INTERNATIONAL JOURNAL OF ECONOMICS AND FINANCE STUDIES
Vol: 14 **No:** 1 **Year:** 2022 **ISSN**: 1309-8055 (Online) (**pp.** 87-115) **Doi:** 10.34109/ijefs. 202220003
Received: 18.10.2021 | **Accepted:** 08.01.2022 | **Published Online:** 09.03.2022

-RESEARCH ARTICLE-

THE CONTRIBUTION OF PRIVATE INVESTMENT TO ECONOMIC GROWTH AND DEVELOPMENT IN SOUTH AFRICA

M F Oladele

Email: oladeleladewa@gmail.com

Gabila Fohtung Nubong

Email: G.Nubong@nwu.ac.za
http://orcid.org/0000-0002-6551-32823

M F Oladele

https://orcid.org/0000-0003-3897-9835

─Abstract─

Despite numerous studies highlighting the importance of investment in Africa, there is a shortage of research on the influence of private investment on economic growth in South Africa. This is the void that this piece of writing filled. As a result, this article will concentrate on the importance of private investment in South Africa's economic growth between 1975 and 2019. The research utilised the Cob-Douglas model framework. The model was estimated using the Vector Error Correction Model (VECM) and the Johansen co-integration technique. The South African Reserve Bank (SARB) and World Development Indicators provided data for this study (WDI). The analyses found that all macroeconomic variables have an equilibrium long run connection. The investigation revealed that the only statistically important variables in the long term are private consumption, the exchange rate, inflation, and trade openness. However, all private and public investment factors have long-run statistical significance concerning GDP. As a result, policy-makers should work to increase credit availability to investors in the South African economy while bolstering investor confidence.

Keywords: GDP per capita, private investment, public investment, inflation, private consumption

Citation (APA): Oladele, M. F., Nubong, G., Oladele, M. F. (2022). The Contribution of Private Investment to Economic Growth and Development in South Africa. *International Journal of Economics and Finance Studies, 14* (1), 87-115. doi:10.34111/ijefs.202112223

Vol: 14 **No:** 1 **Year:** 2022 **ISSN**: 1309-8055 (Online) (**pp.** 87-115) **Doi:** 10.34109/ijefs. 202220003

1. INTRODUCTION

Investment is a critical component of total demand and a significant driver of economic growth. The increased investment raises both total demand and an economy's productive capacity. The expansion of output is contingent upon a country's investment (Bint-e-Ajaz et al., 2012). As Levine (2005) asserted, the most effective method of determining economic growth is capital investment. Increased physical capital either directly or indirectly stimulates economic growth in a country through gross domestic investment (Bint-e-Ajaz et al., 2012).

South Africa is a middle-income country endowed with vast natural resources, a sound financial system, and a legal environment characterised by strong courts and a commitment to the rule of law, all of which are complemented by well-developed transportation infrastructure. It is Africa's second-largest economy, and it is home to the continent's largest stock exchange (Sarb, 2016). South Africa as a country faces the triple threat of poverty, unemployment, and inequality, all of which are among the greatest in the world (Houé et al., 2018). Its unemployment rate has remained consistently around 27% for the last two decades, and recent attempts to reverse some of the apartheid-socioeconomic era's challenges have been marred by allegations of rampant corruption and state capture. This has significantly harmed investor confidence and dimmed the outlook for the economy's future (Houé et al., 2018). South Africa's economy has remained stagnant over the last decade, owing to a lack of private investment. According to studies, private investment is around 20% lower than before the 2008 global financial crisis (Briard et al., 2020). Thus, the country's existing level of personal investment must be increased, as increased private investment is predicted to result in increased GDP and development. South Africa's growth and development strategy should prioritise investment, as domestic private investment remains the primary source of capital generation in an economy (Unctad, 2011). The private investment appears to be related to business confidence and variations in gross business profits in South Africa, as illustrated in Figure 1.1 below.

As illustrated graphically above, private investment has been inconsistent since roughly 1978, reflecting the global financial crisis, and took a particularly deep dive in 2009 and 2010, the early years of the Jacob Zuma Presidency. Thus, there is evidence to show that perceptions of high political risks have a detrimental effect on corporate confidence, resulting in lower levels of economic investment. Political uncertainty is frequently a hindrance to private investment. Political insecurity is that it results in investment decisions being delayed due to uncertainty about future economic policy (Bleaney, 1994). Even though the economy benefits from private investment, little study on the relationship between private investment and economic growth in South Africa has been performed (Hussain et al., 2013).

Vol: 14 **No:** 1 **Year:** 2022 **ISSN**: 1309-8055 (Online) (**pp.** 87-115) **Doi:** 10.34109/ijefs. 202220003

Source: BER, SARB (Shaded areas represent economic downswings)

Figure 1.1 Private Investment Business Confidence

South Africa has been witnessing a decline in world pricing for four critical export commodities since 2012, including platinum, iron ore, and gold. This decline contributed to a slowing of economic growth and was exacerbated by domestic structural flaws and the country's reliance on commodities. As a result of this pattern, growth slowed to 0.3% in 2016 from 3.3% in 2011. In 2016, output growth in the country's sectors, which includes manufacturing, slowed to 0.7% from 3% in 2011. The public debt climbed to an estimated 54.2% of GDP in 2017, up from 50.7% in 2016, while industries accounted for 19% GDP, with manufacturing accounting for 12% of GDP, compared to 73% for services (Sarb, 2016).

While conducting a study on the significance of economic growth, it was discovered that investment rate is a critical component of economic growth. Most countries that grow rapidly invest a significant portion of their GDP, whilst other countries grow slowly due to a lack of investment. This demonstrates that investment is a vital component of economic growth (Sial, 2010).

Compared to the current high level of resources in South Africa, the rate of investment and population growth are not commensurate with the production and revenues necessary to maintain people's standard of life (Duke et al., 2020). The situation has been disappointing, as the wealthy have grown increasingly prosperous, while the less fortunate have deteriorated. The inadequate public infrastructure capacity has mostly deterred domestic and foreign investment (Ozoh et al., 2010).

South Africa is a densely populated country needing adequate investment capable of connecting its abundant resources. However, it is unfortunate that shortsightedness, corruption, greediness, ineffective policy execution, and inept public spending

Vol: 14 **No:** 1 **Year:** 2022 **ISSN**: 1309-8055 (Online) (**pp.** 87-115) **Doi:** 10.34109/ijefs. 202220003

management have become the order of the day. This has resulted in poor investment throughout the years, lowering productivity and rendering it incapable of ensuring appropriate employment, which will raise production inputs and, in turn, stimulate economic growth (Ozoh et al., 2010).

Public investment advancement programmes significantly impacted South Africa's rapid expansion and origin of private investments. This dates back to the apartheid era, from 1948 to 1994. Throughout this era, public investment growth outpaced personal investment forecasts: However, a personal investment strategy targeted at lowering imports and developing domestic concern has demonstrated considerable benefits, resulting in the formation of a dynamic, diversified economic structure despite the state's dominance over economic events (Odhiambo, 2010).

South Africa has endured a prolonged period of economic weakness due to several domestic restrictions, including high unemployment, poverty, and inequality. Its lower degree of private investment compared to comparable middle-income economies has contributed to slower than planned economic growth (Corporation), 2016). Investment levels have been declining in South Africa's economy because investment is critical for advancement, and low investment may result in higher liability in the economy (Mlambo et al., 2001).

Private investment may be low due to low actual returns on assets. This hinders private investors from responding to real income increases due to risk aversion or institutional impediments to investing. South Africa is expected to be a major investment destination; yet, numerous obstacles to private investment growth exist (Bank, 2011). In South Africa, the private investment appears to be connected with company confidence and changes in gross corporate profits. This article aims to examine the influence of private investment in the economic growth of South Africa. The report examines the restrictions on this contribution and makes recommendations on how to boost private investment's contribution to economic growth and development in South Africa to assist the economy in combating poverty, unemployment, and disparity (Gudalov et al., 2020).

2. REVIEW OF THE LITERATURE

Private investment cannot be overstated in its contribution to a country's GDP and potential for resource allocation and utilisation efficiency. Economic success and expansion are determined by a country's capacity to spend and utilise its assets prudently and productively. Economic growth cannot occur in the absence of investment. As a result, investment is viewed as a critical component of long-term economic growth and development. Private investment is essential to an economy in this way since it encourages output in the Keynesian sense and the exploitation of resources and their associated rewards and instils vitality into every economic structure. This occurs when investment takes the shape of gross capital formation or fixed capital formation and is thus seen as a significant component of a country's gross domestic product growth.

