THE IMPACT OF GOVERNMENT SOCIAL EXPENDITURE ON ECONOMIC GROWTH IN SOUTH AFRICA

BY:

DANIEL KABELO SETOUTO

2018191789

The research project submitted to the UFS Business School in the Faculty of Economic and Management Sciences in partial fulfilment of the requirements for the degree:

MASTER OF BUSINESS ADMINISTRATION
AT THE
UNIVERSITY OF THE FREE STATE

SUPERVISED BY: DR GIBSON MUDIRIZA

Submitted on 20 November 2023

Declaration

I declare that the research project hereby handed in for the qualification Master's in Business Administration at the UFS Business School at the University of the Free State is my independent work and that I have not previously submitted the same work, either as a whole or in part, for a qualification at/in another university/faculty.

Daniel Kabelo Setouto 20 November 2023

ABSTRACT

South Africa has been facing persistent socio-economic challenges, including high levels of unemployment, poverty, and income inequality. To tackle these issues, the government has allocated significant resources towards social spending programmes but socio-economic challenges have persisted. It is against this background that this study aims to examine the impact of different components of government social spending on economic growth in South Africa. The study investigated this relationship for the period 1985 to 2019 before the Covid-19 effects.

To establish the relationship between government social expenditure and economic growth, the study adopted the Johansen Cointegration Analysis and Vector Error Correction Model. This study further employed the Granger Causality test, the Variance Decomposition and the Generalised Impulse Response function to assess the causation, to trace the response of the dependent variable to shocks in the error term and the time path of the variables in numerous shocks. Government social protection, educational expenditure and health expenditure were used as the major components of government social expenditure.

The empirical results obtained in this study indicate that aggregate government expenditure, social protection expenditure and gross fixed capital formation have positive significant effects on the performance of the economy. This implies that an increase in these variables promotes economic growth. Conversely, government health expenditure adversely and significantly affects economic growth. Surprisingly, government educational expenditure was not statistically significant. Moreover, looking at the variance decomposition findings, the results indicate that although the changes in economic growth are influenced by aggregate government expenditure, government education expenditure and gross fixed capital formation shocks, in the long-run, its shocks largely contribute to the fluctuations of economic growth. In other words, the changes in economic growth are largely influenced by changes of the previous economic growth.

The results of this study underscore the critical role of government social protection expenditure in fostering long-term economic growth in South Africa. Accordingly, the results suggest that the government should prioritise and potentially increase

investments in social safety nets and welfare programs, given the positive impact of social protection expenditure on economic growth. On the other hand, the adverse and significant effect of government health expenditure on economic growth warrants careful consideration. The findings suggest a need for a more efficient allocation of health resources or a revaluation of health expenditure policies to ensure that government spending in this sector aligns more effectively to promote and sustain economic growth. This could involve exploring ways to enhance the effectiveness of healthcare spending or identifying areas for improvement in the health sector to mitigate any negative impact on economic growth. The insignificance of government educational expenditure suggests a potential need for targeted reforms or enhanced efficiency in the educational sector to align it more closely with economic growth objectives. Overall, this study provides valuable insights for policymakers seeking to optimise the impact of social spending on economic growth in South Africa.

DEDICATION

I dedicate this thesis to my beloved daughter, Opelong Setouto. You have been a constant source of love, joy, and inspiration throughout my academic journey. Your presence in my life has motivated me to work harder and strive for excellence, not only for myself but for you as well.

As I pursued my educational goals, you were there with your unwavering support and understanding, even when I had to spend long hours studying or working on this thesis. Your patience and encouragement have been my pillars of strength, and I am truly grateful for your boundless love.

I dedicate this thesis to you as a testament to the importance of education and the power of determination. I hope that it serves as a reminder that with hard work and perseverance, we can achieve our dreams and make a better future for ourselves and our loved ones.

May this dedication be a symbol of my love and commitment to you, Opelong. You are my greatest achievement and the driving force behind my academic accomplishments. I look forward to sharing many more milestones with you in the years to come. Thank you for being the light of my life.

ACKNOWLEDGEMENTS

I would like to express my sincere deep gratitude to the following:

First, I would like to humbly acknowledge and express my gratitude to the Almighty, the One above, for the countless blessings and guidance that have been bestowed upon me throughout my academic journey and the completion of this thesis. My faith provided me with courage and inspiration during my hesitant and doubtful moments. It was my constant faith in a higher power, in His wisdom, and in His plan for my life that gave me the strength to overcome obstacles and keep going. I have been able to pursue information, get past challenges, and negotiate the complexity of my studies thanks to His grace.

I would like to extend my heartfelt appreciation to my dedicated supervisor, Dr Gibson Mudiriza, for his invaluable support, guidance, and mentorship throughout the process of completing this thesis. His expertise, patience, and unwavering commitment to my academic development have been instrumental in making this research possible.

I would like to express my deepest gratitude and appreciation to my mother, Mamothibedi Salmis Setouto, for her unwavering support, love, and sacrifices throughout my academic journey and life in general. As a single mother, she has been the anchor of my life, providing me with the strength and motivation to pursue my educational goals. Her dedication and resilience have been a constant source of inspiration. Her sacrifices, both big and small, have enabled me to focus on my studies and strive for excellence. Her love and support have been instrumental in shaping my character and instilling in me the values of perseverance and determination. Thank you, Sthiba, for being the incredible woman you are. Your sacrifices, love and mainly the struggles are the reasons I stand here today, proudly presenting this thesis.

I would further like to extend my heartfelt gratitude to my family and friends who have been an essential part of my academic journey and the completion of this thesis. Your unwavering support, encouragement, and belief in me have been a constant source of inspiration and motivation.

Last but not least, I would like to take a moment to acknowledge and appreciate the dedication and perseverance that I have demonstrated throughout the process of completing this thesis and qualification in general. This journey has been challenging, demanding, and at times, mentally and emotionally exhausting. Despite the obstacles and self-doubt, I may have encountered, I have managed to push through and reach this point.

Acknowledging myself is not about vanity but about recognising the hours of hard work, the countless late nights, and the moments of doubt that I have overcome. It is a testament to my commitment to personal and academic growth. I am grateful for the determination that has kept me focused on my goals, for the times I pushed my limits, and for the willingness to learn from my mistakes. This thesis stands as evidence of the persistence, resilience, and dedication that I have displayed throughout this journey.

Thank you, to myself, for the effort and determination that have brought me to this point, and may this achievement be a stepping stone to even greater accomplishments in the future.

Table of Contents

LIST OF TABLES

LIST OF FIGURES

The Impact of government social expenditure on economic growth in South Africa

Chapter 1

1.1. Background to the study

Democratic governments allocate a significant proportion of their resources to social programmes to address persistent socio-economic challenges such as high unemployment, poverty, and income inequality (Çakerri, Petanaj, & Muharremi, 2014). The resources allocated by governments for social spending are critical for improving human capital, the standard of living and promoting economic growth (Lahirushan & Gunasekara, 2015; Iwegbunam, 2017). However, the true impact of government social expenditure on economic growth is still a topic of debate. Some argue that social spending programmes can stimulate economic growth by improving human capital development and reducing poverty (Gumede, 2019; Onifade, et al., 2020; Nhlangwini & Tleane, 2019), while others contend that excessive social spending can lead to budget deficits and inflation (Molefe & Maredza, 2017; Chipaumire, et al., 2014). Thus, the relationship between government social expenditure and economic growth is not clear.

The literature has explained the relationship between government social expenditure and economic growth from different perspectives. Of these perspectives, the Keynesian theory, Endogenous Growth theory and Human Capital theory suggest that social expenditure can lead to increased economic growth by improving the quality of the labour force, increasing productivity, and boosting demand for goods and services (Vuluka, 2020; Iwegbunam, 2017; Nhlangwini & Tleane, 2019). Wagner's Law presents an alternative viewpoint, suggesting that social expenditure is a natural consequence of economic development and can increase as a proportion of GDP

(Kamasa & Ofori-Abebrese, 2015; Magazzino, et al., 2015). Meanwhile, the Neoclassical growth theory emphasises the role of technological progress in driving economic growth and posits that social expenditure can promote technological progress and innovation (2010, p. McGrattan; Gumede, et al., 2020). In contrast, the Public Choice theory suggests that social expenditure can create disincentives for private investment and reduce economic growth, particularly if the expenditure is inefficient or subject to rent-seeking behaviour (Nyahsa & Odhiambo, 2019).

Building on these different theoretical perspectives, a considerable body of empirical research has examined the relationship between social expenditure and economic growth (Gumede, 2019; Onifade, et al., 2020; Nhlangwini & Tleane, 2019). However, results from these studies are mixed and inconclusive. For example, Barro and Redlick (2011) found that government spending on education and health has a positive effect on economic growth in the long run. Meanwhile, Iwegbunam (2017) and Chirwa & Odhiambo (2016) found government social spending to be detrimental to economic growth. As a result of the mixed and inconclusive results, there is a need for more research on the link between social expenditure and economic growth.

Further, the bulk of existing studies have examined the effects of aggregate government spending (Babatunde, 2018; Chipaumire, et al., 2014; Chu, et al., 2020; Hasnul, 2015). Yet, government social spending has many components, such as social welfare, education, and healthcare. Thus, apart from examining the effects of aggregate government social spending, examining the effects of the different components of government social spending might add new insights into the relationship. A few studies have examined the effects of the different components of government social spending (Gumede, 2019; Nhlangwini & Tleane, 2019). Of these

studies, even fewer studies have been done in emerging countries, particularly in Africa, mainly because of the scarcity of comprehensive data. As a result, much remains to be discovered about the effects of different components of government social spending on economic growth in these countries.

