

UDC 332

DETERMINANTS OF ECONOMIC GROWTH IN SOUTH AFRICA

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ABSTRACT

The current study investigates the determinants of economic growth in South African economy using quarterly data from 1967 to the first quarter of 2022. Data on Gross fixed capital formation, final consumption by government, final consumption by households, gross domestic savings, total employment by public, total employment by private sector, exports, and gross domestic product were obtained from WDI indicators. Autoregressive Distributed Lag approach (ARDL) was employed to examine the short and long run determinants of growth in South African economy. Empirical results show that there is existence of long run association among the variables and GDP. Gross fixed capital formation, Export, household consumption expenditure, Gross domestic savings and private employment are found to have significant impacts on the economic growth. While employment by government and consumption expenditure by government are found not to have significant positive impact on the growth of the economy. More so, using error correction model, all the variables have short run impacts on economic growth with the exceptions of eexport, savings and public sector employment. Furthermore, Pairwise Granger causality shows that there is existence of bidirectional causality of bidirectional causal relation between gross fixed capital formation and economic growth as well as between private sector employment and economic growth. Unidirectional causality is established between each of the remaining variable and economic growth, with the exception of government consumption and public sector employment as they are both found not to have causal relation with economic growth in South African economy. The evidence from the study affirms that private sector plays an important in driving the growth process. As such, government must provide necessary enabling environment to simulate growth process.

KEY WORDS

GDP, Determinants, ARDL, South Africa.

Economic growth has been affirmed to be fundamental element of a South Africa's development, and has been recognised to be the most important strategic and policy challenges for policy-makers (Khamfula, 2004). Variety of factors, including the kind and quality of economic policies, as well as other macroeconomic factors determine a country's economic growth. Karabo (2007) revealed that in developing economies substantial studies have been done to observe the outcomes of macro-economic factors on the economic growth. The GDP growth rate in developing countries appears to be influenced by a multitude of elements, some of which have a negative correlation whereas others have a direct positive correlation. Macroeconomic models have been utilized in practically every country throughout the world to formulate economic. Variations in a country's economic growth are thus important components of macroeconomic models (Kira, 2013; Nach,2016). Demand-side approach was recognised to be an important recovery approach after the global economic recession. The recovery of many developing countries, including South Africa, is considered to have been driven by consumption in place of production. Even though South Africa has rebound from the stagflation of 2009, GDP rates keep on declining, and employment continues to be less than the pre-crisis levels. South African policymakers, like those in other developing nations, are focused on achieving both sustainable and increased growth rates for the purpose of eliminating poverty and unemployment. Therefore, policymakers must constantly assess the influence of the economy's high growth rates on economic growth to accomplish and sustain high growth rates (Dewan and Hussein,2001).

A study of the elements that cause economic fluctuations is essential in developing suitable policies for long-term economic growth and addressing socio-economic development challenges. Many structural changes occurred in South Africa since 1994, as it is well recognized. The economy of South Africa has gone through several stages. After South Africa's 1994 transition, there were expectations for a dramatic improvement in the performance of the economy. The elimination of trade and banking restrictions was expected to have a significant impact on the country's economy. The events in 1994 have shown that South Africa's GDP production has improved. Consequently, both by global and South African standards, the growth is reported to be moderate on average for most instances. South Africa, for instance, grew at a rate of 4.5% per year on average during 2002 to 2008, the quickest rate since the country's 1994 democratic transition (Nach,2016).

Research done by Mongale and Monkwe (2015) shows that South Africa is experiencing relatively slow economic growth. The World Bank reduced the country's 2014 economic growth prediction to 2.7 percent from 3.2 percent previously. Regardless of the adjustment, the Bank believes that the 2014 forecast will be higher than predicted 1.9 percent growth in 2013 and will reach 3.4 percent in 2015. It is expected that it would be strengthened by rising international demand and exports. In 2013, continuous economic growth in South Africa proved elusive since domestic factors continued to impact on the recovery and offset the benefits of strengthening external conditions. Economic growth, which had already slowed significantly in 2012, dropped more in 2013. Long-standing structural constraints were worsened by the labor unrest, which lowered morale. Consumer spending along with private investment grew at a slower pace, hitting only 2.3 percent and 2.6 percent, respectively, indicating a lack of confidence in the face of rising uncertainty, strict lending conditions, and sharply rising unemployment. The growth prediction for 2014 was revised to 2% from 2.7 percent at the start of the second quarter of 2014, with the estimate for 2016 remaining unchanged at 3.5 percent. Each of these adjustments were ascribed by the bank to tight monetary policy, labour unrest, and a weak and unstable electrical supply. Analysing the relationship between growth in GDP and employment, Leshoro (2013) found that the growth of an economy is motivated by increased employment. This study contributes to the literature by considering the role of private sector in the growth process. More specifically, we break down the total employment into the private sector employment and public sector employment, and break down the consumption expenditure into household consumption expenditure and government consumption expenditure. This is done to evaluate the contribution of private sector to the growth process. Apart from section one that introduces the study, extant literature is presented in the second section, methodology, results analysis and conclusion are presented in third, fourth and fifth sections respectively.