Vol: 14 **No:** 1 **Year:** 2022 **ISSN**: 1309-8055 (Online) (**pp.** 87-115) **Doi:** 10.34109/ijefs. 202220003

This section establishes the theoretical and empirical foundations for the analysis methodologies. Keynesian economic theories have extensively examined the relationship between investment and economic growth. Investment sometimes referred to as capital formation, is the acquisition or construction of funds used in manufacturing. Such assets can be made by the government, non-profit organisations, and individuals. Additionally, it involves building intangible, human, and physical capital (Eisher, 1992). Investment accounts for a sizable portion of aggregate demand and is typically associated with economic growth. This is because investment generally boosts and grows the productive capacity of an economy (Jongwanich et al., 2008).

On the other hand, the primary function of private investment is to increase the capital stock of productive assets held by the private sector, whether national or domestic. Numerous economists have used a variety of investment models in their varied research. (Nwakoby et al., 2016), for example, employ a neoclassical theory of investment to demonstrate how increasing capital investment might enhance growth. Lee et al. (2009) examined the relationship between private investment and economic development in developing countries, using a cross-sectional sample of 24 developing countries using a growth model to disentangle the effects of state and private investment. Munthali (2012) proposes a neoclassical model inside an error correction framework for the contributing role of private investment in emerging nations in his research of the link between the public and private investment in Southern Africa (Habanabakize, 2020).

Additionally, Mustefa (2014) conducted his research using a neoclassical model that disregards technological developments and forecasts that population growth and investment determine per capita income. These models adequately represent the relationship between private investment and economic growth, which is the primary objective of this work (Kikulwe et al., 2020). However, this model demonstrates that private investment can stimulate economic growth in ways that public investment cannot. Additionally, these ideas show that when funds are channelled through private investment, economies rise rapidly, and countries fulfil their visions (Matthews et al., 2020).

According to Du Toit et al. (2004), the neoclassical method is significant since it is consistent with a supply-side perspective. However, it demonstrates how private investors make profit-maximising and cost-cutting judgments. Additionally, the neoclassical model corrects the accelerator model's weakness, which holds that capital and output should be fixed, obviating the potential of factor substitution between capital, labour, and other inputs. Furthermore, according to Chirinko (1993), in the neoclassical perspective, "the desirable or ideal capital stock is proportional to output and the user cost of capital (which is determined by the price of capital goods, the real rate of interest, the rate of depreciation, and the tax structure)." As a result, the study adopts the traditional growth theory, which identifies income, labour, and knowledge as the three pillars of growth (Valencia, 2020).

Vol: 14 **No:** 1 **Year:** 2022 **ISSN**: 1309-8055 (Online) (**pp.** 87-115) **Doi:** 10.34109/ijefs. 202220003

The classical theory model provides a theoretical foundation for understanding the relationship between private investment and economic growth. According to Adam Smith and David Ricardo, classical economists were preoccupied with the process of economic growth, which turns out to be a defining characteristic of the classical school of thought (Engel et al., 2010). Additionally, Thirlwall (2006) asserts that classical economics comprised all development economists who wrote about the factors that determine a country's performance before the emergence of the physiocratic growth theory, which was based on a country's wealth. Despite the physiocratic theory's contribution to growth theory, the classical theory was classified as the primary precursor of contemporary growth theory (McCamel, 2018).

To assess the effect of private investment on economic growth in South Africa, this article employs the classical theory model of development by inserting the domestic investment factor in the equation, as in Kalu et al. (2015). On the other hand, this theory considers the relationship between private investment and economic growth and potential variables such as credit, exchange rates, trade, and labour, all of which affect investor and consumer behaviour (Wallenius et al., 2020). Investment rate was recognised as a predictor of economic growth in both Harrod – Domar and Neo-Classical growth theories. Capital, labour, and technology are the three pillars of classical theory, which may be determined using the Cobb – Douglas production function as follows:

$$Y - AK^{\propto} L^{1-\propto} \tag{1}$$

Where $\propto$ is the claimant share of capital, and $(1 - \propto)$ is the labour share.

This can be rewritten as:

$$\frac{\delta y}{y} - \frac{\delta A}{A} + \propto \delta K \frac{+}{K} (1-\propto) \frac{\delta L}{L} \tag{2}$$

However, this means that the proportion of growth in GDP can be resolute mathematically by the amount of increase in A, K, and L. This means that the rate of variation in investment is equivalent to the rate of change in capital stock. In addition, the equation can be expressed as follows:

$$\frac{\delta \gamma}{\gamma} = \frac{\delta A}{A} + \alpha\, 1 + \frac{(1-\alpha)}{\gamma} \frac{\delta L}{L} (4) \tag{3}$$

That is to say that $\frac{\delta A}{A}$ the remaining component of the fundamental equation is replicated, the equation now becomes;

$$\text{GDP growth} = \frac{\alpha \tau 1}{Y} + \alpha 2L + e \tag{4}$$

Vol: 14 **No:** 1 **Year:** 2022 **ISSN**: 1309-8055 (Online) (**pp.** 87-115) **Doi:** 10.34109/ijefs. 202220003

Where: $\alpha 1$ is the capital cost of production, $\alpha 2$is the allocated the cost of production and e is the error term.

The neoclassical investment theory is the only hypothesis that can account for the relationship between domestic investment and economic growth. The theory was developed during the nineteenth and twentieth centuries when the Western world industrialised (Yoon et al., 2020). It bases its investment thesis on the concept of a domestic investment environment in which investment is intrinsically linked to growth. As a result, economic progress can be facilitated when contributions and inventions in production are spread strategically. As a result, private investment is vital to the economic progress of any country at some point (Garba, 2012).

According to neo-classical economic theory, Increases in capital or labour result in falling returns. However, because the economy maintains its constant level of economic growth while capital accumulation occurs, asset accumulation has a temporary and limited effect on extending economic expansion.

However, for neoclassical theory to promote economic growth, a rise in the proportion of GDP invested is required, which is also constrained by the fact that an increase in the proportion of GDP supported opens the door to declining returns and convergence on the growth steady state. Additionally, technical advancement is required to boost capital and worker productivity. According to Fourie et al., an increase in the production function is driven by an exogenous increase in Sial (2010). This implies, however, that the higher the economy's steady-state, the steeper the saving curve. As a result, a higher steady-state might result in increased per capita output and capital-labour ratios. As a result, technological advancements can occasionally sustain output growth over time (Sorensen, 2010).

Following the structural adjustment initiatives of the 1980s and 1990s, the economic literature began to see experimental research on the role of private investment in economic growth. As Blejer et al. (1984) point out, private investment appeared significantly more productive than public investment in the 1970s; nevertheless, state investment appeared to be more effective in other circumstances.

Since the 1970s, there have been numerous appeals for the involvement of private investment. Following the International Monetary Fund and World Bank's Structural Adjustment Programs, most countries have resorted to private investment as an alternative to development plans for economic growth. As a result, the state's role in policy formation and infrastructure investments such as transportation, communication, and energy, which are critical because they generate positive externalities for private investment, is limited. Consequently, the private investment must participate in the economy's growth (Mustefa, 2014).

Vol: 14 **No:** 1 **Year:** 2022 **ISSN**: 1309-8055 (Online) (**pp.** 87-115) **Doi:** 10.34109/ijefs. 202220003

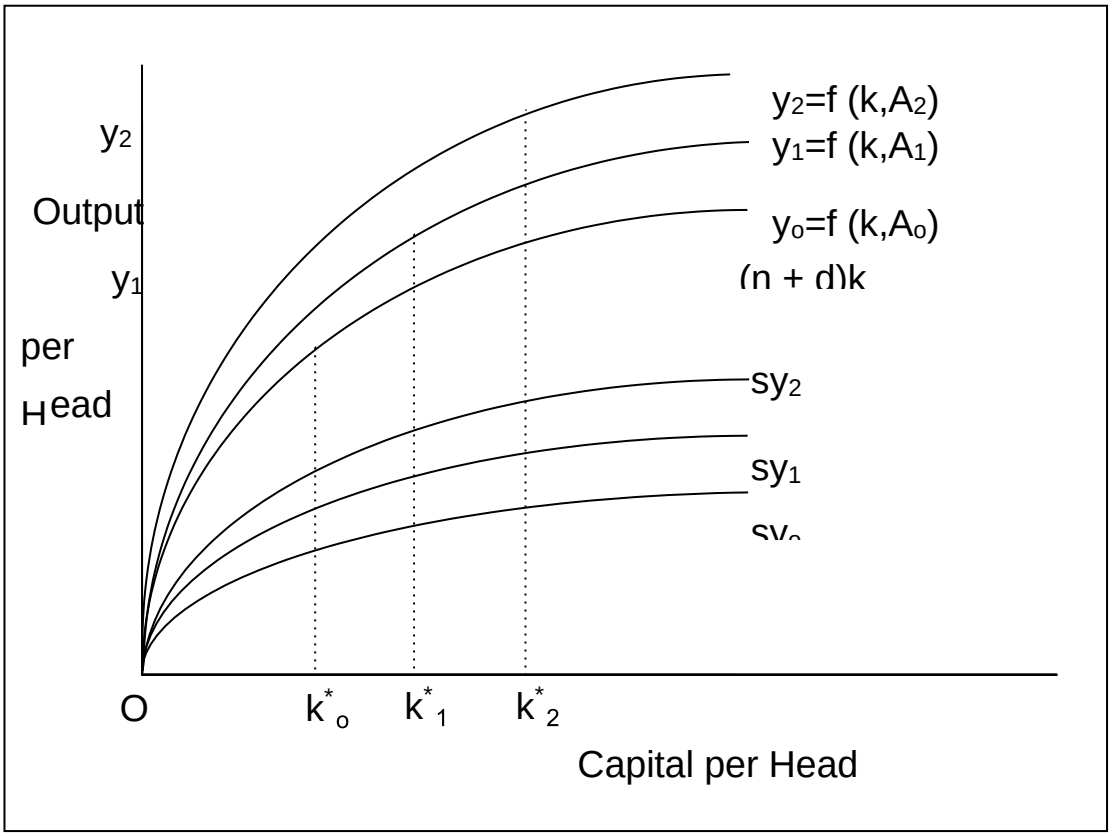

Figure 2.2: Exogenous technological change
Source: Dornbusch et al. (2014)