Thus, the goal of this study is to add to the existing literature by examining the impact of disaggregated government social spending on economic growth for an emerging economy, namely, South Africa. The study will employ annual time series data from 1985 to 2019, and various time series models will be utilised.

1.2. Problem statement

South Africa has been facing persistent socio-economic challenges, including high levels of unemployment, poverty, and income inequality. To tackle these issues, the government has allocated significant resources towards social spending programmes aimed at reducing poverty and promoting economic development. The total government social spending increased from R21,028 million in 1994 to R370,022 million in 2021, presenting a more than 100 per cent increase over the period (South African Reserve Bank, 2023). Established evidence highlights the importance of government social spending in mitigating poverty, inequality, and unemployment and enhancing economic growth (Karim, 2015; Gumede et al., 2020; Kamasa and Ofori-Abebrese, 2015).

However, despite the significant allocation of government resources to social spending, socioeconomic challenges such as high levels of unemployment, poverty, and income inequality persist in South Africa. Furthermore, economic growth remains very low. For example, South Africa's economic growth has been sluggish, registering an average growth rate of 2.42 per cent between 1994 and 2022 (South African

Reserve Bank, 2023). According to the National Treasury of the Republic of South Africa (2021), the country's reliance on expansionary fiscal policies has led to a difficult fiscal balancing act, with government expenditure outstripping revenue, yet leading to insignificant economic growth. Thus, it is not clear whether a relationship does exist between government social spending and economic growth in South Africa.

As a result, it is necessary to investigate the impact of government social expenditure on economic growth in South Africa to inform policy decisions. This study aims to contribute to the ongoing debate on the effectiveness of government social expenditure in promoting economic growth in South Africa.

1.3. The objective of the study

The primary objective of this study is to examine the impact of government social spending on economic growth in South Africa. This objective will be accomplished by pursuing the following specific objectives:

- To determine the impact of government social spending on economic growth in South Africa.
- To determine the impact of specific components of government social spending (health education and social protection) on economic growth.

1.4. Research questions

These specific objectives are addressed by answering the following questions:

- What is the impact of government social spending on economic growth in South Africa?
- Which specific government social spending between health, education, and social protection has a great impact on economic growth in South Africa?

1.5. Research Methodology

1.5.1. Research Design

The study adopted a longitudinal research design which utilised time-series data collected from the South African Reserve Bank (SARB). A longitudinal design involves the collection of data from the same subjects or units over an extended period of time to examine changes or trends.

The data collected by SARB was publicly available on their website and contained key macroeconomic variables that were necessary for addressing the objectives of this study. As a result, the study did not have a research instrument as secondary data was utilised. The secondary data collected for the study was quantitative. Time series data used in this study made it possible to analyse the changes and developments in government social spending and economic growth over time.

As explained above, this study's objective was to examine the impact of government social spending on economic growth. To address this objective, the study employed time-series econometric modelling techniques, among them, the vector regression analysis model and Granger causality. In these models, the real gross domestic product growth rate, the proxy of economic growth, will be used as the dependent variable, while the elements of government social expenditure, namely, health, education and social protection expenditure will be used as the main independent variables.

1.5.2. Sampling Strategy

The data collected for this study covered one country for the period 1985 to 2019 before the Covid-19 effects. The data collected included real Gross Domestic Product

growth rate, which was used as a proxy of economic growth and elements of government social expenditure, namely, health, education and social protection expenditure.

1.5.3. Ethical Considerations

This study utilised publicly available secondary data collected from the South African Reserve Bank (SARB) website, and as a result, there were no ethical concerns to be addressed.

1.6. Significance of the study

This paper seeks to provide further insight on the role of government social expenditure components (health, education and social protection) in enhancing economic growth. Although there have been a number of studies conducted on the link between government spending and the national output such as; Chipaumire, et al. (2014); Chu, et al. (2020); Gumede, et al. (2020); Nhlangwini and Tleane (2019); and Muyaba (2016), the direction of the causation has been uncertain as it has been unclear on whether the increase of public expenditure is good or bad for the economy. The lack of consensus on the results of the previous empirical findings, has led this study to address these gaps in existing literature by specifically examining different components of government social expenditure.

This study will make important contributions to the policy and academic debates. First, by understanding the impact of government social expenditure on economic growth, policymakers can make informed decisions that promote sustainable development, address socio-economic challenges, and ensure efficient allocation of resources towards social spending programmes. Additionally, this study will contribute to the

ongoing academic and policy discourse on the effectiveness of social spending in promoting economic growth, filling knowledge gaps and generating new research findings in the field. Ultimately, the findings of this study will contribute to the development of evidence-based policies and strategies that promote socio-economic development and sustainable economic growth in South Africa.

1.7. Delimitation of the study

The subsequent sections of this study are structured as follows: Chapter 2 offers an overview of both theoretical and empirical literature on the impact of government social expenditure on economic growth. Chapter 3 provides a detailed explanation of the research methodology, including the research design, data sources and estimation techniques that will be employed in the study. Chapter 4 presents the empirical analysis and interpretation of results for the estimated models, starting with the preliminary analysis which determines the applicable econometric model to be adopted. Finally, chapter 5 summarizes the conclusions drawn from the study and offers policy recommendations for future research and implementation.

Chapter 2

2. Theoretical and empirical insights

2.1. Introduction

This chapter provides a review of the existing theoretical and empirical literature on the relationship between government social spending and economic growth. It is structured as follows. Section 2.2 provides an overview of theories that explain the relationship between government social expenditure and economic growth. Section 2.3 reviews the empirical work done by other studies, focusing on the link between government social expenditure and economic growth at both international and national levels. This chapter aims to provide a foundation for the empirical work that follows in Chapter 4.

2.2. Theories explaining the link between government social expenditure and economic growth

From a theoretical view, the literature has explained the relationship between government social expenditure and economic growth from many different and sometimes contradicting perspectives. While some theories suggest that government expenditure can stimulate economic growth, others argue that it can have a negative impact (Mehdi and Falahi, 2018, Chipaumire, et al., 2014). Here, we will review some of the most relevant theories that explain the relationship between government expenditure and economic growth, among them, the Classical view, the Public Choice theory (Boyne, 1998), Keynesian theory (Keynes, 1936); Wagner's law (Wagner, 1883); Solow growth (Solow, 1956); and Endogenous Growth theories.

Of these theories, the Classical theory suggests that government expenditure can hurt economic growth (Chipaumire, et al., 2014; Babatunde, 2018; Shaddady, 2022). According to this view, government intervention in the economy through increased spending can lead to inefficiencies and market distortions, which can reduce economic growth (Hudea, 2014; Hasnul, 2015; Hudea, 2012). Therefore, the classical view recommends limiting government expenditure and promoting free markets (Kurz, 2010; Jooste, et al., 2013; Kanono & Sello, 2016).

Supporting the classical view, the Public Choice theory suggests that government expenditure can harm economic growth due to the incentives faced by politicians and bureaucrats (Nyasha & Odhiambo, 2019). According to this theory, politicians and bureaucrats are motivated by their self-interest, which can lead to inefficient allocation of resources and wasteful spending. Therefore, the Public Choice theory recommends limiting government expenditure and promoting market-based solutions (Nyasha & Odhiambo, 2019).

Contrary to these theories, the Keynesian theory suggests that government expenditure can stimulate economic growth, particularly during times of economic recession (Hudea, 2012; Kamasa & Ofori-Abebrese, 2015; Jahan, et al., 2014). According to this theory, government spending can increase aggregate demand and stimulate economic activity, which can lead to increased economic growth (Babatunde, 2018). Therefore, the Keynesian theory recommends increasing government expenditure during times of economic recession to stimulate economic growth (Kamasa & Ofori-Abebrese, 2015).

Another perspective, Wagner's law suggests that government expenditure tends to increase as a country develops, which can lead to increased economic growth (Muyaba, 2016; Magazzino, et al., 2015). According to this theory, as a country develops, the demand for public goods and services, such as education, healthcare, and infrastructure, increases, which leads to increased government expenditure (Chu, et al., 2020; Gumede, et al., 2020; Magazzino, et al., 2015). This increased expenditure can lead to increased economic growth by providing the necessary infrastructure and services to support economic activity (Babatunde, 2018).

A further perspective, the Solow growth theory suggests that government expenditure can have a positive impact on economic growth by promoting investment in physical and human capital (Kurz, 2010). According to this theory, government expenditure can promote investment in infrastructure and education, which can lead to increased productivity and economic growth. Finally, the Endogenous Growth theory suggests that government expenditure can have a positive impact on economic growth by promoting innovation and technological advancement (McGrattan & Ohanian, 2010). According to this theory, government expenditure can promote research and development, education, and infrastructure, which can lead to increased innovation and technological advancement, leading to increased economic growth (Kurz, 2010).

In summary, each of these theories offers a theoretical lens for understanding the link between government social expenditure and economic growth on whether the government should embark on increasing its expenditure or. Collectively, they provide a more nuanced framework for exploring this relationship. That is for instance, classical theory together with public choice theory claims that when there is inefficient allocation of resources and wasteful spending, the increase of government social

expenditure affects economic growth. Other theories such as the Keynesian model, Solow growth model and endogenous model claims that the increase of government expenditure through promoting innovation, technological advancement, investment in physical and human capital is likely to influence economic growth.

Empirical studies in this field have largely drawn on these theoretical perspectives to gain a deeper understanding of the linkages between government social expenditure and economic growth. By leveraging these theories, researchers can develop a more robust understanding of the complex dynamics at play and gain a clearer picture of how government spending on social programmes impacts overall economic performance.