LITERATURE REVIEW

Several empirical studies have documented that more employment implies an increase or decrease on the growth of the economy, such as Marelli and Signorelli (2010) who discovered that as number of jobs increase in the European Union area a slowdown occurs in the growth of the economy. When Caporale and Škare (2011) used the VECM and Granger causality test to conduct a country-specific and panel investigation on 119 nations, they discovered causation between GDP employment growth in most economies. Kumo (2012), Asari, Mohamad, Alias, Shamsudin, Baharuddin and Kamaruzaman (2011) are two examples of country-specific researchers. For Malaysia, a data from 1982 to 2006 was used and therefore a short run unidirectional relationship between GDP and employment was discovered by Asari et al. (2011). Kumo (2012), on the contrary, used the traditional Granger causality test along with the autoregressive distributed lag (ARDL) to examine the relationship between the growth of the economy, private and public employment, and infrastructure investment in South Africa from 1960-2009. The findings declined to deny the H0 that GDP does not promote employment in the public and private sectors, and that employment in these sectors does not promote GDP. The findings also revealed that

investment increase granger leads towards increment in GDP. Upon adjusting for structural breaks, the findings revealed that the growth in the economy increases job opportunities in public sector and never the other way around. Phelps (1994), Ball and Moffit (2011) are two such studies that confirmed the idea that increase in the growth of the economy leads to increase in the number of jobs available in the economy.

The study conducted by Leshoro in South Africa, examined the direction of causality between the growth of the economy and employment using quarterly data from 2001Quarter1 to 2012Quarter2. Toda Yamamoto technique of causality was utilized to find out if an increase or a decline in employment results from a rise in Gross Domestic Product and vice versa. At all significant levels, the regression ran by the researcher failed to not accept the H_0 , the findings suggest that causality does not run from employment to South Africa's GDP. The Keynes General Theory, on the other hand, remains true in South Africa's economy, in which actual evidence shows that expansion in the economy influences employment. The above outcomes back up the charge of 'rising unemployment' raised at South African economy (Leshoro, 2013).

Empirical growth model was employed by Anyanwu (2014) to analyse the elements that have an impact in the growth of the economy in Africa and China. This analysis reported that increased domestic investment, urban population, mental price index, net official aid, government effectiveness, and secondary school enrolment, have a favourable and significant relationship with growth of Africa's economy, using time series data from 1984 to 2010 and cross-country panel data from 1996 to 2010 for Africa. There is a significant and positive correlation between the growth of the economy in China and trade openness as well as domestic investment, according to the findings of the research. Whereas their analysis also revealed a significant and an inverse relationship between the growth of the economy and oil price indices, population growth, inflation, agricultural material price, credit to the private sector and official development aid.

The Keynesian model was utilized by Kira (2013) to identify the determinants influencing GDP in underdeveloped nations, adopting Tanzania as a typical country. By employing OLS to examine GDP as a dependent variable, and consumption, government expenditure, net export and investment as explanatory variables, the finding revealed that consumption in Tanzanian determines GDP.

Adepoju and Ogundunmade (2019) also utilized time series cross sectional (panel data of 126 countries from 2010 to 2014) to determine the impact of public debt, government expenditure, policy interest rates, unemployment, fiscal policy trade openness on the GDP. The results of this research confirmed that economic growth is influenced by variety of factors. Throughout the assessment, fiscal balances showed a constant positive association with the growth of the economy. African countries' growth was aided by their unemployment rate and fiscal balance. Some places so major increases in openness and inflation. For any of the sub regions the exchange rate yielded no significant coefficients. For diverse regions of the world, trade openness policy interest rate industrial output rate and consumption all had a substantial impact.

Mongale and Monkwe (2015) analyzed the major aspects that contribute to South Africa's economic growth. The Cointegrated Vector Autoregressive (CVAR) approach was applied to make estimations. The findings show that import, export, infrastructure investments and real GDP are all cointegrated. All the variables, even though positive or negative, have long run relationships according to estimates.