South Africa's economy has seen considerable difficulties in recent years, which has directly impacted GDP growth, which has been declining since 2009. This has affected employment, which has remained surprisingly high (Bank, 2011). This affects commodities pricing, domestic confidence, and, of course, the contribution of private investment (Lings, 2016). This, combined with South Africa's low economic performance, has had a long-term negative effect on financial sector growth (Corporation), 2016).

Acemoglu (2008) asserts that an economy expands when savings, investment, labour, and developing technology contribute to increased employee performance. The neo-classical school of thought also argues that technological advancement boosts labour productivity. However, if a country's population increases and its saving rate and production function remain constant, its productivity will remain constant. This means that countries experiencing poverty due to a lack of resources can save in the same way as wealthy countries and have access to technology, which will eventually result in breakthroughs. As a result, the neo-classical theory holds that growth occurs through investment, population growth, land expansion, and productivity (Domar, 1946).

The critique levelled at this hypothesis is that it fails to explain why countries have varying levels of investment as a percentage of GDP. Additionally, the theory fails to explain why emerging countries do not attract higher levels of investment due to structural difficulties such as corruption and a lack of infrastructure. The hypothesis does not explain how countries might accelerate their technological advancement. Additionally, the theory treats technology as a constant, which is not the case. It is a reality of life that technology advances throughout time. Another shortcoming of neo-classical theory is that it treats factor prices as the sole determinant of growth. This, however, can be easily disrupted by a shift in liquidity.

Furthermore, the neo-classical theory was unable to adequately characterise and explain entrepreneurs' expectations and the capital accumulated through them. This implies that it disregards investment functions. Additionally, the neo-classical theory assumes that capital assets are homogeneous, which is not the case (Nitisha et al., 2019).

Although a considerable study has been conducted on private investment and economic growth, most of these studies have been undertaken in developing nations. Numerous researchers have examined the relationship between private investment and economic development. However, the section's primary objective is to contrast and review innumerable studies undertaken to support private investment and economic growth. Sial (2010), for example, conducted a pilot study of Indonesian economic growth from 1990 to 2011, concluding that private investment exerted a significant positive and controlling influence on development.

According to Josten et al. (2017), there is historical evidence that South African investment is especially susceptible to uncertainty. Fedderke et al. (2001) examined the long-term impact of infrastructure financing in South Africa using the VECM technique. The finding demonstrates that infrastructure contributes significantly to South Africa's economic growth, both directly and indirectly. For instance, an increase in infrastructure results in economic uplift, even if infrastructure growth is fairly slow.

Odhiambo (2010) used the ARDL test model to examine the relationship between financial development, investing, and economic growth in South Africa, arguing that most articles that used Engle and Granger or Johansen were unable to obtain appropriate results due to the small sample size used. The outcome demonstrated that investment results in economic growth and that financial development occurs due to investment (Basari et al., 2013). According to Odhiambo (2010) and Oluwafemi Amusa et al. (2014), Savings is the most critical instrument for South Africa to achieve sustained monetary growth.

Ntembe (2017) established that the endogenous growth model includes Ghura (1997). The aggregate production function represents cumulative returns to scale. The data indicate that amplification of private investment has a large, significant, and favourable effect on public investment and a positive impact on growth. Economic policies that

promote external competitiveness stimulate production expansion, physical and human capital accumulation, and positive externalities. Economic policies encourage foreign competitiveness to bolster growth.

Investment has two consequences. The first is the demand for capital goods, a subset of overall economic demand. If imports are insufficient to meet the demand for investment goods, increasing demand will stimulate investment goods output, resulting in significant economic growth and development. Additionally, capital formation expands the economy's production capacity, producing more work (Epaphra, 2016).

Dreger et al. (2016) examined whether "public investment boosts private investment in the Eurozone" and discovered that a lack of public investment may have harmed private investment and GDP growth in the Eurozone. Additionally, as previously said, public investment promotes and benefits private investment. Several researchers, however, revealed the disadvantages of public investment. In other words, state investment acts as a brake on private investment.

Bonga (2017) used heterogeneous sampling to conduct an experiential examination of Zimbabwe's private investment drivers from 1980 to 2016. GDP, public investment, political instability, interest rates, credit to the private sector, and private investment are their variables. The data indicate that GDP and public investment have the greatest influence on private investment in Zimbabwe.

(Nwakoby et al., 2016) examined the impact of private investment on Nigerian economic growth using a time series spanning 1986 to 2014. They used GDP, private domestic investment, foreign direct investment, foreign portfolio investment, the currency rate, and inflation as variables. The findings indicate that domestic private sector investment and GDP have a unidirectional causal link.

Molocwa (2018) studied the determinants affecting private investment in emerging markets. The Johansen approaches were applied to GDP, interest rates, real exchange rate, and general tax rate. The study spans the years 1994 through 2015. The findings indicate that GDP has a long-term positive connection with a private fixed investment. Additionally, it demonstrates that tax rates complement limited private investment. The real exchange had a negative effect, showing that currency depreciation stimulates economic growth in South Africa.

Enning (2016) utilised an OLS technique to estimate private investment in Ghana between 1980 and 2010. They concluded after modelling that private investment, credit to the private sector, external debt, economic openness, corporate taxation, and democracy all have a significant impact on private investment. While GDP growth, real interest rates, inflation, and the real exchange rate all remain constant.

Mlambo et al. (2001) examined South Africa's investment activities from 1994 to 2015. The study used a co-integrated vector auto-regression approach to analyse GDP, interest rate, inflation, investment, tax, and credit rate variables. The findings indicate a positive link between economic growth, interest rates, inflation, and private investment. Additionally, the data suggest a negative association between taxation and private investment in South Africa's economics, both in the long and short run.

Mlambo et al. (2001) the impact of investment on economic development and employment in South Africa from 1994 to 2016. Autoregressive Distributed Lag was used in this investigation (ARDL). Sectoral investment, the findings indicate, has a significant impact on employment and economic growth. Odhiambo (2010) undertook an empirical study of governmental and private investment in South Africa from 1970 to 2017. Autoregressive lag was used in this investigation (ARDL). Private investment has a favourable long- and short-run effect on economic growth, whereas public investment has a negative long-run effect.

Additionally, it has been observed that gross public investment pushes out private investment, even though it is infrastructure-related. The discovery of a component that draws private investment. As a result, private investment in South Africa is unquestionably more substantial than government investment.

Mlambo et al. (2001) examined the effects of state investment on private investment and economic growth in Vietnam from 1990 to 2016 using an Autoregressive Distributed Lag model. The studied variables are GDP, private investment, public investment, foreign direct investment, capital stock, labour, and real interest rate. The findings indicate that while public investment attracts private investment in the short term, it repels private investment in the long run.

Masipa (2018) found that foreign direct investment, like the real exchange rate, has a positive relationship with economic growth in South Africa, based on Vector Error Correction Analysis from 1980 to 2014. At the same time, economic growth and government spending have a long-run inverse connection.

Sayef (2017) examined the effect of domestic investment on economic growth in Malaysia from 1960 to 2015 using the Johansen co-integration analysis of the vector error correction model and the granger causality test. However, the findings indicate that domestic investment, exports, and labour all contribute positively to economic growth in the long run. Additionally, there is no short-run relationship between domestic investment and economic development.

Valentini et al. (2000) concludes by stating that private investment is a useful indicator of economic success. As a result, the investment may contribute significantly to long-term economic growth in the contemporary era, especially through capital formation, productivity export, and infrastructure expansion.

Vol: 14 **No:** 1 **Year:** 2022 **ISSN**: 1309-8055 (Online) (**pp.** 87-115) **Doi:** 10.34109/ijefs. 202220003

However, the study demonstrates that while various economic agents such as the government, private investment, and FDI have all played a role in restoring a depressed economy, South Africa's level of economic activity development and growth looks to be falling short of expectations (Ozoh et al., 2010).