2.3. Empirical Literature

A considerable body of empirical studies have examined the link between government social expenditure and economic growth in both developed and developing countries. These studies have used different theories in specifying the model as well as different research methods, and their results showed that the effect of government social expenditure on economic growth can either be negative, positive, or non-existent. This outcome is in line with economic theories that propose two different positions on the impact of government social expenditure on economic development. In the subsequent sections, we will delve into these studies to provide a comprehensive review.

2.3.1. Empirical evidence from developed countries

This section provides an overview of empirical evidence on the link between government social expenditure and economic growth in developed countries. Chu, Hölscher, and Dermot McCarthy (2020) examined the impact of the composition of government expenditure on economic growth by looking at both the high and the low to middle-income economies. The analysis developed an endogenous growth framework that separated government expenditure into productive and non-productive forms. Using ordinary least squares fixed effects and dynamic panel Generelise Methods of moments (GMM) techniques, Chu, et al. (2020), found that an increase in the level of government expenditure has a negative effect and crowding out effect on the long-run economic growth of the low to middle-income economies. The findings of this study supported the Classical view and the Public Choice perceptive. Moreover, the empirical results of their study revealed that the shift of the government from unproductive government expenditure to productive expenditure has a positive influence on economic growth.

On the same note, using the same ordinary least squares techniques, Hasnul (2015), analysed the relationship between government expenditure and economic growth by looking at government operating and development expenditure. The study used time series data from the period 1970 to 2014. The study's empirical findings revealed that there has been a negative relationship between economic growth and government spending in Malaysia for the last 45 years. Moreover, the housing sector expenditure and development expenditure were significantly found to lower economic growth. Meanwhile, other social expenditures such as education, healthcare and defence were found to have no impact on the economic growth of Malaysia. As a result, the findings of the study were more in support of the Classical view and Public Choice theory.

Looking at middle to high-income countries, a study by Lupu, Petrisor, Bercu and Tofan (2018) examined the importance of government expenditure in the growth and the functional structure of GDP using an autoregressive-distributed lag (ARDL) model. According to the different functional classifications of public expenditure, the 10 different categories of government spending were employed. Using the quarterly data for the period 1995 to 2015 for 10 European countries, the finding of the study revealed that productive social expenditure such as education and health expenditure positively enhances economic growth. The result showed the significance of the Keynesian theory. Nevertheless, other expenses of the government such as social welfare, economic affairs, defence and general public services expenditures harmed the economy.

Connollya and Li, (2016) looked at 34 Organisation for Economic Cooperation and Development (OECD) countries to investigate the impact of government social expenditure, consumption spending and public investment on economic growth. The study was carried out using the generalised method and panel data from the period of the year 1995 to 2011. The empirical findings revealed that public social spending has a negative significant effect on the growth rate of the economy. Moreover, government consumption spending and public investment surprisingly were found not to have a significant effect on the progress of the economy (Connollya and Li, 2016). The results supported the Classical view and Public Choice theory that argues against the intervention of the government in the economy.

2.3.2. Empirical evidence from developing countries

This section is an overview of empirical evidence on the link between government social expenditure and economic growth in developed countries. A study by Shafuda (2015) examined the causal relationship between government expenditure and real growth rate through the employment of government consumption expenditure and real GDP in Namibia. Using the Namibian data from the period 1980 to 2012 and the Co-integration test and Vector Error Correction Model (VECM) technique, the study found that government consumption expenditure positively and significantly influences economic growth in Namibia. The results of this analysis were in support of the Keynesian model, which indicates that as the government increases its spending economic growth is boosted.

Onifade, Erdogan, Asongu and Bekun (2020) assessed the impact of government expenditures on economic growth. Their empirical study mainly focuses on capital expenditure and recurrent expenditure in the context of the Nigerian economy. Using the autoregressive distributed lag (ARDL) approach, from the period 1981 to 2017, the study found that government recurrent expenditures hurt economic growth. Meanwhile, the government's capital expenditure positively influences the progress of the economy, however, the finding was not significant. To robust the findings, Onifade, et al., (2020) further analysed the causality between government expenditure and economic growth using Granger causality. The results revealed that fiscal expansion financed from the public debt granger cause government expenditure and government expenditure granger causes real growth in the economy. The findings supported both Keynesian and Endogenous theories that advocate government involvement.

2.3.3. Empirical evidence from South Africa

Looking at the relationship between government expenditure and economic growth in South Africa, Chipaumire, et al. (2014) examined the validity of the Classical perspective and the hypothesis of Keynesian theory in the relationship between aggregate government expenditure and national income. The study used the South African quarterly data spanning from 1990 to 2010 to test the long-run relationship. The study applied the Johansen Maximus Likelihood test techniques. A long-run relationship between aggregate government expenditure and national income was revealed. However, Chipaumire, et al. (2014) claim that the expansionary fiscal policy in South Africa has not been driving the economy into meaningful development. Henceforth, the study supported the validity of the Classical theory.

On the contrary, Nhlangwini and Tleane (2019), employed the Vector Error Correction Model with time series data of the period 1997 to 2017, to assess the impact of government expenditure on economic growth in South Africa. The empirical results found in the study by Nhlangwini and Tleane (2019), strongly support the Keynesian model and view that suggests that an increase in public expenditure is favourable to economic growth. The findings of the study revealed that social infrastructure expenditure has a positive effect on economic growth in the short run, and then contracts adversely in the long run (Nhlangwini & Tleane, 2019). The improvement of government spending in influencing economic growth in South Africa was suggested to the policymakers.

On the same note, Gumede (2019) carried out a study looking at the relationship between government expenditure and South African economic growth specifically looking at government social spending. Using the cointegration approach to estimate

the effect of disaggregated government social spending on economic growth, income inequality and household consumption expenditure in the short run and long run. The findings of the study revealed that the government's health expenditure significantly boosts the economy in the long run. Public education spending was found to significantly influence the enhancement of economic growth in the short run but later in the long run, the impact was found insignificant. The findings were found in support of the Slow Growth module which claims that the increase of government expenditure can have a positive impact on economic growth by promoting investment in physical and human capital.

Overall, Gumede (2019) indicated that the impact of government social expenditure can positively and significantly boost the economy of South Africa. The government can rely on government social spending to progress the economy but also needs to focus on other economic fundamentals to raise economic well-being.

This paper seeks to provide further insight into the role of government social expenditure components (health, education and social protection) in enhancing economic growth. Although there have been several studies conducted on the link between aggregate government spending and the national output, there are few empirical studies that look at the role of different elements of government social spending on economic growth. The direction of the causation done by other studies has been uncertain and biased to aggregate expenditure. Therefore, it has been very unclear whether the increase in public expenditure is good or bad for the economy. The lack of consensus on the results of the previous empirical findings has led this study to address these gaps in the existing literature by specifically examining one of the components of government expenditure. This study is crucial and significant to

South African economic growth as it assists the policymakers with a sense of direction in terms of fiscal planning and implementation to boost the economy. A clear idea will be revealed on how individual components of government social spending influence economic growth by focusing on the effects of health, education and social protection on growth in the long run.

A priori, it is expected in this study that the increase of components of government social expenditure; namely education, health and social protection expenditure is likely to significantly influence the growth of the economy positively. The expectation is based on the view of the Keynesian theory which claims that government spending is positively correlated with economic growth. Moreover, studies by Gumede, et al. (2020) and Jerono (2009) extend by proposing that economic growth is dependent on or is a function of all components of government spending which includes government social expenditure. Unlike, Gumede (2019) this study made use of the Vector Correction Mechanism (VECM) presented by Johansen (1995).

2.4. Conclusion

This chapter presented a comprehensive review of the existing theoretical and empirical literature on the relationship between government spending and economic growth. The review showed that the impact of government spending on economic growth can be positive or negative. Thus, the relationship between government spending and economic growth is far from clear. The empirical studies either support the Keynesian hypothesis or Wagner's law. In the case of South Africa, the studies

supported Wagner's law, which implies that government spending has no significant effect on economic growth. Building on this literature, this study re-examines the relationship between different components of government social expenditure and economic growth in South Africa.

Chapter 3

Methodology

3.1. Introduction

This chapter presented the methodological approaches that were employed to achieve the objectives of the thesis. First, the methodology provided a brief description of the research design, the data and the analytical approaches employed in this study. The methodology section also covered the ethical considerations for this study.

3.2. Research Design

The study adopted a longitudinal research design utilised time-series data collected from the South African Reserve Bank (SARB). A longitudinal design involves the collection of data from the same subjects or units over an extended period of time to examine changes or trends. The data collected allows this study to observe trends and patterns over the course of the time series as it was collected at multiple points in time.

The data collected by SARB was publicly available on their website and contained key macroeconomic variables that were necessary for addressing the objectives of this study. As a result, the study did not have a research instrument as secondary data was utilised. The secondary data collected for the study was quantitative. Time series data used in this study made it possible to analyse the changes and developments in government social spending and economic growth over time.

As explained above, this study's objective was to examine the impact of government social spending on economic growth. To address this objective, the study employed time-series econometric modelling techniques, among them, the vector regression

analysis model and Granger causality. In these models, the real gross domestic product growth rate was used as a proxy of economic growth and acted as the dependent variable, while elements of government social expenditure, namely, health, education and social protection expenditure were used as the main independent variables.

3.3. Data Collection

The study utilised secondary data obtained from the South African Reserve Bank (SARB) (SARB, 2023). Thus, secondary quantitative data was used in this study. From the collected data, the real gross domestic product growth rate was used as a proxy of economic growth and is the dependent variable. Looking at social expenditure – both in aggregate and disaggregate forms, encompassing health, education and social protection. These indicators were examined as percentages of GDP and constituted the independent variables under scrutiny within the study's analytical framework.

