature
Karagoz & Keskin (2016)	Examined impact of fiscal policy on macroeconomic aggregates using Bayesian Vector Auto Regression (BVAR) method using data from 2003 to 2015	Turkey	Found that macroeconomic variables – GDP, External debt, Stock Market Index, Inflation and Interest rates were all relatively unaffected by government revenues and Spending	By using the BVAR method the researcher acknowledged the likelihood of interdependence on the variables which likely affected the findings of the study.
Macek & Junku (2015)	Discussed the effect of fiscal policy on economic growth using Least Squares Methods using data between 2000 – 2012 based on institutional factors	OECD Countries	Results demonstrated that institutional factors affect how fiscal policy affects economic growth.	The study only focused on determining how institutional factors affect the way fiscal policy impact economic growth and not on the impact of fiscal policy on economic growth
Nawaz & Khawaja (2016)	Examined panel data to show how fiscal policy affects economic growth using the Solow growth model	56 Countries a mix of developed and developing countries	Findings showed that fiscal policy has a positive correlation with economic growth in developed countries while having a negative correlation in developing Nations	The main gap of this study was the statistical insignificance in the full sample of 56 economies, divergent effects in economies underscore the need for further investigation and consideration of institutional factors.
Richter & Paparas (2015)	Analyzed data from 1995 to 2008 to find the influence of fiscal policy on economic growth using Ordinary Least Squares Method	European Union Countries	Evidenced showed that taxation and expenditure have an impact on economic growth	OLS method assumes exogeneity of explanatory variables and the model only identifies correlation. The limitation is that in the case of fiscal policy and economic growth endogeneity is likely and the study lacked the need to address the direction of causality explicitly.
Khan, Khan & Zaman (2012)	Investigated time series data from 1980 – 2010 to see the relationship between fiscal variables and economic growth	Pakistan	Study showed that tax revenue has a positive impact on real economic growth while government spending and size of budget deficit had negative impact.	The major weaknesses of the study were that it suffered from causality and directionality issues.
Tahin (2022)	Examined the impact of fiscal policy on economic growth using quantitative methodology	Kosovo	Findings showed that fiscal policy affects economic growth	Major limitations were limited time period leading to failure to fully capture recent development and changes in fiscal policy dynamics as well as the model assumption of linearity which has a limited application in the real-world economic dynamic
Symoom (2018)	Analyzed impact of fiscal policy on economic growth using Panel data from 1980 – 2016 and pooled cross-	South Asian Nations (Bangladesh, India, Pakistan, Sri Lanka)	Evidence showed real GDP in these countries is not significantly impacted by either	The major limitation for this study was the selection bias of the four south Asian nations to make up the study and limited

	section time series using Error Correction Model (ECM) and ARDL model		government expenditure or tax revenue	application of the model assumptions in the real world.
Alesina & Ardagna (2009)	Examined fiscal policy stimuli and fiscal adjustments using data from 1970 – 2007	OECD Countries	Findings showed that fiscal adjustments that involves spending cuts rather than tax increase are likely to result in lower deficits and debt levels	The major limitation was the treatment of OECD Countries as a homogeneous group when countries are heterogeneous exhibiting diverse economic structures, political contexts and institutional frameworks among others.
Boballola & Amino (2011)	Investigated the effect of fiscal policy on economic growth using improved Dickey-Fuller Model and Engle-Granger Joint Integration test using data from 1977 – 2009	Nigeria	Findings showed production expenditure has positive impact on economic and found also a long-term link between fiscal policy and economic growth	The Engle-Granger test showed weakness in that it assumes Cointegrating relationship being linear which not the case is always. The study further suffered from endogeneity and generalizability issues.
Ndubuisi (2017)	Examined link between fiscal policy and economic growth using time series between 1985 – 2015 using VECM and Co-integration Model	Nigeria	The Study showed that fiscal policy had a significant impact on economic growth.	The main weaknesses of the study were limitations in generalisation of research findings and well pitfalls bordering validity since study relied on secondary data.
Oguanai & Ogunta (2017)	Examined effects on fiscal variables on Economic growth	Southern Africa	Findings showed that productions costs hampers economic growth but distortionary taxes increase the rate of growth	The major limitations was data, annual time series that failed to capture short-term fluctuations or specific policy changes, as well as context-specific issues.

3.0 METHODOLOGY

Conceptual Framework

Conceptually, we envision that the dependent and independent variables interact as shown in Figure 1.