3. METHODOLOGY

This section covers the strategies employed to accomplish the study's primary objectives. It outlines how the study variables were operationalised to achieve the study's primary goals. The report uses a quantitative research design to paint a clear picture of South Africa's private investment foundations Saunders (2007). The GDP, the dependent variable in this study, and the independent factors are quantitatively rationed.

A quantitative research approach is optimal for determining private investment behaviour since it allows for observation of the behaviour of other variables and their impact on GDP (the dependent variable). According to Wiersma et al. (1995), quantitative methods are most effective when the phenomena under inquiry are identified and recognised. Quantitative approaches such as partial regression coefficients and correlation coefficients can be used to quickly summarise the examination of multiple independent variables that adversely affect private investment (Bayal and Nyangara, 2013).

The research utilised the Vector Error Correction Model (VECM). The study chose VECM because it allows for a more accurate interpretation of long and short-term equations and a more efficient calculation of coefficients. VECM (Vector Error Correction Modelling) can be considered multivariate time series modelling. One of the VECM requirements is that the time series has a moving level. Additionally, VECM can be estimated only when the variables are co-integrated. A vector error correction model includes co-integration relationships to constrain the long-run behaviour of endogenous variables to converge to their co-integration connections while allowing for short-run adjustment dynamics. According to Levin et al. (2008), the Vector Error Correction Model (VECM) constrains endogenous variables' long-run behaviour and trends to their co-integrating connections, enabling it to be tied to co-integration while allowing for short-run adjustment dynamics.

The shortcoming of this model is that when data change at an increasing rate, the resulting model prediction will not be stationary, will not be white noise, will be biassed, and will most likely have residuals that are not normally distributed. Co-integration is also referred to as the corrective error because it allows long-run equilibrium restoration through a succession of short-run adjustments. As a result, this establishes the vector error correction model's existence.

Vol: 14 **No:** 1 **Year:** 2022 **ISSN**: 1309-8055 (Online) (**pp.** 87-115) **Doi:** 10.34109/ijefs. 202220003

Levin et al. (2008) indicated that if it is discovered that the variables are co-integrated, a vector error correction model will be used. However, if Abdalla et al. (1997) determine that the variables are not co-integrated, the VAR model must be evaluated at the first difference. The vector error correction model is defined as a "multiple time series model that directly evaluates the rate at which the dependent variable (X) regains equilibrium following a change in an independent variable" (Y).

The Vector Error Correction Model (VECM) technique of stationary and co-integration tests was applied in this work. The order of integration of the variables was determined using the Augmented Dickey-Fuller (ADF) unit root tests. The approach will be similar to previous empirical studies examining the investment growth relationship.

4. SETTING AND SAMPLE

The South African Reserve Bank (SARB) and the World Development Indicator provided data for this study, covering the years 1975 to 2019. This data set spans the years preceding and following the country's democratic era. Additionally, it encompasses the period during which most investment treaties were negotiated, when both African and non-African countries signed more deals. This historical period encompasses two separate epochs in South Africa's political and economic history. South Africa was not integrated into the global economy before 1994; nonetheless, 1994 marked the beginning of South Africa's integration. It was also a period during which African countries began unbolting their domestic economies due to structural adjustment programmes implemented in the aftermath of decades of trade restriction.

5. MODELS AND ESTIMATION TECHNIQUES

These models are approximated to accomplish the study's goals. The purpose of this study is to ascertain the extent to which private investment contributes to South Africa's economic growth. Certain economists and policy-makers have asserted unequivocally that private investment is more practical than public investment in accelerating economic growth, particularly in South Africa.

The body of research on the role of private investment in economic growth is extensive, encompassing both time series analysis and econometric analysis. However, the empirical model developed for this study is based on various previous Hussain et al. (2013); Nwakoby et al. (2016); Blejer et al. (1984); Zhou et al. (2016); Manete (2018); Makuyana et al. (2018); Sesele (2017). The VECM model is used to quantify private investment's contribution to South Africa's economic development.

The model used in this study was modified utilising revisions to the Solow production function (1956), as used by Blejer et al. (1984); Ghali (1998); Zou (2006), and Wang et al. (2006), to account for the importance of private investment and its contribution to

Vol: 14 **No:** 1 **Year:** 2022 **ISSN**: 1309-8055 (Online) (**pp.** 87-115) **Doi:** 10.34109/ijefs. 202220003

economic growth. By utilising GDP as a dependent variable, the study focuses on a distinct model.

The study will use the following model:

5.1 Model

$$\Delta\ GDP_t = \alpha_0 + \sum_{i=1}^{n} \alpha_{1\tau}\,\Delta GDP_{t-\tau} + \sum_{i=0}^{n} \alpha_{2\tau}\ \Delta PRI.INV_{t-\tau} + \sum_{i=0}^{n} \alpha_{3\tau}\ \Delta PUB.INV_{t-\tau} + \sum_{i=0}^{n} \alpha_{4\tau}\Delta NEER_{t-\tau} + \sum_{i=0}^{n} \alpha_{5\tau}\Delta TR_{t-\tau} + \sum_{i=0}^{n} \alpha_{6\tau}\Delta INF_{t-\tau} + \sum_{i=0}^{n} \alpha_{7\tau}\Delta DCPS_{t-\tau}$$

$$+ \beta_1\ GDP_{t-1} + \beta_2 PRI.INV_{t-1} + \beta_3 PUB.INV_{t-1} + \beta_4 NEER_{t-1} + \beta_5 TR_{t-1} + \beta_6\ INF_{t-1} + \beta_7\ DCPS_{t-1} + \ \mu_t \quad (5)$$

where GDP is the dependent variable; PRI.INV is a private investment; PUB.INV is a public investment; NEER is nominal exchange rate; TR is openness to trade; INF is inflation; DCPS is domestic credit to the private sector; α is the intercept; α_1 - α_5 and β_1 - β_5 are correspondingly short-run and long-run elasticity of productivity. Concerning the above, recognised variables; μ_t stands as error term; Δ is the difference operator, and n is the lag length.

Vector Error Correction is a technique for correcting errors in vectors. The following is a model based on the model above.

$$\Delta\ GDP_t = \alpha_0 + \sum_{i=1}^{n} \alpha_{1\tau}\,\Delta GDP_{t-\tau} + \sum_{i=0}^{n} \alpha_{2\tau}\ \Delta PRI.INV_{t-\tau} + \sum_{i=0}^{n} \alpha_{3\tau}\ \Delta PUB.INV_{t-\tau} + \sum_{i=0}^{n} \alpha_{4\tau}\Delta LAB_{t-\tau} + \sum_{i=0}^{n} \alpha_{5\tau}\Delta TR_{t-\tau} + \sum_{i=0}^{n} \alpha_{6\tau}\Delta INF_{t-\tau} + \sum_{i=0}^{n} \alpha_{7\tau}\Delta DCPS_{t-\tau}$$

$$+ \varphi_1\ ECM_{t-1} + \mu_t \quad (6)$$

where φ_1 is the coefficient of the ECM, and ECM_{t-1} is the error correction term lagged by one period. The other variables are explained after equation (1) above.

The fundamental objective of this study is to ascertain the effect of private investment on the economic development of South Africa. However, little research on the impact of private investment has been done in South Africa. Nonetheless, various studies (Bayai et al., 2013; Makuyana et al., 2018; Molocwa, 2018; Sesele, 2017) and a large number of others have examined the determinants affecting private investment in South Africa. As a result, the purpose of this article is to create a model of the factors that influence private investment and economic growth in South Africa. The methodologies employed in this study to analyse the model are based on Blejer et al. (1984) Odhiambo (2010).

6. EMPIRICAL RESULT

Cointegration and the Vector Error Correction Model were used to evaluate the model in this study (VECM). According to Ogbonna et al. (2000), the co-integration technique

should be employed to investigate the possibility of a long-run link between private investment and other explanatory variables. The short-run dynamics will be modelled using VECM to account for any lagged reaction from private investment. According to Ogbonna et al. (2000), VECM analysis consists of four steps. To begin, the integration order for each variable must be established. Second, co-integration should be demonstrated using variables with the same integration order. In the third phase, the unit root of the residuals from co-integrating regressions should be investigated. The fourth step is to estimate VECM.

To use OLS to examine the contribution of investment, all variables in the inquiry must be stationary (Ogbonna et al., 2000). According to Gujarati (2003), a time series is stationary if its means and variances remain constant throughout time, and the rate of covariance between two points is controlled purely by the space or lag between the two points, not by the real-time at which the covariance is calculated. Thus, to avoid erroneous OLS in the presence of a unit root, it is necessary to investigate the time series structures to ascertain the data's stationarity.