3.3.1 Sampling Strategy

The data collected for this study covered the period 1985 to 2019 before the Covid-19 effects. The data included real Gross Domestic Product growth rate, which was used as a proxy of economic growth and elements of government social expenditure, namely, health, education and social protection expenditure.

3.3.2 Model Specification

The main aim of this study was to examine the relationship between government social expenditure and economic growth. For this study, both aggregate government social expenditure and disaggregated government expenditure (health, education, and social protection) were employed to empirically quantify the long-run and short-run impacts

on economic growth in South Africa. The study made use of the Vector Correction Mechanism (VECM) developed by Johansen (1995) over the Ordinary Least Square (OLS) and ARDL models. This was because, unlike the OLS method which can be sensitive to the choice of starting values and not readily applicable to censored data, the VECM model comprised multiple time series and very useful tool for forecasting. Moreover, this study opted for using the VECM method over the ARDL model because ARDL does not show the long-run relationship among variables, while VECM displayed both the long-run and short-run relationship among the variables. The econometric model was specified as follows:

$$GDP_t = f(\,GHE, GEE, GSPE, GFCF, GE) \qquad (1)$$

where: GDP: is the real Gross Domestic Product growth rate, GHE: is the government health expenditure, GEE: is the government educational expenditure, GSPE: is the government social protection expenditure, GFCF: is gross fixed capital formation, GE: is aggregate government expenditure, GHE, GEE, and GSPE are explanatory variables.

This study used the growth rate of real gross domestic product to measure the economic growth of South Africa. Moreover, all independent variables which are namely; government health expenditure, government educational expenditure, government social protection, aggregate government expenditure and gross fixed capital formation are calculated as a percentage of real GDP at market price. To assess the impact of government social expenditure this study used government health expenditure, government educational expenditure, and government social

protection as explanatory variables. Meanwhile, the control variable was gross fixed capital formation.

The regression analysis in Equation 1 can be written using the stochastic model of the VAR Framework. The econometric model estimated in this study was adopted from studies by Iwegbunam (2017) and Nhlangwini and Tleane (2019).

Following the VAR framework procedure in the regression analysis, this study used the multivariate cointegration methodology, where t =1985, 1986, …….. 2019 and it is specified as follows:

$$GDP_t = \beta_0 + \beta_1 GHE_t + \beta_2 GEE_t + \beta_3 GSPE_t + \beta_4 GFCF_t + \beta_5 GE_t + \mu_t \quad (2)$$

Following the VAR framework procedure in the regression analysis, this study used the multivariate cointegration methodology, where t =1985,1986, 2022 and it is specified as follows:

$$GDP_t = \beta_0 + \beta_1 GHE_t + \beta_2 GEE_t + \beta_3 GSPE_t + \beta_4 GFCF_t + \beta_5 GE_t + \mu_t \quad (3)$$

Following the multivariate cointegration methodology in the regression analysis, Equation 3 is converted into VEC form and it is specified as follows:

$$GDP_t = \beta_0 + \beta_1 \Delta GHE_{t-1} + \beta_2 \Delta GEE_{t-1} + \beta_3 \Delta GSPE_{t-1} + \beta_4 \Delta GFCF_{t-1} + \beta_5 \Delta GE_{t-1} + \xi_{t-1} + \mu_t \quad (4)$$

Where Δ denotes the different operatives, andξ_{t-1} represents the significance of the error term. $\xi_{t-1}$is used to apprehend the dynamics in the short run.

3.4. Regression Analysis Techniques

This study used time series data, to array the fears associated with the non-random disposition of the series which could undermine the use of econometric tests such as

F and t-tests (Muthui et al.,2013). This study, therefore conducted stationarity and co-integration tests to mitigate such situations

3.4.1. Granger Causality test

On a further note, this study also analysed the direction of causality between the different components of government social expenditure and economic growth using the Pairwise Granger Causality (PGC) test. The PGC test assisted the study in assessing whether there was unidirectional, bidirectional or no causation between the variables in question. The following hypothesis used in the PGC test was specified as follows:

$$H_0: x_t \; does \; not \; granger \; cause \; y_t;$$

$$H_1: x_t \; does \; granger \; cause \; y_t$$

3.4.2. Variance decomposition

A variance decomposition test can be introduced in a model to understand the rate at which each variable reacts to the volatility in both structural components with more than one variable and sole components. Moreover, the variance decomposition test is employed in the VAR framework to reveal the evidence of the significance of each random shock to the variables.

3.4.3. Generalised Impulse Response Function

Using the impulse response functions is very useful when studying the interactions between government social expenditure and economic growth using a vector autoregressive model.

The impulse Response Function (IRF) technique was introduced by Sims (1980) to the VAR modelling to trace out the response of the dependent variable in the VAR system to shocks in the error terms. The author argued that there are often challenges with the homogeneity assumptions for some variables in classical simultaneous equation models that require the IRF technique to interpret. In other words, the IRF technique was introduced as a tool for interpreting the relationship between variables in VAR models as it is difficult to see directly from the parameter matrices.

Nevertheless, studies by Persaran and Shin (1998) spotted some omissions in the IRF technique and developed a revised technique called the Generalised Impulse Response Function (GIRF). The GIRF technique was encouraged over the IRF technique because it does not need the orthogonalizing of shocks. The GIRF technique supplies relevant outcomes as the response impulse of the variables is the same as the sequences of the VAR. Hence, this study made use of the GIRF technique to trace the time path of the variables in numerous shocks.

This study used time series data, to array the fears associated with the non-random disposition of the series which could undermine the use of econometric tests such as F and t-tests (Muthui et al.,2013). This study, therefore conducted stationarity and co-integration tests to mitigate such situations

3.4.4. Johansen Cointegration

To understand the long-run relationship between economic growth and government social expenditure this study used the cointegration analysis. The cointegration model posits that cointegration exists when two integrated variables exhibit stationarity and

share a common stochastic trend. Two well-established methods are commonly employed to assess this long-term correlation: the Engel-Granger two-step approach and the Johansen Maximum Likelihood Estimation (MLE) procedure. In this investigation, we chose to utilise the Johansen Maximum Likelihood Estimation technique due to its capability to assess the speed of adjustment parameters and identify multiple cointegrating vectors, thus enhancing the depth of our analysis.

The main aim of this cointegration analysis is not only to separate the long-run causality and the short-run relationship among variables but also to use it to improve the accuracy of the long-run forecast. To determine the number of cointegration vectors, this procedure employed two tests. The two tests were namely the Trace test and the Maximum eigenvalue statistic test.

Trace test and Maximum eigenvalue statistic tests are specified as follows:

$$\lambda_{trace}(r) = -T\sum_{i=r+1}^{n} \ln(1-\widehat{\lambda_i}) \quad (5)$$

$$\lambda_{max}(r, r+1) = -Tln(1-\widehat{\lambda_{r+1}}) \quad (6)$$

Equation 5 displayed the trace test meanwhile, equation 6 represented the maximum eigenvalue statistic test. Where r is denoted as the number of the cointegrating vectors, T displayed the number of observations and ith represents the primary canonical correlation.

Following the cointegration test using the Trace test and Maximum eigenvalue statistic test of Johansen and Juselius (1988), the VECM model was employed. This model is only used when the variables are integrated in the first order of integration. When analysing two series that are cointegrated of the same order of integration, it is vital to employ the Vector Error Correctional Model (VECM) as it is a multiple equation model

and creates room for variables to develop jointly over time. Therefore, the VECM approach was specified as follows:

$$\Delta Y_t = \mu + \Gamma \Delta Y_{t-1} + \cdots + \Gamma_{k-1} \Delta Y_{t-k+1} - \Pi \Delta\, Y_{t-1} + \mu_t \qquad (7)$$

The VECM model was represented by Equation 7. The estimated parameters were denoted as Γ, meanwhile, the Vector Impulses were represented by μ_t and Δ displayed the difference operative. Vector Impulses were an important part of the VECM model as they represented the unforeseen measure in the K vector of the non-stationary variables.

3.5. Diagnostic Tests

In every empirical study, the validity and robustness of the estimated model need to be assessed. In this study, diagnostic tests and stability tests were carried out using both serial correlation tests and normality tests. Both diagnostic tests and stability tests were important techniques to this study as they assisted in avoiding the problems associated with the correlated residuals and goodness of fit for the estimated model.

3.5.1. Testing for Stationarity

The first step in the time series analysis is to check whether the data obtained is stationary or not. To test for stationarity/unit root, the paper made use of the Augmented Dickey-Fuller unit root test of Dickey and Fuller (1979). The Augmented Dickey-Fuller (ADF) unit root technique is utilised to determine whether the series is

stationary or non-stationary and the order of integration. Using the null hypothesis implies that a variable has a unit root, and the alternative hypothesis implies that a variable does not have a unit root, the null hypothesis will either be accepted or rejected.

3.5.2. Lag Length Selection

To perform the Johansen Cointegration test for time series you need to decide the lag you want to use first. This study made use of the Final Prediction (FPE) and Akaike Information Criterion (AIC) to determine the suitable lag order for cointegration tests. FPE and AIC are widely accepted criteria for lag length selection in time series analysis because they balance the trade-off between model fit and model complexity, helping researchers choose a lag length that is both statistically meaningful and interpretable. In the specific context of investigating the impact of government social expenditure on economic growth in South Africa, these criteria can guide the selection of an appropriate lag length for subsequent cointegration tests and model estimation.