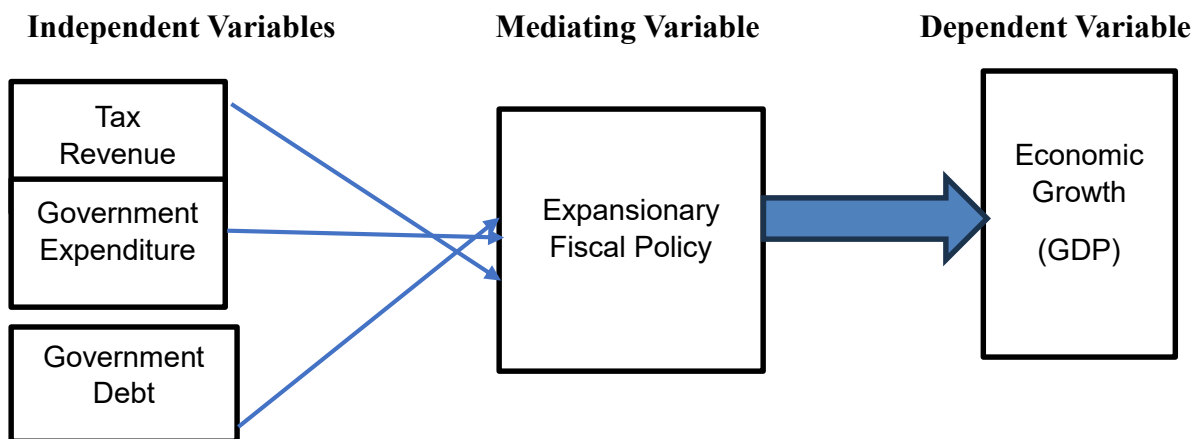


Figure 1: Conceptual Framework

Source: Authors' Elaboration

In this study, the regressors are total public debt, total Government expenditure and total tax revenue while economic growth is the explained or dependent variable with gross domestic product (GDP) as its proxy.

Material and Methods

A quantitative, deductive case study research strategy is employed in this study (Dawson, 2013). Dawson (2013) explains that deductive researchers heavily rely on existing, substantial prior knowledge to conceptualise particular situations. The annual time series secondary data from 1991 to 2021 were obtained from the World Bank's World Development Indicators (WDI) on total public debt, total Government expenditure and total tax revenue as regressors and GDP, a proxy for economic growth, as dependent variable. Total public debt (denoted as P_DEBT) is measured as total Central government debt expressed in Zambian Kwacha (ZMW) while total expenditure (denoted as P_EXP) is measured as all expenditure done by the Zambian government to the public either directly or indirectly expressed in the Zambian Kwacha (ZMW). The total tax revenue (denoted as TR) is measured as all tax revenues collected by the Zambian Government, also expressed in the Zambian Kwacha (ZMW). Economic Growth, whose proxy is GDP, is expressed as an annual percentage change in GDP (GDP growth rate). Quantitative data analyses were done using EViews 10 and Stata 15 data statistical tools. According to Saunders et al. (2000), studies that are conducted to determine the cause-and-effect relationship between two variables may qualify as explanatory studies. The goal of the deductive method is to prove that the variables are causally related. This approach is based on testing the hypotheses that were formulated in light of the three specific objectives. The aim was to establish the relationship between expansionary fiscal policy and economic growth (Bryman & Bell, 2015). The Keynesian theory is applied in this paper to support the thesis that fiscal expansion promotes economic growth.

Diagnostic Tests

Augmented Dickey-Fuller (ADF) Test

The Augmented Dickey-Fuller ADF (1979) test was used to determine the stationarity of each individual variable, after which the order of integration was also determined (Granger & Newbold, 1974).

The basic ADF (1979) time series unit root test can be expressed as shown in equation 1:

$$\Delta y_i = \alpha y_{i-t} + \sum_{j=1}^{\rho_i} \beta_{ij} \Delta y_{i-j} + \varepsilon_i \quad (1)$$

y_i denotes the time series data, ρ_i denote autoregressive coefficients, ε_i is a vector of error terms assumed to be mutually independent idiosyncratic disturbances. If $|\rho_i| < 1$, y_i is stationary, but if $|\rho_i| > 1$ then the time series, y_i , has a unit root (Lutkepohl, 1991).