According to Agénor et al. (2000), the estimation of the outcomes is determined by the ideal of econometric procedures used to eliminate long-term trends from the data. For example, in Applied Studies, the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests are frequently employed to determine the stationarity of data series. As a result, both methods can determine stationarity at the level or the first difference. However, only ADF approaches were used for each variable in this study. Additionally, the ADF test accommodates heteroskedasticity and serial correlation in the error terms. Although the R^2 and t-statistics of erroneous regression are significant, the resulting findings are largely meaningless. Because regression is effective only on data that does not exhibit a trend, data that indicates a trend must first be de-trended. Typically, the ADF test is applied to larger and more sophisticated time series models. This can be accomplished by displaying two or more lags of the dependent variable. Because the ADF is negative, the more negative it is, the stronger the denial of the unit root's existence.

The results of the ADF Unit Root Tests used to establish the integration are shown in Table 1.1.

The test for unit root is shown in Table 1.1. It is necessary to account for the stationarity of the relevant macroeconomic variables to avoid erroneous regression.

After analysing the level, the unit root test revealed that the data were non-stationary. At the initial difference, the variables are stationary by 5%. This means that at the trend and intercept, the variables are integrated to the order of I(1). As a result, the unit root test is used to examine the contribution of private investment to economic growth in South Africa over the sample period, with a t-test employed to establish the significance of the results.

Vol: 14 **No:** 1 **Year:** 2022 **ISSN**: 1309-8055 (Online) (**pp.** 87-115) **Doi:** 10.34109/ijefs. 202220003

Order

Variables	Model Specification	Level	First Difference	Probability at Levels	Probability at First Difference	Order of Integration
Log GDP	Trend & Intercept	[0.6353] (-3.5155)	[-4.9917] ** (-3.5181)	0.9994	0.0011	I(1)
Log Pri.inv	Trend &Intercept	[-2.0399] (-3.5181)	[-5.2676]** (-3.5208)	0.5635	0.0005	I(1)
Log Pub.inv	Trend & Intercept	[-2.6167] (-3.5181)	[-4.5433]** (-3.5181)	0.2753	0.0039	I(1)
Log NEER	Trend &Intercept	[-1.9905] (-3.5155)	[-5.3141]** (-3.5181)	0.5902	0.0004	I(1)
Log Trade	Trend & Intercept	[-2.1576] (-3. 5181)	[-4.6660]** (-3.5181)	0.5002	0.0028	I(1)
Log Pri.Con	Trend & Intercept	[-8.8181] (-3.5181)	[-4.4632]** (-3.5208)	0.9558	0.0049	I(1)
Infation	Trend & Intercept	[-2.8379] (-3.5155)	[-5.5348]** (-3.5266)	0.1922	0.0003	I(1)
Log DCPS	Trend & Intercept	[-0.9318] (-3.5155)	[-5.8594]** (-3.5181)	0.9430	0.0001	I(1)

*At 10% level, statistically significant

**At 5% level, statistically significant

***At 1% level, statistically significant

( ) Stands for critical test value

[ ] Stands for test statistics

Significance at 5%

Source: Writer's calculation Using E-View 11

Vol: 14 **No:** 1 **Year:** 2022 **ISSN**: 1309-8055 (Online) (**pp.** 87-115) **Doi:** 10.34109/ijefs.202112223

The results indicate that the null hypothesis that the series has a unit root is rejected; this implies that stationarity exists because the t-statistics are significant and all variables have p-values smaller than the critical value.

Even though individual variables are stationary, their grouping may be co-integrated. If their linear combination is fixed, we can say that their non-stationarity is co-integrated. For example, I (0). As a result, co-integration necessitates regressing non-stationary series in the same order. However, now that it has been established that all variables are integrated sequentially, the investigation can proceed "I (1)". As a result, it is critical to determine if private investment and economic growth have a long-term relationship. This suggests that the variables' co-integration must be estimated. However, before proceeding to Johansen co-integration, it is necessary to calculate the lag duration. Numerous metrics, such as the Akaike Information Criterion (AIC) and the Hannan-Quinn Criterion, can be used to determine the lag length (HQ). Distinct criteria fulfil different duties. As seen below, it is crucial to select the appropriate standard when performing time series analysis. However, based on the data in Table 5.3, it is found that ideal lag length 2 is the optimal lag length to use; hence, the study chose the AIC criterion. Thus, the co-integration test is predicated on this lag length.

6.1 Var Lag Order Selection Criteria

Table 1.2: Results of VAR Lag Order Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	330.4185	NA	4.24e-17	-14.99621	-14.66855	-14.87538
1	724.6450	623.4278	9.52e-24	-30.35558	-27.40659*	-29.26808
2	818.9146	114.0005*	3.19e-24*	-31.76347*	-26.19316	-29.70931*

Because of the data in table 1.2, it can be stated that AIC determines the lag duration. Therefore, the long-run equation can be approximated using Johansen co-integration.

Table 1.3 Results of Long-Run Co-integration (Trace)

Hypothesised No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None*	0.923874	334.8878	159.5297	0.0000
At most 1*	0.794204	226.7223	125.6154	0.0000
At most 2*	0.666800	160.3258	95.75366	0.0000
At most 3*	0.590731	114.1673	69.81889	0.0000
At most 4*	0.495349	76.64525	47.85613	0.0000
At most 5*	0.463696	47.92192	29.79707	0.0002
At most 6*	0.289408	21.75367	15.49471	0.0050
At most 7*	0.161623	7.404090	3.841465	0.0065

Trace test indicates 8 co-integrating eqn(s) at the 0.05 level
*denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Table 1.3 summarises the results of the Johansen co-integration study of the unconstrained co-integration rank test. The test can be used to determine whether or not the variables have achieved long-run equilibrium. Because the Johansen methodology incorporates a parametric amendment, it provides asymptotically optimal evaluations, and the estimator's method suggests that the assessments are robust to simultaneity bias. The findings indicate that all variables are co-integrated. The null hypothesis must be rejected because the probability is less than 5%. The table demonstrates that trace statistics exceed critical values, indicating that the null hypothesis is rejectable. Furthermore, all variables are statistically and significantly co-integrated, showing that they have a long-run relationship and permitting the computation of VECM (Hjalmarsson et al., 2007).

Table 1.4: Unrestricted Co-Integration Test Results (Maximum Eigenvalue)

Hypothesised No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None*	0.923874	108.1656	52.36261	0.0000
At most 1*	0.794204	66.39645	46.23142	0.0001
At most 2*	0.666800	46.15848	40.07757	0.0092
At most 3*	0.590731	37.52210	33.87687	0.0175
At most 4*	0.495349	28.72333	27.58434	0.0356
At most 5	0.463696	26.16824	21.13162	0.0090
At most 6*	0.289408	14.34958	14.26460	0.0485
At most 7*	0.161623	7.404090	3.841465	0.0065

Max-eigenvalue test indicates 8 cointegrating eqn(s) at the 0.05 level

*denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Based on the results in Table 1.4, it is evident that the variables are co-integrated. Eight co-integrations are contained in the equation. However, the data indicate that the probability is less than 5%, and the maximum statistics exceed critical values. All co-integrations of variables are statistically stated, as is a p-value indicating that the variables are co-integrated, and hence the null hypothesis may be rejected. As a result, both the trace and the maximum-likelihood tests confirmed that the variables are co-integrated, meaning they have a long-run relationship.

Both findings imply the presence of a co-integrating connection between GDP and its determinants at the 5% level of significance (Tables 1.3 & 1.4). As a result, the equilibrium convergence relationship between GDP, private investment, public investment, personal consumption, inflation, domestic credit to the private sector

Vol: 14 **No:** 1 **Year:** 2022 **ISSN**: 1309-8055 (Online) (**pp.** 87-115) **Doi:** 10.34109/ijefs. 202220003

(DCPS), a nominal exchange rate (NEER), and trade openness is established. The long-run link between private investment and GDP can be found by normalising the unconstrained co-integrating vector estimates, as seen in Table 1.5. After estimating long-run co-integration, the Johansen normalisation equation must be described. The latency is determined using the AIC. In the short run, the coefficient of private investment is expected to have a positive effect on GDP in the normalised equation, consistent with the long-run results. The coefficient is highly significant statistically. However, to provide further context for the Johansen co-integration test, the study wishes to interpret the Johansen Normalization Equation: In the long run, the signs of the coefficients are reversed in the Johansen normalisation equation:

This can however be written as:

LGDP + 0.417942LPRI.INV - 0.037810LPUB.INV + 0.326335LPRIV.CON. + 0.791403LTRADE + 0.280530LNEER + 0.341334LDCPS - 0.002599 INF (7)

In the long run, as previously indicated, the signs of the coefficients in the Johansen normalisation equation are inverted. Private investment, on average, has a positive long-run effect on GDP, ceteris paribus. Private consumption and trade, the currency rate, and domestic loans to the private sector all contribute to GDP growth. At the same time, government spending and inflation have a detrimental effect on GDP. As a result, the null hypothesis of no co-integration in the model is rejected, favouring the co-integrating connection as an alternative. The findings indicate that South Africa's variables exhibit a unique co-integration relationship. To explain genuine private investment in South Africa, we normalise the private investment model and regard both the dependent and independent variables as "long-run." On the other hand, the study can proceed with the VECM estimation.