3.5.3. Normality test

One of the assumptions of the Classical Linear Regression Model claims that the validity and the robustness of the estimated model exist when residuals are normally distributed. In other words, to confirm the normality of the residuals, the mean is supposed to be zero and the variance constant. The study employed the Jarque-Bera test to identify if there were any misspecification problems by assessing the normality of the residuals. To analyse the normality of the residuals the hypothesis used in the Jarque-Bera test was specified as follows:

$$H_0: jointly\ the\ error\ terms\ are\ normally\ distributed;$$

$$H_1: jointly\ the\ error\ terms\ are\ not\ normally\ distributed;$$

The null hypothesis (H_0) can either be rejected or accepted at a 5% level of significance.

3.5.4. Serial Correlation Test

In testing the presence of autocorrelation, econometric models make use of L Jung-Box tests, the Durbin-Watson technique and the Breusch-Godfrey LM technique. However, the Breusch-Godfrey LM technique is considered to be more general than the others as it does not have any restrictions (Iwegbunam, 2017). The technique is chosen by many studies to test for serial correlation because it not only assesses the higher orders of serial correlation but also offers convincing results. As a result, this study opted for the Breusch-Godfrey LM test to test for serial correlation. The test was applied using the following hypothesis:

$$H_0 = p_1 = p_2 = \cdots .. = p_p = 0 \quad \therefore\ no\ autocorrelation;$$

$$H_\alpha = at\ least\ one\ of\ the\ \rho\ is\ not\ zero, \therefore\ serial\ correlation$$

This means that the null hypothesis is rejected if the p-value is found to be less than the level of significance.

3.6. Variance Inflation Factor (VIF)

All explanatory variables that will be used in this study are calculated as a percentage of GDP. Therefore, there is a high chance of multicollinearity. Using variance inflation factor (VIF) this study tested for multicollinearity problems to avoid biased results.

3.7. Ethical consideration

This study utilised publicly available secondary data collected from the South African Reserve Bank (SARB) website. Since the study did not require participants or respondents to take part, there were no ethical concerns to be addressed. The use of secondary data that was already publicly available on the SARB website was considered non-invasive and low-risk, making it a reliable and suitable source for collecting information to complete the primary and secondary objectives of the study.

3.8. Conclusion

The purpose of this chapter was to explain the techniques, data and variables that were employed in the study to understand the relationship between government social expenditure and economic growth in South Africa. To investigate the long-run and the short-run association between economic growth and government social expenditure, this study employed the VECM model. The steps of the estimation techniques involved in the chosen model to explain the relationships of the variables were disclosed. The results of the estimation techniques explained in this chapter were presented and interpreted in Chapter 4.

Chapter 4

Analysis of empirical findings

4.1. Introduction

This chapter presents the empirical findings of the estimations measuring the effects of government social expenditure on economic growth in South Africa. The stages of the estimation include unit root testing, cointegration test, vector error correction mechanism (VECM), long-run estimate, Granger causality test, and diagnostic tests which include the variance decomposition test to validate other tests in the study. This study makes use of VECM model techniques to measure both the long-run and short-run relationship between government social expenditure (education, health, and social protection) and economic growth.

4.2. Estimates of the VECM modelling

4.2.1. Unit Root Formal Inspection of Variables

To avoid problems associated with spurious regression, this study needs to assess the properties of the time-series data for modelling data to be established. The findings of the stationarity test are discussed in this section to establish the stability of mean and variance.

This study makes use of the Augmented Dickey-Fuller (ADF) test to determine the order of integration. Table 4.1 below parades the stationarity test carried out using the model that includes an intercept and a trend at first difference. Other concepts which include intercept only and none were assessed and found to be integrated at first difference. However, looking at other models which include intercept only and none, the growth rate of real GDP used as an instrument to measure economic growth was found to be integrated at order 0 meanwhile other variables were only integrated at

first difference. As a result, this led this study to convert the variables into the first difference, as the GDP growth rate was found to be integrated at the first difference using the model that includes an intercept and a trend.

Table 4.1: Results of Stationarity test at first different ADF

Variables	Test	T-statistic at intercept	P-value	Results
GDP growth rate	ADF	*(5.604***)*	*0.0003*	**I (1)**
AGE	ADF	*(6.054***)*	*0.0001*	**I (1)**
GEE	ADF	*(5.6197***)*	*0.0003*	**I (1)**
GHE	ADF	*(5.579**)*	*0.0004*	**I (1)**
GSE	ADF	*(4.4146***)*	*0.0073*	**I (1)**
GFCF	ADF	*(4.0775**)*	*0.0155*	**I (1)**

Notes: Asterisks ***, ** represent the statistical level of significance at 1% and 5%. where: GDP: is the real Gross Domestic Product growth rate, GHE: is the government health expenditure, GEE: is the government educational expenditure, GSPE: is the government social protection expenditure, GFCF: is gross fixed capital formation, AGE: is aggregate government expenditure, GHE, GEE, and GSCF are explanatory variables.

The Augmented Dickey-Fuller test shows that all variables which include aggregate government expenditure, government educational expenditure, government health expenditure, government social protection expenditure and the overall gross fixed capital formation were integrated in the same order which is the first difference. In other words, all variables are stationary at a 5% level of significance. Henceforth, this allows this study to determine further both the short-run and the long-run cointegration relationship.

4.2.2. Lag Length Selection

It is vital that when estimating a VAR model first select criteria of Lag Length to obtain accurate outputs and avoid misspecification of estimated models. As a result, this leads this study to test for cointegration in the long run. Table 4.2 displays the lag length selection criterion outputs.

The findings of the VAR Lag Order Selection Criteria by Final prediction error test, sequential modified LR test statistic, Akaike information criterion, Schwarz information criterion and Hannan-Quinn information criterion shown in Table 4.2 indicate that both lag 1 and lag 2 were selected. Nevertheless, since lag 2 was selected by most of the criterion tests which includes the LR, FPE, AIC and HQ tests, this study considers lag 2 to be the best lag selected to assess the long-run equilibrium relationship between variables under study.

Table 4.2: VAR Lag Order Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-336.7988	NA	42.45888	20.77569	21.04778	20.86724
1	-196.2923	221.4043	0.078390	14.44196	**16.34660***	15.08281
2	-143.8500	**63.56644***	**0.036457***	**13.44545***	16.98265	**14.63561***

Notes: * indicates lag order selected by the criterion, LR: sequential modified LR test statistic (each test at 5% level), FPE: Final prediction error, AIC: Akaike information criterion, SC: Schwarz information criterion, HQ: Hannan-Quinn information criterion.

4.2.3. Johansen Cointegration Test

This section assesses the possible cointegration relationships between the real GDP growth rate and the government social expenditure components (aggregate government expenditure, government educational expenditure, government health expenditure, government social protection expenditure and the overall gross fixed capital formation) using Johansen methodology. Table 4.3, shows results of both the

Trace Test and the Maximum Eigenvalue Test using unrestricted cointegration rank tests.

Table 4.3: Johansen Cointegration Test

Trace test				**Maximum Eigenvalue test**			
Hypothesized No. of CE(s)	**Trace statistics**	**0.05 Critical Value**	**P-value***	**Hypothesized No. of CE(s)**	**Max statistics**	**0.05 Critical Value**	**P-value***
r = 0	232.2750	95.753	0.0000	r = 0	92.11139*	40.077	0.0000
r = 1	140.1636*	69.818	0.0000	r = 1	62.79624*	33.876	0.0000
r = 2	77.36735*	47.856	0.0000	r = 2	37.46416*	27.584	0.0020
r = 3	39.90318*	29.797	0.0025	r = 3	24.90308*	21.131	0.0140
r = 4	15.00010	15.494	0.0592	r = 4	14.62230*	14.264	0.0439
r = 5	0.377799	3.8414	0.5388	r = 5	0.377799	3.8414	0.5388

Notes: Trace test indicates 4 cointegrating equation(s) at the 0.05 level.
*denotes rejection of the hypothesis at 0.05 level

Notes: Max-eigenvalue test indicates 5 cointegrating equation(s) at the 0.05 level
*denotes rejection of the hypothesis at 0.05 level

Table 4.3 shows the results of the possible cointegrating variables using both the Trace and Maximum Eigenvalue tests. Trace tests display that there are at least four cointegrating variables meanwhile the Maximum Eigenvalue test shows that at least 5 variables are cointegrating at a 5% level of significance. Based on the findings of both tests, the results prove that the real GDP growth rate cointegrates with the variables of government social expenditure at a 5% level of significance. As a result, this thesis will carry on in estimating the long-run and short-run relationship among variables.

4.2.4. Long-run and short-run VECM estimates findings

The Maximum Eigen Test under the Johansen method proves the existence of at least 4 cointegrations among variables. The next step is to determine the long-run and short-run equilibrium effects of government expenditure on real GDP through the estimation of a correction model. The results of both long and short-run coefficients are shown in the VECM results.

Table 4.4 displays the approximation findings of a vector error correction model in the long run. The results indicate that in the long run total government expenditure positively influences economic growth at a 5% level of significance. D(AGE(-1)): This represents the lagged difference of the "AGE" variable at time t-1. Results show a coefficient of 0.577, Standard Error of 0.039 and t-statistic of 14.952 for the variable AGE. That is to say, if other variables were constant, a 1% increase in AGE leads to a 0.58% increase in real GDP (the growth of the economy). The t-statistics show that the results of the aggregate government expenditure coefficient are statistically significant. Moreover, the reaction of the economic growth towards government expenditure was expected as it supports the Keynesian theory. The Keynesian theory states that when there is an increase in government expenditure, consumer spending tends and ultimately increases economic growth through multiplier effects.

The coefficient of government social protection indicates a positive effect on economic growth. In other words, a 1% increase in government social protection will increase the GDP growth rate by 0.36%, *ceteris paribus*. The findings indicate that when the government concentrates more on spending on vulnerable individuals, groups, and communities through the distribution of social grants and welfare services, poverty and inequality might be reduced. In addition, with women and youth empowered this may

lead to economic growth. Moreover, the results might imply that government social protection services enable vulnerable groups to become capable and active participants in the development of themselves and the economy.