Empirical Econometric Model Specifications

Theoretically, we envision that economic growth (GDP) is driven by total tax revenue, total public expenditure, and total public debt.

$$GDP = f(TR, PEXP, PDEBT) \quad (2)$$

The empirical econometric model employed to examine the fiscal policy economic growth nexus in Zambia follows Symoom (2018) and Khan and Zaman (2012). This is expressed in equation 3 which is essentially an explicit log-linearization of equation 2:

$$\ln GDP_t = \alpha_t + \beta_1 \ln TR_t + \beta_2 \ln EXP_t + \beta_3 \ln DEBT_t + \varepsilon_t \quad (3)$$

Where:

$\ln GDP_t$ is the natural log of GDP the proxy of economic growth the dependent variable.

TR is total tax revenue, EXP is the Total government spending and DEBT is public debt the independent variables of the model α represent the intercept; β_1 , β_2 , and β_3 represents the estimated coefficients for the represented variables, that is the magnitude and the impact of each variable on GDP and ε_t is the error term, which represent unobservable factors that may not only impact GDP but may also influence some or all the independent variables. In empirical literature, it is recommended that data analyses be done in natural log form to rescale data. This is necessary to make variance constant and to mitigate the effects of positive skewness.

Vector Error Correction Models (VECM)

Vector Error Correction Models (VECM) are essentially restricted vector autoregression (VAR)² models. We use VECM to analyze cointegrated time series data in this study. Following Lutkepohl (1999), the VECM can be expressed as expressed in equation 4:

$$\Delta y_t = \pi_{y_{t-1}} + \Gamma_1 \Delta y_t + \dots + \Gamma_{p-1} \Delta y_{t-p+1} + u_t \quad (4)$$

Where $\pi = -(I_k - A_1 - \dots - A_p)$, and $\Gamma_i = -(A_{i+1} + \dots + A_p)$ for $i = 1, \dots, p - 1$

It is assumed that Δy_t contains no stochastic trends. All the variables are therefore integrated of order one, I (1)). This implies that the presence of cointegration relations is manifested by the term; $\pi_{y_{t-1}}$ be I (0). When y_t is cointegrated with cointegration rank, r , $\text{rank}(\pi) = r < K$ and $\pi = \alpha A'$, where α and A are $K \times r$ matrices or vectors. The term Γ_j ($j = 1, \dots, p - 1$) is interpreted as the short-run parameters whereas the term $\pi_{y_{t-1}}$ is interpreted as the long run association of the VECM. The unknown order p in equation 4 is estimated using the Bayesian Information Criterion (BIC).

We follow Johansen (1988) in the determination of the cointegration rank and in estimating the unknown parameters in the VEC model in equation 4. This estimation is based on the maximum likelihood (ML) principle. The trace and maximum eigenvalue tests of Johansen (1988) are used to calculate the cointegration rank.

Autoregressive Distributed Lag (ARDL)

The ARDL model assumes that the dependent variable is a function of its lagged values, along with the current and lagged independent variables. We follow Symoom (2018) and Osamor et al (2023) in re-estimating equation 2 in the ARDL form:

² VAR models are well established in empirical economics and econometrics as statistical tools for analyzing the effects of macroeconomic variables. For details, see, for example, Simms, 1980; Granger, 1981 and Lutkepohl, 1991. VAR Models provide a systematic way to capture multiple time series data dynamics. VAR is a description of the evolution of the set of k (endogenous) variables in the same sample period as a linear function of their past changes or innovations. In other words, the VAR model may be envisioned as an $n - equation$, with $n - variables$ explained by their own lagged values and current and past values of the remaining $n - 1$ variables (Stock & Watson, 2001).

$$\Delta GDP_t = \beta_0 + \beta_1 GDP_{t-1} + \beta_2 TR_{t-1} + \beta_3 PEXP_{t-1} + \beta_4 PDEBT_{t-1} + \sum_{i=1}^p \theta_{1i} \Delta GDP_{t-i} + \sum_{i=0}^{q_1} \theta_{2i} \Delta TR_{t-i} + \sum_{i=0}^{q_2} \theta_{3i} \Delta PEXP_{t-i} + \sum_{i=0}^{q_3} \theta_{4i} \Delta PDEBT_{t-i} + \varepsilon_t \quad (5)$$

ΔGDP_{t-1} is the lagged dependent variable.