7. VECTOR ERROR CORRECTION MODEL (VECM)

The VECM analysis becomes apparent only when the series are co-integrated; this implies that they are in long-run equilibrium. Additionally, it can predict the short-run parameters of co-integrated series. As illustrated in Table 1.6, a negative and substantial VECM coefficient suggests that any short-term instability between the dependent and independent variables strengthens their long-run link. The findings indicate that while private investment, public investment, and inflation contribute positively to GDP, private consumption, the exchange rate, trade openness, and credit to the private sector (DCPS) contribute significantly to GDP over time. According to the data, the coefficient is also significant.

7.1 Long Run Equilibrium

ECT_{t-1} = [1.000000$LGDP_{t-1}$ + 0.524904$LPRIV.INV_{t-1}$ + 0.103051$LPUB.INV_{t-1}$ – 1.502320$LPRI.CON_{t-1}$ - 1.095845$LNEER_{t-1}$ - 0.397096$LDCPS_{t-1}$ + 0.017111INF_{t-1} -1.258786$LTRADE_{t-1}$+5.434469] (8)

Table 1.5: Johansen Normalization Equation

Normalized cointegrating coefficients (standard error in parentheses)

LGDP	LPRIV_INV	LPUB_INVE	LPRI_CON	LTRADE	LNEER	LDCPS	INF
1.000000	-0.417942	0.037810	-0.326335	-0.791403	-0.280530	-0.341334	0.002599
	(0.08295)	(0.01393)	(0.08670)	(0.11068)	(0.05502)	(0.05017)	(0.00105)

LGDP	LPRIV_INV	LPUB_INV	LPRI_CON	LTRADE	LNEER	LDCPS	INF
1.000000	-0.417942	0.037810	-0.326335	-0.791403	-0.280530	-0.341334	0.002599
	(0.08295)	(0.01393)	(0.08670)	(0.11068)	(0.05502)	(0.05017)	(0.00105)

Table 1.6: Vector Error Correction Model

Variables	LGDP(-1)	LPRIV_INV(-1)	LPUB_INV(1)	LPRI_CON(-1)	LNEER(-1)	LDCPS(-1)	INF(-1)	LTRADE (-1)
Coefficient	1.000000	0.524904	0.103051	-1.502320	-1.095845	-0.397096	0.017111	-1.258786
		(0.27349)	(0.06032)	(0.27146)	(0.17433)	(0.20964)	(0.00355)	(0.44510)
		[1.91925]	[1.70827]	[-5.53431]	[-6.28592]	[-1.89419]	[4.82481]	[-2.82811]

Table 1.7: Equilibrium in the Short Run

Error Correction:	D(LGDP)	D(LPRIV_INVE)	D(LPUB_INVE)	D(LPRI_CON)	D(LNEER)	D(LDCPS)	D(INF)	D(LTRADE)
CointEq1								
	-0.076616	-0.089484	0.011076	0.017741	-0.020427	0.102509	0.000315	-0.011993
	(0.03282)	(0.08036)	(0.03238)	(0.17120)	(0.06526)	(0.08316)	(0.00117)	(0.22216)
	[-2.33466]	[-1.11355]	[0.34213]	[0.10363]	[-0.31302]	[1.23275]	[0.26830]	[-0.05398]
R^2 = 0.588465								
Adj. R^2 = 0.476229								

The preceding equation denotes a model of co-integrating error correction in the long-run relationship between the variables. Private investment, as expected, is favourable and has a relationship with economic growth. Increases in private investment of 1% result in a rise in the economic development of 0.52%. Given that the Keynesian model requires private investment to contribute to GDP growth, this should be the case. It is determined, however, to be statistically negligible.

Additionally, a 1% increase in public investment led to a 0.10 % gain in GDP, albeit this result was deemed statistically unimportant due to the t-value. Furthermore, a unit increase in private consumption resulted in a statistically significant 1.50 % decline in GDP. Additionally, empirical evidence demonstrated that exchange rates had a major impact on economic growth. sA 1% increase in the exchange rate translates into a 1.09 % reduction in GDP. The remaining variables, LDCPS, INF, and LTRADE, describe the economic growth of South Africa in a variety of ways. While INF and LTRADE were statistically significant, LDCPS was not. A 1% rise in the trade openness coefficient translates into a 1.25 % loss in GDP.

Additionally, increasing domestic credit to the private sector (DCPS) by one unit results in a 0.39 reduction in GDP. Domestic credit supplied to the private sector is supposed to promote GDP; however, the current study contradicts this, which could be owing to the passivity of fund misuse caused by asymmetric knowledge, such as moral hazards or adverse selection. Finally, actual research indicates that a one-per cent inflation increase GDP by 0.01 %.

7.2 Equilibrium in the Short Run

The Short Run equilibrium can be rewritten thus:

$$\Delta GDP_t = -0.076616ECT_{t-1} + 0.596099LGDP_{t-1} - 0.089484\Delta LPRI.INV_{t-1} + 0.011076\Delta LPUB.INV_{t-1} + 0.017741\Delta LPRI.CON_{t-1} - 0.020427\Delta LNEER_{t-1} + 0.102509\Delta LDCPS_{t-1} - 0.000315\Delta LINF_{t-1} - 0.011993\Delta LTRADE_{t-1} + 0.019020 \quad (9)$$

The short-run VECM results in Table 1.7 demonstrate that none of the explanatory variables is statistically significant in the short term. A 1% increase in private investment results in a 0.08 % decline in GDP. Additionally, a 0.01% increase in GDP is associated with a 1% increase in public investment. The findings indicate that the LPRI CON, LDCPS, and inflation rate had a favourable effect on economic growth. To be precise, increases in private consumption, domestic lending to the private sector, and inflation rate raise GDP by 0.01, 0.10, and 0.0003 percentage points, respectively. Additionally, the statistics indicate that a 1% increase in the exchange rate affects GDP by 0.02 %.

A critical factor to examine is the error correction term, which indicates the rate at which all variables adjust in the long run. Its coefficient is -0.07 in this study, which is statistically significant. This shows that all variables exhibit long-run equilibrium convergence, as indicated by a seven % yearly speed correction whenever the system

Vol: 14 **No:** 1 **Year:** 2022 **ISSN**: 1309-8055 (Online) (**pp.** 87-115) **Doi:** 10.34109/ijefs. 202220003

deviates from the long-run equilibrium path. The error correction term also suggests that, while the individual factors are not statistically significant in the short run, they have a cumulative effect on GDP.

8. CONCLUSION

This study aimed to examine the influence of private investment in the economic growth of South Africa. Bint-e-Ajaz et al. (2012) assert that investment is a significant component of aggregate demand and a source of lending for economic growth. The study outlined the obstacles to economic growth development, including unemployment, poverty, and inequality. Additionally, one of South Africa's challenges has been a decline in investment. Low real returns to capital may be a factor in the fall in investment, which is why one of the study's objectives was to examine the success prospects of continuing investment recruitment initiatives and give recommendations for how they should be channelled to contribute to economic growth.

The article examined and contrasted the economic growth of South Africa during and after Apartheid. Additionally, the research aided in identifying the elements that affect private investment and economic growth. Despite the private investment, it demonstrated why South Africa's economic growth had been subdued. Additionally, the study established a theoretical foundation from which the analysis approach is derived. It presented Keynesian and growth theories as to the foundation for the study's model. The study demonstrated several investment models in detail, including the neoclassical investment model.

According to the study, macroeconomic variables such as private investment, private consumption, trade, the exchange rate, and public investment are the primary drivers of economic growth. However, several of these variables account for a substantial amount of GDP instabilities. These findings, however, suggest a possible future policy framework for South Africa.

Private investment, for example, was statistically insignificant in both the long and short run, despite being favourable in the long term. Thus, private investment may be boosted by ensuring macroeconomic and fiscal stability, which are critical preconditions for the success of any domestic private investment programme. Additionally, public-private investment should complement private investment, as private investment contributes far more to GDP than foreign investment. Policy-makers are to broaden the reach of production by boosting the welfare of the masses to improve their per capita income, educational attainment, and health. The policy-makers need to raise the level of private investment by encouraging investor interest and their environs.