On a further note, the long-run findings displayed in Table 4.4 suggest that the coefficient of gross fixed capital formation constructively and significantly influences the increase of economic growth. That means if all variables are constant, a 1% increase in gross fixed capital formation enhances the GDP growth rate by 0.31% and this finding is statistically significant based on its t-value. The finding indicates that when the government concentrate more on productive expenditure such as the promotion of infrastructure development and technology advancements such as plant, machinery and equipment stimulates the performance of economic growth.

On the other hand, the results of government health expenditure were not expected. The coefficient of government health expenditure shows a negative influence on the real gross domestic product. That is, keeping other variables constant, a 1% increase in government health spending leads to a decrease in GDP growth rate by 1.57%. The results indicate that increased government spending on health does not stimulate economic growth. It could be due to several factors, such as inefficiencies in health spending or crowding out of private health sector investment. Further investigation would be needed to understand the underlying reasons for this unexpected negative relationship between government health expenditure and GDP growth.

Overall, the coefficient of government education expenditure on economic growth is statistically insignificant. This shows that the funds that are allocated by the government to education expenses have not been causing any significant changes to the economic growth of South Africa in the long run.

Table 4.4: Long-run results: GDP

Variable(s)	Coefficient	Standard Errors	t-statistics
D (AGE (-1))	*0.577*	*0.039*	*14.952*
D (GEE (-1))	*-0.009*	*0.071*	*-0.135*
D (GHE (-1))	*-1.571*	*0.136*	*-11.54*
D (GSE (-1))	*0.357*	*0.038*	*9.418*
D (GFCF (-1))	*0.311*	*0.051*	*6.082*

Notes: where: GDP: is the real Gross Domestic Product growth rate, GHE: is the government health expenditure, GEE: is the government educational expenditure, GSPE: is the government social protection expenditure, GFCF: is gross fixed capital formation, AGE: is aggregate government expenditure, GHE, GEE, and GSPE are explanatory variables.

Table 4.5 exhibits a significant error term coefficient for Real GDP growth rate is displayed in Table 4.5 of -1.15. This means 115% of the variation in economic growth is correlated within a year. In other words, the error term coefficient of real GDP is responsive to its covariates in the short run. This is indicated by its significance. That means that when the GDP growth rate oversteps its cointegrating relationship with components of government expenditure there is a downward readjustment of GDP to restore its long-run equilibrium.

Table 4.5: the speed of adjustment results

Variable(s)	Coefficient	Standard Errors	t-statistics
CointEq1	*-1.151*	*0.39*	*-2.949*
D (GDP (-1))	*1.155*	*0.422*	*2.737*
D (AGE (-1))	*1.239*	*0.392*	*3.160*
D (GEE (-1))	*-0.783*	*0.457*	*-1.714*
D (GHE (-1))	*1.839*	*0.835*	*2.202*
D (GSE (-1))	*0.291*	*0.287*	*1.018*
D (GFCF (-1))	*-0.592*	*0.396*	*-1.498*

Source: Author's calculations

Granger Causality Test/ The Block Exogeneity Wald Test

Considering the position of the association between GDP growth rate and components of the social government expenditure in South Africa, the Wald coefficient test is employed to test the hypothesis on parameters that have been estimated by maximum likelihood using the chi-square distribution. Table 4.6 below shows the results of the block homogeneity Wald Test. The Chi-square results in the test for the GDP growth rate model indicate that there is short-run causality running from aggregate government expenditure, government health expenditure and gross fixed capital formation. Moreover, the findings are statistically significant at a 10% level of significance. This implies that in the short run aggregate government expenditure, gross fixed capital formation and government health expenditure influence the performance of the economy. Nevertheless, the chi-square results of government social expenditure and government education expenditure were found to be insignificant in the short term.

Table 4.6: Block Exogeneity Wald Tests/ VEC Granger Causality

Dependent variable: D(GDP1)

Excluded	Chi-sq	Prob.
D(AGE1)	*10.89959*	*0.0043*
D(GEE1)	*4.465710*	*0.1072*
D(GFCF1)	*13.81649*	*0.0010*
D(GHE1)	*5.221493*	*0.0735*
D(GSE1)	*2.208536*	*0.3315*
All	*31.59384*	*0.0005*

Source: Author's calculations

4.2.5. The Discussion of the VAR Stability Analysis and Diagnostic Checks

It is valuable for the study to assess the credibility and the validity test of the cointegration result. Therefore, an inspection check of serial correlation, the stability test and multicollinearity is done to avoid the misspecification of models and results.

Serial Correlation Test Results

Serial correlation is one of the problems faced by researchers when using time series data as it leads to biased results. In other words, the presence of serial correlation indicates that the models assessed have different types of errors which include the omission of important variables, or the underestimation of standard errors and overestimation of t-statistics value. This study makes use of the LM Breusch-Godfrey correlation test to check the presence of serial correlation in the model. Table 4.7 displays the findings of the Serial Correlation LM test. The Null hypothesis of the Breusch-Godfrey correlation LM test shows the absence of serial correlation lag h. The results fail to reject the null hypothesis since the p-value of 1 lag is not statistically significant at a 5% level of significance.

Table 4.7: VEC Residual Serial Correlation LM Tests

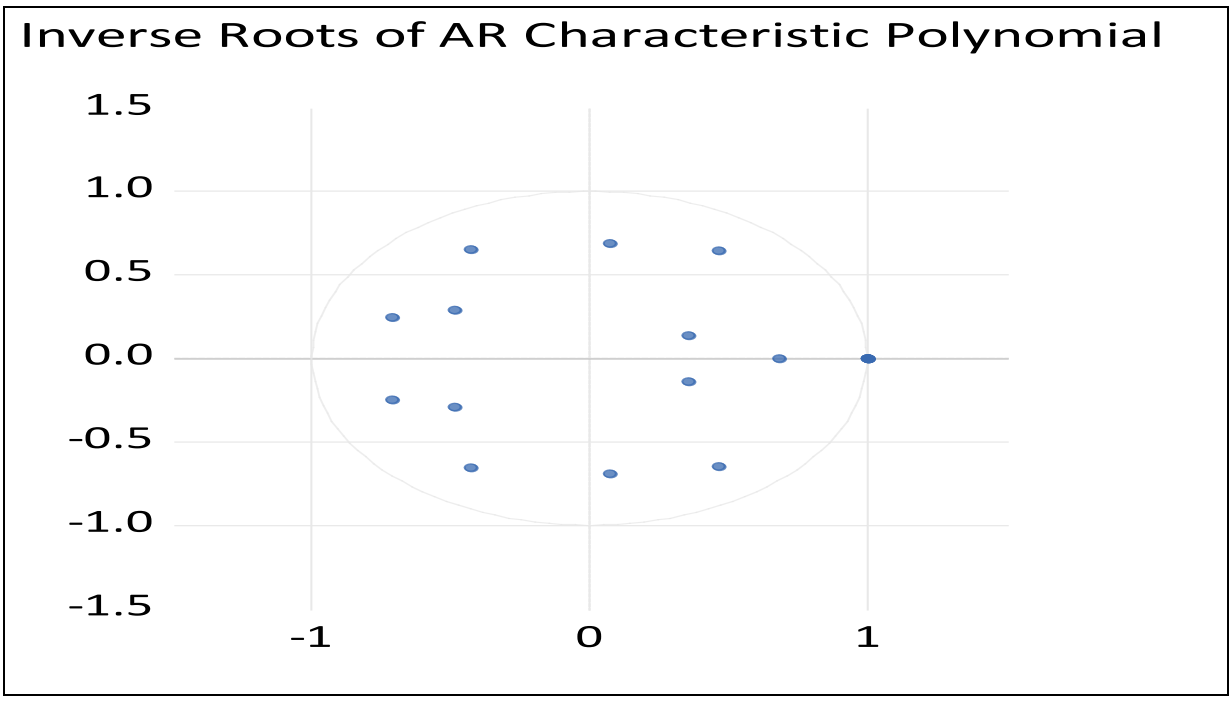
Lag	LRE* stat	Df	Prob.	Rao F-stat	Df	Prob.
1	35.98379	36	0.4694	0.967019	(36, 33.5)	0.5407

Source: Author's calculations

The Stability Test Results

On a further note, another problem that can be faced in this study by using time series models is associated with unstable inverse roots of AR polynomials which are likely to give biased results. Therefore, this study needs to evaluate the stability of the model. It is assumed that the model is good and stable when inverse roots of AR characteristics fall within the unit circle. Figure 4.1 exhibits the inverse roots in a unit circle. All inverse roots of the AR polynomial fall within the unit circle (check Figure 4.1). Therefore, this implies that this model is good and stable.

Figure 4.1: Inverse Roots of AR Characteristic Polynomial



Source: Author's calculations

4.2.6. Variance Inflation Factor (VIF)

Another challenge faced by many researchers is multicollinearity as it undermines the statistical significance of an independent variable. Using VIF, the study tested for multicollinearity problem between the dependent variable with the independent variables. The variance was found to be higher above 50%, therefore, there was no multicollinearity between the independent variables.