β_0 is the intercept.

p, q_1, q_2, q_3 represent the upper limit of the number of lags.

β_1 to β_4 represent the parameter coefficient estimates of the long run relationships.

θ_1 to θ_4 represent the parameter coefficient estimates of the short run relationships.

4.0 FINDINGS

Table 2 shows the descriptive statistics of the variables in the study.

Table 2: Summary Statistics

	GDP_GROWTH	TAX_REV(TR)	G_EXP	T_DEBT
Mean	4.274	6.238	3167.5431	9.438
Median	4.655	2.671	2514.173	6.791
Max.	10.298	2.445	6851.091	2.737
Min.	-8.6254	0	693.736	2.269
Std. Dev.	3.903	7.789	2271.063	7.341
Obs.	31	31	31	31

Source: Authors' Elaboration on Data from the World Development Index (WDI)

The mean, median, maximum, and minimum of the variables are not close to each other and the implication is that the data for our variables is not symmetric. Table 3 shows a summary of the unit root test following the Augmented Dickey-Fuller (ADF, 1979) test procedures. We observe in Table 3 that GDP time series variables were stationary at levels while the total tax revenue (TAX_REV), total government expenditure (G_EXP) and total debt(T_DEBT) became stationary after the 1st difference.

Table 3: Summary of ADF Unit Root Test Procedures

Variable	T-Test at Levels	T-Test at 1st Difference	P-Value at 1st Difference	Order of Integration
GDP	-4.05**	N/A	0.000	I (0)
TAX_REV	-0.18	-5.09**	0.001	I (1)
G_EXP	4.39	-2.99**	0.014	I (1)
T_DEBT	-2.25	-3.15**	0.034	I (1)

Source: Authors' Elaboration on Data from WDI

The null hypothesis assumes a common unit root process, ** denotes that the time series data were stationary at 5% significance level. Unit root tests included individual intercepts only. ADF denotes the Augmented Dickey Fuller test. Note that GDP needed no differencing, denoted as N/A (not applicable) since data were stationary at levels.

From the Least Squares (LS) preliminary regressions output(not shown here), we found that the R-squared indicate that 36.25% change in Economic growth can be explained by changes in Government Expenditure, Tax Revenue and External Debt. When other factors that affect the economic growth that are not explained by this model are accounted for, the independent variables are only able to account for 29.16% change in the dependent variable as depicted by the Adjusted R-squared. The F-statistic show that explanatory variables are significant in explaining the change in economic growth as the level is very close to zero.

We conducted correlational relationships in order to identify the linear relationships among the variables in the study. Table 4 reports the results. We observed that total tax revenue (TAX_REV) and total debt (T_DEBT) are weakly negatively correlated with economic growth (GDP) while Government expenditure (G_EXP) has a weak positive correlation with GDP.

Table 4: Correlation Matrix

	GDP	TAX_REV	G_EXP	T_DEBT
GDP	1			
TAX_REV	-0.109	1		
G_EXP	0.022	0.925	1	
T_DEBT_	-0.356	0.888	0.688	1

Source: Authors' Elaboration on Data from WDI

Table 5 shows a summary of the test of cointegration following the Johansen (1988) cointegration test procedures. It is easy to observe that both the Trace test and the Max-Eigen Test show that there is at least 1 cointegration vectors among the variables in the study. This implies that there is a long run association among the variables.

Table 5: Summary of the Johansen Co-Integration Test Result

	Trace	Max
$r = 0$	49.86*	24.26*
$r \leq 1$	25.61	13.41
$r \leq 2$	12.21	9.71
$r \leq 3$	2.48	2.49

Results are based on the VAR model with lag order 2 as guided by the Bayes Information Criterion (BIC). Notes: Trace denotes Johansen's Trace statistic; Max denotes Johansen's Max-Eigen value rank test statistic. * denotes rejection of the null hypothesis at 0.05 level.

Short-Run And Long-Run Vecm Output

The study proceeded to estimate the vector error correction model (VECM) using Stata 15 in order to take short run disequilibrium situation and long-run equilibrium adjustments into account. Table 6 shows that if GDP is taken as a dependent variable, R-squared is 0.8011 which implies that 80%

variations in GDP are explained by the independent variables in the Model. This is cemented by the fact that the P-value is significant at 5% level of significance.