Chirwa and Odhiambo (2016) investigated the macroeconomic indicators of economic expansion in a variety of industrialized and developing nations in a qualitative approach. Fiscal policy, human capital development, monetary policy, foreign direct investment, natural resources, investment trade, reforms, foreign aid, political, geographical, and regional elements are among the key macroeconomic determinants of economic growth in developing economies, according to the findings of this research, human capital, demography, physical capital, monetary policy, fiscal policy technological and financial components are all variables that influence growth in the economy of advanced economies.

Based on the study conducted by Chirwa and Odhiambo (2016) numerous economic expansion analysts had turned towards picking quite several variables as feasible, provided that sufficient degrees-of-freedom and pooled country data are available to undertake the estimation (Cicchone and Jarocinski 2010). Research findings have backed this technique, arguing that the stability of economic growth drivers can therefore be ensured by incorporating many economy's determinants of growth (Bayraktar 2006). The above technique, however, serves as a platform for demonstrating proof that variables might respond differently, and that might be deceptive to policymakers placing emphasis on country specific economic strategy. Several more countries are still not aware of the primary factors that particularly determine the growth in their economies, even though pooled data gives a straightforward analytical approach to determining the underlying economic growth determining factors. The significance of how diverse equilibria, or temporal paths, for per capita income growth can be led by economic reforms and country specific development plans and is emphasized in the recent literature on initial empirical studies (Durlauf and Johnson 1995; Azariadis and Drazen 1990).

It is difficult to ascertain which elements are indeed the primary contributors to the growth of the economy in and between nations today. The literature on this topic in South Africa is limited, with conflicting results regarding the factors that influence economic growth in various nations. The current analysis took full advantage of this deficiency in the literature by including a wide range of macroeconomic variables and incorporating underlying factors impacting growth in the economy into account. Choosing as many macroeconomic factors as you can, according to Chirwa and Odhiambo (2016), may lead to better outcomes. Since most research employed cross-sectional and panel data, this study used time series data, which contributes to the gap.

METHODS OF RESEARCH

This paper attempts to investigate the determinants of South Africa's economic growth using quarterly time series data from 1967 to first quarter of 2022. The data were sourced from South African reserve Bank. The data employed in the study are Gross fixed capital formation (GFCF), Final consumption by government (CG) and final consumption by household (CH), Gross Domestic Savings (GDS), total employment by public (EMG), and Exports (EXP), with Total employment by private sector (EMP) and GDP.

ARDL bounds test is adopted to investigate the association between the parameters under consideration as opined by Pesaran *et al.* (2001). ARDL is comparatively better for analysis when small and finite data sample sizes are involved. ARDL test provides estimates in a long run model that are unbiased (Harris and Sollis, 2003). The test involves estimating unrestricted error correction model (UECM) considering gdp as a dependent variable.

$$\begin{aligned} \Delta GDP = & a_{01} + \sum_{i=1}^p a_{1i} \Delta GDP_{t-i} + \sum_{i=1}^q a_{2i} \Delta GFCF_{t-i} + \sum_{i=1}^q a_{3i} \Delta CG_{t-1} + \sum_{i=1}^p a_{4i} \Delta CH_{t-i} + \sum_{i=1}^q a_{5i} \Delta GDS_{t-i} + \\ & \sum_{i=1}^q a_{6i} \Delta EMG_{t-1} + \sum_{i=1}^p a_{7i} \Delta EMP_{t-i} + \sum_{i=1}^q a_{8i} \Delta EXP_{t-i} + b_{11} GDP_{t-1} \\ & + b_{21} GFCF_{t-1} + b_{31} CG_{t-1} + b_{41} CH_{t-1} + b_{51} GDS_{t-1} + b_{61} EMG_{t-1} + b_{71} EMP_{t-1} + b_{81} EXP_{t-1} + \varepsilon_{1t} \end{aligned} \quad (1)$$

Where: the variables are as defined earlier and Δ is the difference operator.

In ARDL bound test the null hypothesis; $H_0: b_{1i}=b_{2i}=b_{3i} = \dots = b_{8i}=0$ is tested against the alternative one; $H_1: b_{1i} \neq b_{2i} \neq b_{3i} \neq \dots \neq b_{8i} \neq 0$ for $i = 1, 2, 3 \dots .8$ If the estimated value exceeds the upper critical value, this indicates the presence of long-run association between the parameters which warrants the rejection of null hypothesis. Similarly, if the estimated value falls below a lower critical value, then no long run relationship exists and null hypothesis could not be rejected. However, the result is adjudged inconclusive if the estimated value falls between these two bounds.