4.2.7. Variance Decomposition

On a further note, the level of causal effect between the components of government social expenditure and economic growth is assessed using variance decomposition. The variance decomposition test demonstrates how each of the variables contributes to the other variables in the autoregression. Moreover, in the case of this study, it will assist in determining how much of the forecast error variance (GDP growth rate and components of social expenditure) can be explained by exogenous shocks to the other variables. Table 4.8 displays the results of the variance decomposition for 10 periods in which one to five periods are assumed to be in the short-run and six to ten periods are assumed to be in the long-run period. The Variance Decomposition of the GDP growth rate shows that economic growth responds to its shock in the short term. This is indicated from the first period where its shocks caused a 100-cent fluctuation in the first period to 56.72% in the fifth period. However, in the long term, the findings show that the response of the economic growth rate to its shocks starts declining.

Table 4.8 Variance Decomposition Findings

Variance Decomposition of GDP1:							
Period	S.E.	GDP1	AGE1	GEE1	GFCF1	GHE1	GSE1
1	1.252899	100.0000	0.000000	0.000000	0.000000	0.000000	0.000000
2	2.033315	70.71388	1.638134	0.052711	22.40411	4.920889	0.270283
3	2.201484	62.57959	4.574768	4.837858	21.23723	5.527729	1.242826
4	2.236392	60.87073	4.516745	4.733114	22.68516	5.662373	1.531884
5	2.333591	56.72409	4.262732	7.344581	24.97321	5.232407	1.462985
6	2.438683	52.00573	5.706919	9.270555	26.84283	4.805795	1.368174
7	2.542171	48.79164	7.043858	9.074735	29.22091	4.598738	1.270117
8	2.628792	47.44347	7.679676	8.654351	30.21384	4.627381	1.381285
9	2.700556	46.03063	8.220196	8.201548	31.38707	4.811701	1.348851
10	2.768190	44.22714	8.709436	8.007620	32.93551	4.825162	1.295139

Source: Author's calculations

On the other hand, Table 4.8 shows an upsurge in response to economic growth to the gross fixed capital formation shocks (32.94% in period 10). The shocks of aggregate government expenditure and government education expenditure to GDP growth rate are seen to be slowly increasing together with the periods. The results also show that in the short-run the response of economic growth to government health expenditure shocks increases but later declines in the long-run. These results imply that a larger proportion of variation in economic growth is mainly contributed but its shock in the short-run. However, aggregate government expenditure, government education expenditure and gross fixed capital formation shocks were also found to be contributing to the change in economic growth.

Generalised Impulse Response Function

Finally, the study used a generalised impulse response function to track the time area of how the GDP growth rate responds to the shocks of the components of government social expenditure. Figure 4.2 displays the generalised imposed response function table.

The response of the GDP growth rate to its shocks shows a positive display throughout the end of the forecast. On a further note, the response of the GDP growth rate to aggregate government expenditure shocks starts negatively then after 3 years strengthens. However, GDP weakens after 4 years and remains negative. Moving further, Figure 4.2 displays a negative response of GDP to government education expenditure first periods then starts to intensify positively after 4 years and drops again after 7 years. The shocks of government social protection and health expenditure, both imply a positive display to GDP then later decline in the middle of the periods and escalate towards the end of the forecast. Last, GDP growth rates react positively to the shocks of gross capital formation in the first period then drop towards the second period and maintain being negative.

Figure 4.2: Generalized Impulse Response Function Table

Source: Author's calculation

4.3. Conclusion

The empirical findings of the regression model under VECM were revealed in this chapter. The assessment was carried out to respond to the main aim of the study which was to examine the significance of government social expenditure on the performance of economic growth in South Africa. The study adopted the VECM model using the time series data that ranged from 1985 to 2019.

The empirical results obtained in this chapter indicate that aggregate government expenditure, social protection expenditure and gross fixed capital formation have positive significant effects on economic growth. The negative results of government health expenditure and the insignificant results of government educational expenditure are not expected since both educational and health expenditure are traditionally viewed as integral components of human capital investment, recognised for their positive contributions to economic growth and development. Even though health and education spending are generally considered productive for economic growth, if the funds are mismanaged, misdirected, or not utilised in a way that directly benefits the economy, this may not yield the expected positive outcomes. Nevertheless, the coefficient of government educational expenditure was found to be statistically insignificant. The insignificance of government educational expenditure suggests a potential need for targeted reforms or enhanced efficiency in the educational sector to align it more closely with economic growth objectives.

Chapter 5

Summary, conclusion and policy implications

5.1. Introduction

This chapter concludes the study by drawing up a summary of the major findings of the study, presenting possible policy recommendations and suggesting further areas for further research. Section 5.2 contains the major findings of the study, while section 5.3 presents policy recommendations and last, 5.4 discusses the limitations of the study and areas for further research suggestions.

5.2. The major findings of the study

The main purpose of this study was to analyse the impact of government social expenditure on economic growth in South Africa. The study investigated this relationship for the period 1985 to 2019 before the Covid-19 effects. The existing literature on this topic mainly focuses on the association between economic growth and aggregate government expenditure, and few studies have focused attention on the different components of government social expenditure on economic performance. In aiming to assess the impact of government social expenditure on economic growth, this study contributes to the development of evidence-based policies and strategies that promote socio-economic development and sustainable growth in South Africa.

Real GDP annual percentage change was used as the dependent variable. Meanwhile, government social protection, government educational expenditure and government health expenditure were used as explanatory variables. The study also added a control variable, namely gross fixed capital formation. Primarily, to establish the impact of government social expenditure on economic growth the study adopted

the VECM regression method. Using the VECM method both the long-run and short-run nature of the causation was assessed.

Total government expenditure was found to influence economic growth positively. The findings were found to be in support of the Keynesian theory which claims that when the government focuses on increasing its spending through the multiplier effect economic growth tends to increase. Moreover, the empirical findings revealed that government social protection expenditure in the long run positively and significantly influences economic growth in South Africa. This demonstrated that the efficiency of government programmes and social protection services enabled vulnerable groups to become capable and active participants in the development of themselves and the economy.

On a further note, another variable which was found to contribute to the advancement of the economy was gross fixed capital formation. In other words, when the government focuses more on promoting infrastructure development and technological advancement such as machinery and equipment, economic growth is stimulated.

On the other hand, the findings of government health expenditure and educational expenditure were not expected. The coefficient of government health expenditure depicted that health expenditure contributes negatively to economic growth. Meanwhile, the coefficient of educational expenditure was not statistically significant.

The adverse and significant effect of government health expenditure on economic growth warrants careful consideration. It is essential to ensure the health and well-being of the population; the findings suggest a need for a more efficient allocation of health resources or a revaluation of health expenditure policies. The insignificance of government educational expenditure suggests a potential need for targeted reforms

or enhanced efficiency in the educational sector to align it more closely with economic growth objectives. Moreover, health expenditure and educational expenditure are considered to be components of human capital. Human capital entails the level of knowledge, skills, and health that people invest to accumulate their livelihood. Investing in human capital such as health and nutrition enables the government to promote the citizens' realisation of their potential as productive members of society.

Moving to the effects of government social expenditure on economic growth in the short run, the findings of the estimated model revealed that the adjustment of the real GDP growth rate to restore long-run equilibrium is statistically significant at 115 % per annum. This means 115% of the variation in economic growth is correlated within a year. The results disclosed that there is a downward readjustment of GDP to restore its long-run equilibrium when the GDP growth rate oversteps its cointegrating relationship with components of government expenditure. The validity of the cointegration results was assessed through an inspection check of serial correlation and the stability test was done in this study to avoid the misspecification of results. The model was found stable with no serial correlation.

The study went on to assess short-run causation between economic growth and the components of government social expenditure using the Wald coefficient test. The Wald coefficient test was employed in this study to test hypotheses on parameters that have been estimated by maximum likelihood using the chi-square distribution. The Chi-square results of the block homogeneity Wald Test revealed the presence of a short-run relationship running from aggregate government expenditure, gross fixed capital formation and government health expenditure with economic growth.

Nevertheless, the chi-square results of government social expenditure and government education expenditure were found to be insignificant in the short term.

Finally, the study assessed the reaction of economic growth to the shocks of the components of government social expenditure using Variance Decomposition. The assessment was done to investigate in detail how changes in real GDP growth rate can be explained by its exogenous shocks and independent variables in the Vector Error Correctional Model. Using 10 periods which were subdivided into short-run in the first five periods and long-run in the last periods, the findings of the Variance Decomposition tests indicated that the changes in real GDP in the first period (short term) are explained by itself. However, the findings revealed that as time passes by in the long term; gross fixed capital formation, aggregate government expenditure and government education expenditure shocks were also found to be contributing to the inconsistencies in economic growth.

Based on these findings, this study suggests the need for a more efficient allocation of health and educational resources or a revaluation of health expenditure and educational policies, as their coefficients in the findings showed a significantly negative effect on health expenditure and an insignificant effect on educational expenditure. This is because when the government efficiently make use of its social spending by effectively investing in people by giving them quality education, health care, nutrition, jobs, and skills to help develop human capital, extreme poverty levels are reduced and ultimately economic growth is enhanced. The empirical findings of this study correspond with the Keynesian theory and other empirical studies in developing economies, which encourages the government and policymakers to focus more on

promoting growth-stimulating expenses such as human capital expenses, infrastructure, and technological advancement.

5.3. Policy implications

Concerning the empirical findings presented in Chapter 4, as well as literature and theories explaining the link between government social expenditure and economic growth, it is evident that the South African economic growth rate continues to lag, despite the increasing government social expenditure. Unexpectedly, the results from the long-run estimates suggest that government health expenditure negatively impacts economic growth. This indicates there is a problem with the direction of the government's social expenditure, not its level. As a result, before the government of South Africa can embark on any form of social expenditure there is a need to conduct appropriate cost-benefit analysis.

On the other hand, the results of this study underscore the critical role of government social protection expenditure in fostering long-term economic growth in South Africa. Accordingly, the results suggest that the government should prioritise and potentially increase investments in social safety nets and welfare programs, given the positive impact of social protection expenditure on economic growth.