Table 6: VECM Model Output

Vector error-correction model

Sample: 1994 thru 2021

Log likelihood = -1542.159
 Det(Sigma_ml) = 8.12e+42

Number of obs = 28
 AIC = 112.0828
 HQIC = 112.4755
 SBIC = 113.3674

Equation	Parms	RMSE	R-sq	chi2	P>chi2
D_D_GDP	6	4.0524	0.8011	88.61325	0.0000
D_D_PEXP	6	729.234	0.2643	7.902058	0.2454
D_D_TAXTREV	6	1.6e+09	0.5185	23.68945	0.0006
D_D_EDEBT	6	2.2e+09	0.2249	6.384168	0.3816

Source: Authors' Elaboration on Data from WDI Using Stata 15

Table 7 shows the VECM Model short-run results.

Table 7 : Short-Run VECM Output

	Coefficient	Std. err.	z	P> z	[95% conf. interval]	
D_D_GDP						
_cel						
L1.	-1.302211	.2296717	-5.67	0.000	-1.75236	-.8520632
D_GDP						
LD.	-.1518915	.1508529	-1.01	0.314	-.4475578	.1437747
D_PEXP						
LD.	-.0048667	.0016375	-2.97	0.003	-.0080761	-.0016573
D_TAXTREV						
LD.	2.99e-09	8.09e-10	3.69	0.000	1.40e-09	4.57e-09
D_EDEBT						
LD.	-1.15e-09	4.34e-10	-2.65	0.008	-2.00e-09	-2.98e-10
_cons	-.5061055	.7694616	-0.66	0.511	-2.014223	1.002012

Source: Authors' Elaboration on Data from WDI Using Stata 15

From Table 7, we observe that the error correction coefficient is -1.302211 and the P-value is 0.000. The condition for the existence of the long-run relationship is that in the short-run, the coefficient must be negative and the P-value less than 0.05. It then follows that in the short-run economic growth is significantly affected by the expansionary fiscal policy since Public Expenditure, Tax revenue and external debt all have the P-values that are less than 5% and significant.

Ceteris paribus, public expenditure(PEXP) and external debt (EDEBT) have a significant negative effects on GDP of Zambia while tax revenue(TAXTREV) has a significant positive effect on Zambia's economic growth. Specifically, a 1% increase in public expenditure and a 1% increase in external debt results in decrease of Zambia's GDP by 0.01% and 1.15% respectively. However, a 1% increase in the tax revenue causes GDP in Zambia to increase by nearly 3% in the short run.

Table 8 shows the VECM Model Long-run results with GDP as the dependent variable.

Table 8: Long-run VECM Output

Cointegrating equations

Equation	Parms	chi2	P>chi2
_ce1	2	60.29256	0.0000

Identification: beta is exactly identified

Johansen normalization restriction imposed

beta	Coefficient	Std. err.	z	P> z	[95% conf. interval]
_ce1					
D_GDP	1
D_PEXP	-.0029774	.0014696	-2.03	0.043	-.0058578 - .0000969
D_TAXTREV	3.36e-09	5.60e-10	6.00	0.000	2.26e-09 4.46e-09
D_EDEBT	-1.17e-09	3.08e-10	-3.81	0.000	-1.78e-09 -5.70e-10
_cons	-1.460492

Source: Authors' Elaboration on Data from WDI, Stata 15 Output

Table 8 shows the VECM Model Long-run results with GDP as the dependent variable since the coefficient is 1 whereas the other variables are independent variables. It is easy to observe that the coefficients for total public expenditure (PEXP) and external public debt (EDEBT) are negative and the p-values are all less than 0.05 whereas that of Tax revenue (TAXTREV) coefficient is positive and its p-value is statistically significant. Hence, the study concluded that there is the existence of long-run relationship among Public Expenditure, external debt and GDP but this is not the case in the case of Tax revenues. This implies that, in the long-run, a 1% increase in total public expenditure significantly reduces GDP growth in Zambia by 0.003%, a 1% increase in total external debt causes GDP to fall by 1.17%. Tax revenue, on the other hand, impacts GDP or economic growth positively. Specifically, for every 1% increase in total tax revenue, GDP grows by 3.36% in the long run.

Diagnostic Tests on the VECM Models

Jarque-Bera Residual Distribution Normality Test

The Vector Error Correction model was further subjected to diagnostic tests to verify that it is a good model. The Breusch-Godfrey Serial Correlation showed that the model was serial correlated since the P-value of the observed R-squared for the model was less than 5% level of significance.