Vol: 14 **No:** 1 **Year:** 2022 **ISSN**: 1309-8055 (Online) (**pp.** 87-115) **Doi:** 10.34109/ijefs. 202220003

REFERENCES

Abdalla, I. S. A., & Murinde, V. (1997). Exchange rate and stock price interactions in emerging financial markets: evidence on India, Korea, Pakistan and the Philippines. *Applied Financial Economics, 7*(1), 25-35. doi:https://doi.org/10.1080/096031097333826

Agénor, P.-R., McDermott, C. J., & Prasad, E. S. (2000). Macroeconomic Fluctuations in Developing Countries: Some Stylized Facts. *The World Bank Economic Review, 14*(2), 251-285. doi:https://doi.org/10.1093/wber/14.2.251

Bank, W. (2011). The International Bank for Reconstruction and Development. *1818 H Street NW, Washington, DC 20433 USA*.

Basari, A. S. H., Hussin, B., Ananta, I. G. P., & Zeniarja, J. (2013). Opinion Mining of Movie Review using Hybrid Method of Support Vector Machine and Particle Swarm Optimization. *Procedia Engineering, 53*, 453-462. doi:https://doi.org/10.1016/j.proeng.2013.02.059

Bayai, I., & Nyangara, D. (2013). An analysis of determinants of private investment in Zimbabwe for the period 2009-2011. *International Journal of Economics and Management Sciences, 2*(6), 11-42.

Bint-e-Ajaz, M., & Ellahi, N. (2012). Public-private investment and economic growth in Pakistan: an empirical analysis. *The Pakistan Development Review, 51*(4), 61-77. Retrieved from https://www.jstor.org/stable/23734737

Bleaney, M. F. (1994). Political uncertainty and private investment in South Africa. *South African Journal of Economics, 62*(3), 188-197. doi:https://www.africabib.org/htp.php?RID=134897536

Blejer, M. I., & Khan, M. S. (1984). Política estatal e inversión privada en los países en desarrollo. *Staff Papers, 31*(2), 379-403. doi:https://doi.org/10.2307/3866797

Bonga, W. G., and Thabani Nyoni. (2017). Bonga, Wellington Garikai, and Thabani Nyoni. "An empirical analysis of the determinants of private investment in Zimbabwe. *Dynamic Research Journals' Journal of Economics & Finance (DRJ-JEF) 2*(4), 38-54. Retrieved from https://ssrn.com/abstract=2960558

Briard, R., Bhuiyan, N., Sicotte, H., & Keshani, P. (2020). Critical Success Factors in New Product Development Projects in a Weak Matrix Structure: An Aerospace Case Study. *The Journal of Modern Project Management, 8*(2). Retrieved from https://journalmodernpm.com/index.php/jmpm/article/view/JMPM02403

Chirinko, R. S. (1993). Business fixed investment spending: Modeling strategies, empirical results, and policy implications. *Journal of Economic literature, 31*(4), 1875-1911. Retrieved from https://www.jstor.org/stable/2728330

Corporation), I. I. D. (2016). Economic Overview: Recent Developments in The South African Economy and Drivers of Growth Over The Medium-Term. *Sandton, South Africa: Department of Research and Information.*

Domar, E. D. (1946). Capital Expansion, Rate of Growth, and Employment. *Econometrica, 14*(2), 137-147. doi:https://doi.org/10.2307/1905364

Dornbusch, R., Favero, C., & Giavazzi, F. (2014). Immediate challenges for the European Central Bank. *Economic Policy, 13*(26), 16-64. doi:https://doi.org/10.1111/1468-0327.00028

Dreger, C., & Reimers, H.-E. (2016). Does public investment stimulate private investment? Evidence for the euro area. *Economic Modelling, 58*, 154-158. doi:https://doi.org/10.1016/j.econmod.2016.05.028

Du Toit, C., & Moolman, E. (2004). A neoclassical investment function of the South African economy. *Economic modelling, 21*(4), 647-660. doi:https://doi.org/10.1016/j.econmod.2003.09.004

Duke, E. O., & Osim, S. E. (2020). The culture of slavery in traditional context and globalised society. *Social Space Journal. eu*, 145. Retrieved from https://www.researchgate.net/profile/Emmanuel-Duke/publication/348431950

Eisher, C. a. (1992). NGO's and the African Farmer: A Skeptical Perspective. 1-44. Retrieved from https://tind-customer-agecon.s3.amazonaws.com/72079264-fa64-47b8-a854-bf21cfe50c0d

Engel, E. M., Fischer, R. D., & Galetovic, A. (2010). The economics of infrastructure finance: Public-private partnerships versus public provision. *EIB papers, 15*(1), 40-69. Retrieved from https://www.econstor.eu/handle/10419/45373

Enning, A. a. (2016). "An OLS approach to modelling the determinants of private investment in Ghana. *International Journal of Academic Research in Business and Social Sciences, 6*(4), 201-226. Retrieved from https://ideas.repec.org/a/hur/ijarbs/v6y2016i4p201-226.html

Epaphra, M., John Massawe. (2016). Investment and economic growth: An empirical analysis for Tanzania. *Turkish Economic Review, 3*(4), 578-609. doi:http://dx.doi.org/10.1453/ter.v3i4.1019

Fedderke, J., de Kadt, R., & Luiz, J. M. (2001). Growth and institutions: a study of the link between political institutions and economic growth in South Africa-a times series study: 1935-97. *Journal For Studies in Economic and Econometrics, 25*(1), 1-26.

Garba, A. a. (2012). "Impact of child labour on school attendance: evidence from Bida Local Government Area of Niger State, Nigeria. *Spanish journal of rural development, 3*(3), 1-11. doi:http://dx.doi.org/10.5261/2012.GEN3.04

Ghali, K. H. (1998). Public investment and private capital formation in a vector error-correction model of growth. *Applied Economics, 30*(6), 837-844. doi:https://doi.org/10.1080/000368498325543

Ghura, H. S., Roger M. Francis, Ann Weddell, Elaine K. Perry, Robert H. Perry, and Andrew F. Fairbairn. (1997). Oestrogen and sex hormone binding globulin concentrations in Alzheimer's disease. *Alzheimer's Research, 3*(5), 191-194.

Gudalov, N. N., & Treshchenkov, E. Y. (2020). The Resilience of the EU Neighbours to the South and to the East: A Comparative Analysis. *Croatian International Relations Review, 26*(86), 6-41. doi:https://doi.org/10.37173/cirr.26.86.1

Gujarati, D. N. (2003). *Basic econometrics*: Tata mcgraw-hill education.

Habanabakize, T. (2020). Assessing the impact of interest rate, catering, and fast-food income on employment in the social services industry. *International Journal of Economics and Finance, 12*(2), 534-550. doi:https://doi.org/10.34109/ijefs.202012218

Hjalmarsson, E., & Österholm, P. (2007). Testing for cointegration using the Johansen methodology when variables are near-integrated. *Available at Ssrn 1007890*. doi:https://dx.doi.org/10.2139/ssrn.1007890

Houé, T., & Murphy, E. (2018). The AEO status as a source of competitive advantage. *European Business Review, 30*(5), 591-606. doi:https://doi.org/10.1108/EBR-06-2017-0127

Hussain, M., Chen, D., Cheng, A., Wei, H., & Stanley, D. (2013). Change detection from remotely sensed images: From pixel-based to object-based approaches. *ISPRS Journal of Photogrammetry and Remote Sensing, 80*, 91-106. doi:https://doi.org/10.1016/j.isprsjprs.2013.03.006

Jongwanich, J., & Kohpaiboon, A. (2008). Private Investment: Trends and Determinants in Thailand. *World Development, 36*(10), 1709-1724. doi:https://doi.org/10.1016/j.worlddev.2008.01.010

Josten, E., Wetterskog, E., Glavic, A., et al. (2017). Superlattice growth and rearrangement during evaporation-induced nanoparticle self-assembly. *Scientific Reports, 7*(1), 2802. doi:https://doi.org/10.1038/s41598-017-02121-4

Kalu, C. U., & Onyinye, M. O. (2015). Domestic private investment and economic growth in Nigeria: Issues and further consideration. *International Journal of Academic Research in Business and Social Sciences, 5*(2), 302. Retrieved from https://m.masccom.com/papers_submitted/1489/Domestic

Kikulwe, E., & Asindu, M. (2020). Consumer demand and prospects for commercialization of nutritionally enhanced GM bananas in Uganda. *AgBioforum, 22*(1), 13-24. Retrieved from https://www.agbioforum.info/index.php/agb/article/view/18

Lee, W. B., Jacobs, D. S., Musch, D. C., Kaufman, S. C., Reinhart, W. J., & Shtein, R. M. (2009). Descemet's Stripping Endothelial Keratoplasty: Safety and Outcomes: A Report by the American Academy of Ophthalmology. *Ophthalmology, 116*(9), 1818-1830. doi:https://doi.org/10.1016/j.ophtha.2009.06.021

Levin, B., Lieberman, D. A., McFarland, B., et al. (2008). Screening and Surveillance for the Early Detection of Colorectal Cancer and Adenomatous Polyps, 2008: A Joint Guideline From the American Cancer Society, the US Multi-Society Task Force on Colorectal Cancer, and the American College of Radiology. *Gastroenterology, 134*(5), 1570-1595. doi:https://doi.org/10.1053/j.gastro.2008.02.002

Levine, R. (2005). Chapter 12 Finance and Growth: Theory and Evidence. In P. Aghion & S. N. Durlauf (Eds.), *Handbook of Economic Growth* (Vol. 1, pp. 865-934): Elsevier, 865-934. doi:https://doi.org/10.1016/S1574-0684(05)01012-9.