Moreover, this study recommends the government of South Africa concentrate more on redirecting its spending to improving human capital by improving the quality of educational and health systems. This is because when government invest its expenditure on evolving citizen’s human capital through promoting quality education, health care, training systems and improvement of nutrition, high unemployment and poverty levels being faced currently by the majority can be mitigated.

Looking at the long-run estimates and the variance decomposition findings, gross fixed capital formation was found to have a positive effect on economic growth and in the long-run its shocks largely contribute to the fluctuations of economic growth. Therefore, this study recommends the government focus more on growth-enhancing expenditures such as infrastructure, technological advancement, and machinery to efficiently increase economic growth.

5.4. Area for further research

The main aim of this study was to assess the impact of government social expenditure on economic growth. Nevertheless, due to the inconsistencies in time series data caused by the effects of COVID-19, the study was limited to looking at the effect of government social before the COVID-19 pandemic in South Africa. Further research recommended in this study would be to assess the impact of social expenditure before, during and after the effects of the COVID-19 pandemic. This will assist policymakers in assessing the effectiveness of government social expenditure during major economic downturns or recessions. Moreover, further studies should consider further disaggregating the expenditure into capital expenditure and consumption expenditure. This can help policymakers in investigating how these two expenditures influence economic growth in South Africa. Lastly, looking at the period of the data used in this study 1985 to 2019, there was a major economic event that occurred in 2008/2009, recognised as the global financial crisis. The financial crisis caused a major drop in many economies including South Africa. Therefore, a structural break is suspected during this period. While this study did not address the issue of structural break, which might arise due to the financial crisis, future studies are needed to consider this possibility.

References

Alexiou, C., 2007. Unravelling the ‘mystery’ between public expenditure and growth: empirical evidence from Greece. *International Journal of Economics,* pp. 21-31.

Angner, E. L., 2012. Philosophy of Economics. In: *Behavioural Economics.* s.l.:s.n., pp. 641-689.

Babalola, J. & Aminu, U., 2011. Fiscal Policy and Economic Growth Relationship in Nigeria. *International Journal of Business and Science. add volume and page numbers*

Babatunde, A. S., 2018. Government spending on infrastructure and economic growth in Nigeria. *Economic Research-Ekonomska Istraživanja,* 31(1), pp. 997-1014.

Boyne, A. G., 1998. *Public Choice Theory and Local Government.* London: Palgrave Macmillan.

Çakerri, L., Petanaj, M. & Muharremi, O., 2014. The effect of government expenditures on economic growth. The case of Albania. *European Journal of Social Sciences Education and Research,* 1(2). add pages

Chipaumire, G., Ngirande, H., Mangena, M. & Ruswa, Y., 2014. The impact of Government Spending on Economic Growth: Case South Africa. *Mediterranean Journal of Social Sciences,* 5(1), pp. 109-117.

Chirwa, T. & Odhiambo, N., 2016. What drives long-run economic growth? Empirical evidence from South Africa. *International Economics, add volume,* pp. 425-452.

Chu, T. T., Hölscher, J. & McCarthy, D., 2020. The impact of productive and non-productive government expenditure on economic growth: an empirical analysis in high-income versus low- to middle-income economies. *Empirical Economics,* Volume 58, p. 2403–2430.

Connollya, M. & Li, C., 2016. Government spending and economic growth in the OECD countries. *Journal of Economic Policy Reform. add volume and pages*

Gumede, R., 2019. The Nexus between Social Spending and Economic Growth in South Africa: A Cointegration Approach.

Gumede, T. R., Bulagi, B. & Gryling, L., 2020. The Nexus between Social Spending and Economic Growth in South Africa: A Cointegration Approach., *University of Zululand.*

Hasnul, A. G., 2015. The effects of government expenditure on economic growth: the case of Malaysia. *Munich Personal RePEc Archive.*

Hudea, O., 2012. Classical and Keynesian Thinking in Terms of Modelling. *Management and Administration International Journal,* Volume 92, pp. 91-108.

Hudea, O. S., 2014. *Classical, Neoclassical and New Classical Theories and Their Impact on Macroeconomic Modelling.* Prague, Czech Republic, Procedia Economics and Finance.

Iwegbunam, A. I., 2017. Government Expenditure and Economic Growth in South Africa: Causality and Cointegration Nexus. *University of South Africa Journal. add volume and pages*

Jahan, S., Mahmud, A. S. & Papageorgiou, C., 2014. What Is Keynesian? : The central tenet of this school of thought is that government intervention can stabilize the economy. *Finance and Development. add volume and pages*

Jooste, C., Liu, G. & Naraidoo, R., 2013. Analysing the effects of fiscal policy shocks in the South African economy. *Economic Modelling,* pp. 215-224.give full publication details of volume

Kamasa, K. & Ofori-Abebrese, G., 2015. Wagner or Keynes for Ghana ? Government Expenditure and Economic Growth Dynamics. A 'VAR' Approach *Journal of Reviews on Global Economics,* Volume 4, pp. 177-183.

Kamasa, K. & Ofori-Abebrese, G., 2015. Wagner or Keynes for Ghana? Government Expenditure and Economic Growth Dynamics. A 'VAR' Approach. *Journal of Reviews on Global Economics,* pp. 177-183.

Kanono, T. & Sello, L., 2016. : is this the title? *African Journal of Economic Review,* pp. 143-156.

Karim, M. R., 2015. Public Education Spending and Income Inequality. *International Journal of Social Science and Humanities,* 5(1), p. 75–79.

Keynes, M. J., 1936. *The General Theory of Employment, Interest, and Money.* s.l.:International Relations and Security Network.

Kurz, H., 2010. Technical Progress, Capital Accumulation and Income Distribution in Classical Economics: Adam Smith, David Ricardo and Karl Marx. *European Journal of the History of Economic Thought, add volume,* p. 1183–1222.

Lahirushan, K. & Gunasekara, S., 2015. The Impact of Government Expenditure on Economic Growth: A Study of Asian Countries. *International Journal of Social, Behavioral, Educational, Economic, Business and Industrial Engineering. add volume and pages*

Leshoro, T. L., 2017. An Empirical Analysis of Disaggregated Government Expenditure and Economic Growth in South Africa. *Unisa Economic Research Working Paper Series. number?*

Lupu, D., Petrisor, M., Bercu, A. & Tofan, M., 2018. The Impact of Public Expenditures on Economic Growth: A Case Study of Central and Eastern European Countries. Emerging Markets Finance and Trade*, Taylor and Francis Journals,* 54(3), pp. 552-570.

Magazzino, C., Giolli, L. & Mele, M., 2015. Wagner's Law and Peacock and Wiseman's Displacement Effect in European Union Countries: A Panel Data Study. *International Journal of Economics and Financial Issues,* 5(3), pp. 812-819.

Mcgrattan, E. & Ohanian, L., 2010. Does Neoclassical Theory Account for the Effects of Big Fiscal Shocks ? Evidence from World War II. *International Economic Review, volume number*. 509–532..

Mehdi, H. & Falahi, A., 2018. Economic growth and government size in developed European countries: A panel threshold approach. *Economic Analysis and Policy,* Volume 58, pp. 1-13.

Mitchell, D., 2005. The impact of Government spending on Economic Growth. Place of publication.*The Heritage Foundation,* Issue 1831.

Molefe, K. & Maredza, A., 2017. Budget Deficits and Economic Growth: A Vector Error Correction Modelling of South Africa. *Journal of Economics and Behavioral Studies,* 9(2).

Muyaba, A., 2016. *Public Spending and Economic Growth in Zambia an Econometric Analysis.* Cape Town: University of Cape Town.

National Treasury Republic of South Africa, 2021. *Budget 2021 Budget Review,* s.l.: s.n.

Nhlangwini, P. & Tleane, K., 2019. The Impact of Government Expenditure on Economic Growth in South Africa: A VECM Approach. *The 4th Annual International Conference on Public Administration and Development Alternatives.*

Nyahsa, S. & Odhiambo, N. M., 2019. The Impact of Public Expenditure on Economic Growth: A Review of International Literature. *Folia Oeconomica Stetinensia,* 19(2).add page numbers

Onifade, S., Erdogan, S., Asongu, S. & Bekun, V. F., 2020. An empirical retrospect of the impacts of government expenditures on economic growth: new evidence from the Nigerian economy. *Journal of Economics Structures. add volume and pages*

Peacock, A. & Wiseman, J., 1961. *The Growth of Public Expenditure in the United Kingdom.* London: Oxford University Press.

Shaddady, A., 2022. Is Government Spending an Important Factor in Economic Growth? Nonlinear Cubic Quantile Nexus from Eastern Europe and Central Asia (EECA). *Economies.*

Shafuda, C. P., 2015. An examination of the relationship between government spending and economic growth in Namibia. add a place of publication *University of Namibia.*

Solow, R., 1956. *A Contribution to the Theory of Economic Growth.* s.l.:*The Quarterly Journal of Economics.*

South African Reserve Bank, 2023. *South African Reserve Bank.* [Online]

Available at:https://www.resbank.co.za/en/home/what-we

do/statistics/releases/online-statistical-query

[Accessed 06 April 2023].

Udo, A. & Effiong, C., 2014. Economic Growth and Wagner's Hypothesis: The Nigerian Experience. *Journal of Economics and Sustainable Development,* 5(16).

Vuluka, N., 2020. The Effectiveness of Fiscal Policy Actions on Economic Growth: A Vector Error Correctional Model and Causality Econometrics Analysis of South Africa. *University of the Free State Journals.*

Wagner, A., 1883. *Law of increasing state activity.* s.l.:s.n.