Residual Heteroscedasticity Test

The Breusch-Pagan-Godfrey residual Heteroscedasticity test found that the VECM to heteroscedastic since the observed P-value of the test was found to be 4.25% of the observed 15.99% R-squared which is less than 5% level of significance. Therefore, the study rejected the null hypothesis which states that the VECM is not heteroscedastic.

Residual Normality Test

The Vector Error Correction was subjected to diagnostic test and the first test was to check for normality. Upon conducting the Jarque-Bera Normality test, the P-value of the Jarque-Bera test was found to be less than 0.05 which implied that the residuals of the model were not normality distributed. The research concluded that the VECM was not a good model because it was serially correlated, heteroscedastic and not normally distributed. Therefore, in order to ascertain the result of this model, it was subjected to the Autoregressive Distributed Lags (ARDL) Model.

Autoregressive Distributed Lags(ARDL) Model Output

After the Vector Error Correction model was determined, the ARDL model was carried out to ascertain the long-run relationship between the explained and the explanatory variables. The result of the model is shown in the Table 9. From Table 9, we observed that the F-statistic of the model was found to be statistically significant, as the P-value for the model is 0.001025, which is less than 0.05. The model in the long-run was also found to be a good fit with R-squared and Adjusted R-squared being 0.944571 and 0.839872 respectively. The implication of this is that 94.46% of the model was predicted by the explanatory variables, and when adjusted for other factors that affect economic growth that were not accounted for by our model, our explanatory variables still accounted for 83.99% of the prediction of our model.

Table 9 shows the ARDL output from Stata 15.

Table 9: ARDL Output

Dependent Variable: GDP
 Method: ARDL
 Date: 01/11/24 Time: 23:50
 Sample: 1995 2021
 Included observations: 27
 Dependent lags: 4 (Automatic)
 Automatic-lag linear regressors (4 max. lags): PEXP TAXREV EDEBT
 Deterministics: Restricted constant and no trend (Case 2)
 Model selection method: Akaike info criterion (AIC)
 Number of models evaluated: 500
 Selected model: ARDL(4,3,3,4)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
GDP(-1)	0.034282	0.090213	0.380013	0.7127
GDP(-2)	-0.107046	0.105246	-1.017097	0.3357
GDP(-3)	0.027615	0.102364	0.269774	0.7934
GDP(-4)	0.243985	0.099389	2.454859	0.0365
PEXP	-0.002834	0.000976	-2.905010	0.0175
PEXP(-1)	-0.000884	0.001084	-0.815584	0.4358
PEXP(-2)	-0.001330	0.001263	-1.052702	0.3199
PEXP(-3)	-0.004480	0.001100	-4.073205	0.0028
TAXREV	1.92E-09	5.39E-10	3.555509	0.0062
TAXREV(-1)	-2.93E-10	5.35E-10	-0.548077	0.5970
TAXREV(-2)	1.52E-09	7.91E-10	1.925279	0.0863
TAXREV(-3)	1.01E-09	5.91E-10	1.708059	0.1218
EDEBT	-6.14E-10	2.26E-10	-2.720233	0.0236
EDEBT(-1)	1.89E-10	2.77E-10	0.680673	0.5132
EDEBT(-2)	-6.61E-10	3.93E-10	-1.680934	0.1271
EDEBT(-3)	-7.99E-10	2.74E-10	-2.913573	0.0172
EDEBT(-4)	-5.04E-10	3.41E-10	-1.476758	0.1739
C	28.60835	6.339893	4.512434	0.0015
R-squared	0.944571	Mean dependent var		5.040175
Adjusted R-squared	0.839872	S.D. dependent var		2.866914
S.E. of regression	1.147224	Akaike info criterion		3.347289
Sum squared resid	11.84511	Schwarz criterion		4.211180
Log likelihood	-27.18840	Hannan-Quinn criter.		3.604169
F-statistic	9.021767	Durbin-Watson stat		1.210363
Prob(F-statistic)	0.001025			

*Note: p-values and any subsequent test results do not account for model selection.

From Table 9, the ARDL shows that, *ceteris paribus*, at lag 3, public expenditure (PEXP) has a significant negative effect of 0.005% on GDP for every 1% increase in public expenditure at 1% level. At 10% significance level, at lag 2, Tax revenue has a positive effect on GDP growth of 1.52% in the short run with every 1% increase in Tax revenue. Finally, at lag 3 and significant level of 5%, external debt impacts GDP negatively. Specifically, for every 1% increase in external debt, GDP in Zambia plummets by nearly 8%, *ceteris paribus*.