Lings, K. (2016). South Africa's National Budget 2016/2017. Retrieved from http://www.stalib.com/Documents/Budget_Speech/16062_2016_SA_National_Budget_Kevin_Lings.pdf

Makuyana, G., & Odhiambo, N. M. (2018). Public and private investment and economic growth: An empirical investigation. *Studia Universitatis Babes-Bolyai Oeconomica, 63*(2), 87-106. Retrieved from https://sciendo.com/pdf/10.2478/subboec-2018-0010

Manete, T. K. J. (2018). *The impact of investment on economic growth and employment in South Africa: a sectoral approach.* North-West University, Vaal Triangle Campus, Retrieved from http://repository.nwu.ac.za/handle/10394/28316

Masipa, T. S. (2018). The relationship between foreign direct investment and economic growth in South Africa : vector error correction analysis. *Acta Commercii, 18*(1), 1-8. doi:https://doi.org/https://doi.org/10.4102/ac.v18i1.466

Matthews, M., & Mokoena, B. A. (2020). The influence of service quality dimensions on customer satisfaction within visa facilitation centres in South Africa. *International Journal of eBusiness and eGovernment Studies, 12*(2), 122-135. doi:https://doi.org/10.34111/ijebeg.20201220

McCamel, R. T. (2018). *The impact of manufacturing and its sub-sectors on GDP and employment in South Africa: a time-series analysis.* North-West University, Retrieved from http://repository.nwu.ac.za/handle/10394/31634

Mlambo, K., & Oshikoya, T. W. (2001). Macroeconomic Factors and Investment in Africa. *Journal of African Economies, 10*(suppl_2), 12-47. doi:https://doi.org/10.1093/jae/10.Suppl2.12

Molocwa, G. A., Yohane Khamfula, Priviledge Cheteni. (2018). Budget deficits, investment and economic growth: a panel cointegration approach. *nvestment Management and Financial Innovations, 15*(3), 182-118. Retrieved from https://www.ceeol.com/search/article-detail?id=741800

Munthali, T. C. (2012). Interaction of public and private investment in Southern Africa: a dynamic panel analysis. *International Review of Applied Economics, 26*(5), 597-622. doi:https://doi.org/10.1080/02692171.2011.624500

Mustefa, S. (2014). Private investment and economic growth evidence from Ethiopia. *Mekelle University, School of Graduate Studies*.

Nitisha, & Venkatakrishnan, P. (2019). Accessing [g]-Face π-Expanded Fluorescent Coumarins by Scholl Cyclization. *The Journal of Organic Chemistry, 84*(17), 10679-10689. doi:https://doi.org/10.1021/acs.joc.9b01223

Ntembe, A. (2017). *Technology and the Electoral Process in Cameroon. Technology Integration and Transformation of Elections in Africa: An Evolving Modality, 299*.

Nwakoby, C., & Bernard, A. (2016). Effect of private sector investment on economic growth in Nigeria. *NG-Journal of Social Development, 5*(4), 150-168. Retrieved from https://www.researchgate.net/publication/314490058

Odhiambo, N. M. (2010). Energy consumption, prices and economic growth in three SSA countries: A comparative study. *Energy Policy, 38*(5), 2463-2469. doi:https://doi.org/10.1016/j.enpol.2009.12.040

Ogbonna, E., & Harris, L. C. (2000). Leadership style, organizational culture and performance: empirical evidence from UK companies. *The International Journal of Human Resource Management, 11*(4), 766-788. doi:https://doi.org/10.1080/09585190050075114

Oluwafemi Amusa, A. A., Adebayo Ogunkanmi, Ojobo Omoche,, & Olumayowa Olowe, S. A., Taiwo Omodele. (2014). Genetic diversity of Parkia biglobosa from different agroecological zones of Nigeria using RAPD Markers. *International Journal of Biodiversity*, 1-9. doi:http://dx.doi.org/10.1155/2014/457309

Ozoh, F. O., Nwaka, I. D., Igberi, C. O., & Uma, K. E. (2010). The Influence of Investments on Economic Growth: The Case of Nigeria. *6*(10), 29-39. Retrieved from https://d1wqtxts1xzle7.cloudfront.net/51282993/3-libre.pdf?1484058779

Sarb. (2016). Cumpănas, Alin Adrian, et al. "The involvement of PDGF-B/PDGFRβ axis in the resistance to antiangiogenic and antivascular therapy in renal cancer. *Anticancer research*, *36*(5), 2291-2295. Retrieved from https://ar.iiarjournals.org/content/36/5/2291.short

Saunders, M., P. H. I. L. I. P. Lewis, and A. D. R. I. A. N. Thornhill. (2007). "Research methods. *Business Students 4th edition Pearson Education Limited, England*. Retrieved from https://www.researchgate.net/profile/Mark-Saunders-10/publication/330760964

Sayef. (2017). The impact of domestic investment on economic growth: New evidence from Malaysia. *Journal of Smart Economic Growth, 2*(2), 105-121. Retrieved from https://jseg.ro/index.php/jseg/article/view/19

Sesele, M. (2017). Determinants of Private Investments in South Africa. Retrieved from https://open.uct.ac.za/handle/11427/29077

Sial, H. a. A. (2010). Sial, Maqbool Hussain, Maaida Hussain Hashmi, and Sofia Anwar. "Role of investment in the course of economic growth in Pakistan. *World Academy of Science, Engineering and Technology 66*, 160-164. Retrieved from https://d1wqtxts1xzle7.cloudfront.net/65870115/+

Sorensen. (2010). Larsen, Nadja, et al. "Gut microbiota in human adults with type 2 diabetes differs from non-diabetic adults. *PloS one, 5(2), e9085.*, *5*(2), e9085. doi:https://doi.org/10.1371/journal.pone.0009085

Thirlwall, A. P. (2006). Growth and Development: With Special Reference to Developing Economies. 8th Edition. New, NY: Palgrave Macmillan.

Unctad. (2011). Price volatility in food and agricultural markets: Policy responses. 1-68. Retrieved from https://www.alimenterre.org/system/files/ressources/pdf/86_g20_foodpricevolatility_en.pdf

Valencia, G. A. D. (2020). Forms of informal financing of informal traders in Colombia Cases: Cúcuta, Ibagué and Villavicencio. *Cuadernos de Economía*, *43*(123), 259-274. Retrieved from http://cude.info/index.php/CUDE/article/view/2

Valentini, R., Matteucci, G., Dolman, A. J., et al. (2000). Respiration as the main determinant of carbon balance in European forests. *Nature*, *404*(6780), 861-865. doi:https://doi.org/10.1038/35009084

Wallenius, C., Alvinius, A., & Larsson, G. (2020). Decision-Making in a Military Staff Context. *Res Militaris*, *10*(1), 1-17. Retrieved from https://www.researchgate.net/profile/Claes-Wallenius/publication/358590436

Wang, M. Y., Lu, K. V., Zhu, S., et al. (2006). Mammalian Target of Rapamycin Inhibition Promotes Response to Epidermal Growth Factor Receptor Kinase Inhibitors in PTEN-Deficient and PTEN-Intact Glioblastoma Cells. *Cancer Research*, *66*(16), 7864-7869. doi:https://doi.org/10.1158/0008-5472.CAN-04-4392

Wiersma, D. S., van Albada, M. P., van Tiggelen, B. A., & Lagendijk, A. (1995). Experimental Evidence for Recurrent Multiple Scattering Events of Light in Disordered Media. *Physical Review Letters*, *74*(21), 4193-4196. doi:https://doi.org/10.1103/PhysRevLett.74.4193

Yoon, K. P., Sedaghat, M., & Kim, G. (2020). Portfolio Selection by the Axiom of Choice: Post Mean-Variance Analysis. *International Journal of Operations and Quantitative Management*, *26*(4), 303-318. Retrieved from https://web.archive.org/web/20210627140241id_/http://www.ijoqm.org/papers/26-4-4-p.pdf

Zhou, Q., Wang, H., Schwartz, D. M., et al. (2016). Loss-of-function mutations in TNFAIP3 leading to A20 haploinsufficiency cause an early-onset autoinflammatory disease. *Nature Genetics*, *48*(1), 67-73. doi:https://doi.org/10.1038/ng.3459

Zou, Y. (2006). Empirical studies on the relationship between public and private investment and GDP growth. *Applied Economics*, *38*(11), 1259-1270. doi:https://doi.org/10.1080/00036840500392649