Diagnostic tests were conducted on the ARDL model to determine if the model is good. The Breusch-Pagan-Godfrey Heteroscedasticity test and the Breusch-Godfrey Serial correlation LM test(not shown here) had observed R-squared P-values of 45.83% and 6.70% respectively. This implied that the null hypothesis for heteroscedasticity was rejected in the first instance and the null hypothesis that residuals are normally distributed was not rejected in the second instance. Therefore, the model was found to be homoscedastic and normally distributed.

The final diagnostic test that was conducted on the ARDL model was the Jarque-Bera residual normality distribution test. The Jarque-Bera P-value was found to be 18.67% which is greater than 5% level of significance. It can therefore, be concluded that residuals or the model is normally distributed.

Bound Test

The bound test was conducted after the diagnostic test of the ARDL model. The test was aimed at validating the long-run relationship between economic growth and the explanatory variables. The bound test was used because not all values were stationary at first difference, one variable; GDP annual growth was stationary at level. From the results shown in the Table 4.8 below, the F-statistic 13.498371 is greater than the upper 4.306 and lower 3.272 bound at 5% level of significance. Thus, the null hypothesis of no levels relationship is rejected. Therefore, we can conclude that there is a long-run relationship between economic growth, and government expenditure, tax revenue and external debt.

Table 10: Bound Test Result of ARDL Model

Null Hypothesis: No levels relationship
 Number of cointegrating variables: 3
 Trend type: Rest. constant (Case 2)
 Sample size: 27

Test Statistic		Value					
F-statistic		13.498371					
		10%		5%		1%	
Sample Size	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)	
30	2.676	3.586	3.272	4.306	4.614	5.966	
Asymptotic	2.370	3.200	2.790	3.670	3.650	4.660	

* I(0) and I(1) are respectively the stationary and non-stationary bounds.

Hypothesis Testing

The aim of this study was to investigate the impact of Expansionary Fiscal Policy on Economic Growth in Zambia. Based on the VECM Model test, we observed that the coefficient of the was

significant and contained a negative sign. This satisfies the condition for the long-run relationship among the variables in the study.

For hypothesis 1, we accept the null hypothesis because empirical evidence suggests that government expenditure has a significant negative impact on GDP both in the short run and long-run. For the second hypothesis, we reject the null and accept the null because tax revenues have a positive significant effect on GDP growth in Zambia. Finally, for the third hypothesis, we accept the null because the findings of this study indicate that government public debt has a significant negative effect on the economic growth in Zambia.

Based on the Autoregressive Distributed Lags (ARDL) model, the long-run coefficient of the model is significant at 5% as the F-statistic of the model was found to be statistically significant with the P-value of 0.001025 which is less than 0.05. The model in the long-run was also found to be a good fit with R-squared and Adjusted R-squared being 0.944571 and 0.839872 respectively which implies that 94.46% of the model was predicted by the explanatory variables and when adjusted for other factors that affect economic growth that were not accounted for by our model, our explanatory variables still accounted for 83.99% prediction of our model. Therefore, ARDL model validated the existence of the long-run relationship between economic growth and expansionary fiscal policy. The ARDL model, like the VECM model, also showed the negative effects of public expenditure and public debt on GDP growth in the short-run, and the positive effect of tax revenue on growth in Zambia.

5.0 CONCLUSION AND RECOMMENDATIONS

The aim of this research was to investigate the impact of Expansionary Fiscal Policy on Economic Growth and to establish the short-run and long-run relationship between expansionary fiscal policy and economic growth in Zambia. The results of the various tests conducted on the secondary data collected from the World Bank Databases indicate the following:

The VECM established both the short-run and long-run relationship between economic growth and expansionary fiscal policy. The coefficient of the error term was negative and significant and this validated the existence of both the short-run and long-run relationship between variables of expansionary fiscal policy and economic growth. Hence, expansionary fiscal policy was significant in explaining economic growth both in the short run and long-run. Furthermore, the data were subjected Autoregressive Distributed Lags (ARDL) test to ascertain the results of the VECM model. The Autoregressive Distributed Lags (ARDL) model validated the existence of the long-run relationship as the long-run coefficient of the model is significant at 5% since the F-statistic of the model was found to be statistically significant with the P-value of 0.001025 which is less than 0.05. The model in the long run was also found to be a good fit with R-squared and Adjusted R-squared being 0.944571 and 0.839872 respectively which implies that 94.46% of the model was predicted by the explanatory variables and when adjusted for other factors that affect economic growth that was not accounted for by our model, our explanatory variables still accounted for 83.99% prediction of our model. Therefore, the ARDL model validated the existence of the long-run relationship between economic growth and expansionary fiscal policy. The model was further subjected to diagnostic tests and was found to be a good one as it was not serially correlated, nor was it heteroscedastic and the residuals were found to be normally distributed. The long-run relationship was then verified by the Bound test of the ARDL model.

From the VECM output, the study found that in the short run, a 1% increase in public expenditure and a 1% increase in external debt results in decrease of Zambia's GDP by 0.01% and 1.15% respectively. However, a 1% increase in the tax revenue causes GDP in Zambia to increase by nearly 3%. In the long-run, VECM estimates indicate that a 1% increase in total public expenditure significantly reduces GDP growth in Zambia by 0.003%, a 1% increases in total external debt causes GDP to fall by 1.17% but a 1% increase in tax revenue results in GDP growth of 3.36% in the long run.

The ARDL shows that *ceteris paribus*, at lag 3, public expenditure (PEXP) has a significant negative effect of 0.005% on GDP for every 1% increase in public expenditure at a 1% level. At the 10% significance level, at lag 2, Tax revenue has a positive significant effect on GDP growth of 1.52% in the short run with every 1% increase in Tax revenue, whereas at lag 3, at a significant level of 5%, external debt impacts GDP negatively. This implies that for every 1% increase in external debt, GDP in Zambia plummets by nearly 8% in the short run.

Based on these empirical findings of the research, the study established the existence of the long-run relationship between expansionary fiscal policy and economic growth in Zambia. These empirical findings are supported by the results of the VECM and the ARDL tests.

The implication of this research is that expansionary fiscal policy is a critical tool for the attainment of economic growth in Zambia. This conclusion is cemented by the findings of this study which found that expansionary fiscal policy and economic growth are co-integrated and have both short-run and long-run relationship. This study finds that an increase in tax revenue promotes economic growth, while the increase in public debt and public/government expenditure has a negative impact on Zambia's economic growth. These findings corroborate with earlier empirical studies such as Khan and Zaman (2012), who found that tax revenues had a positive impact on real economic growth, and government spending had a significant negative impact.

Recommendations for Policymakers

1. This study recommends the use of expansionary fiscal policy through increased contraction of public debt and government expenditure cautiously, as these fiscal policy instruments or tools may depress long-run economic growth in Zambia.
2. Since there is a positive relationship between Tax revenue and economic growth in Zambia, the government of Zambia must widen and diversify sources of tax revenue.
3. The study further recommends the use of external borrowing for capital expenditure as opposed to consumption expenditure. This is because borrowing for consumption increases the debt burden on the economy and impedes economic growth. On the contrary, the use of external borrowing to finance capital expenditures promotes economic growth since the project funded by debt is able to generate sufficient to both service the debt and ultimately grow the economy.
4. From the theoretical standpoint, it seems that none of the theories outlined in this study can comprehensively help us explain our findings. Therefore, we recommend employing a variety of theories, such as the Keynesian and classical theories, in policy formulation or implementation of fiscal policies. Keynesian theories((Proponents of John Maynard Keynes) help explain the short-run effects of fiscal policies on economic growth while the

classical theories (Proponents of Adam Smith) help explain the effects of fiscal policies on growth in the long run.

Recommendations for Future Research

1. The study recommends further empirical investigations on the effects of external debt on economic growth by expenditure type – capital expenditure and consumption expenditure. This shall prove insights on whether borrowing for capital expenditure or consumption expenditure promotes economic growth.
2. The study further recommends future research on tax revenues' impact on economic growth to focus on specific tax types such as income tax consisting of individual and corporate, and consumption tax made up of excise tax, value-added tax (VAT) and import duties and examine the impact of these taxes on economic growth. This will help to devise an appropriate taxation policy that would promote growth in a developing country like Zambia.

Declaration of Competing Interests

The authors declare that they have no known competing financial interests or personal relationships that have appeared to influence the work reported in this article.

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