Upon the confirmation of the cointegration among the variables, the short run and long run causality is determined using equation 2. This is particularly important as presence of

causality in the long run does not automatically guarantee short run causality. Ensuing from Odhiambo (2009), Narayan and Smyth (2008) and Belloumi (2014), ECM was estimated to find the short run parameters that are associated with the long-run measurements. While the t-statistic on the coefficient of the lagged error-correction term denote the causal effect in the long run, the F-statistic on the explanatory variables denotes short run effects (Odhiambo,2009; Narayan and Smyth, 2006; and Belloumi,2014). In the ARDL model, the ECM is stated as follow:

$$\Delta gdp = a_0 + \sum_{i=1}^p a_{1i} \Delta gdp_{t-i} + \sum_{i=1}^q a_{2i} \Delta GFCF_{t-i} + \sum_{i=1}^q a_{3i} \Delta CG_{t-i} + \sum_{i=1}^p a_{4i} \Delta CH_{t-i} + \sum_{i=1}^q a_{5i} \Delta GDS_{t-i} + \sum_{i=1}^q a_{6i} \Delta EMG_{t-i} + \sum_{i=1}^p a_{7i} \Delta EMP_{t-i} + \sum_{i=1}^q a_{8i} \Delta tEXP_{t-i} + \alpha ECT_{t-1} + \varepsilon_{1t} \quad (2)$$

Where: a_{1i}, a_{2i}, \dots and a_{8i} are short run coefficients of the variables and α is the coefficient which estimates the speed of adjustments of the model back to long run equilibrium.

RESULTS AND DISCUSSION

The standard Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) time series tests are employed to evaluate the order of the integration of the variables under consideration. The findings of the unit root test as shown in Table 1 revealed that all the series are stationary after first differencing with the exception of employment by private sector, employment by government, and export as a percentage of GDP.

Table 1 – Unit Root Test Results

Variables	ADF		PP	
	P-Val at level	P-Val at 1 st Diff	P-Val at level	P-Val at 1 st Diff
GDP	0.9226	0.0000	0.7065	0.0000
GFCF	0.6388	0.0000	0.6184	0.0000
CG	0.6314	0.0042	0.2524	0.0019
CH	0.104512	0.00012	0.9654	0.00032
EMG	0.0011	0.00002	0.0000	0.0000
EMP	0.0001	0.0000	0.0023	0.0000
GDS	0.3245	0.0016	0.5671	0.0000
Export	0.0012	0.0000	0.0001	0.0000

Analysis of cointegration is done using bound testing cointegration, and the result is presented in Table 2. From the bound testing results, the calculated F-Statistic which is 10.350 is more than the upper bound value (6.25) at 5% significant level. Hence, the null hypothesis is rejected indicating the presence of long run relationship between economic growth and the variables under investigation.

Table 2 – Bound Testing Results

The estimated F-Statistic: 10.350		
Critical Values	Pesarran <i>et al.</i> (2001) Table	
	Lower Bound	Upper Bound
10%	3.17	4.14
5%	5.79	6.85
1%	5.15	6.36

Empirical findings show that gross fixed capital formation has a long run positive relationship with economic growth in South African economy. Export is also found to exert significant positive influence on economic growth. Consumption expenditure, Gross domestic savings and private employment also have significant positive impacts on growth of the economy. On the contrary, both employment by government and consumption expenditure by government are found not to have significant positive impact on the growth of the economy. It is not surprising to see government employment not having significant impact because of poor attitude to work commonly pervasive in public sector in developing countries, couple with bureaucratic tendencies and high level of corruption in the system. Also, insignificant impacts of consumption expenditure by government could also be

attributed to high level of recurrent expenditure by the government which does not drive growth. Also, most of the budgeted amount for capital expenditure are diverted or over inflated as a result of high state of corruption in the system.

Table 3 – Long-run results

Variable	Coefficient	Probability
GFCF	0.6127	0.0010***
EXP	0.5172	0.0008***
EMG	0.8016	0.5284
CG	0.1452	0.3681
CH	0.0416	0.0000***
GDS	0.7615	0.0005***
EMP	0.6149	0.003***
C	0.6765	0.8507

*** connotes significant at 5%.

Table 4 shows the empirical result of short run relationship. The error correction term (-0.8623) is negative and significant suggesting the presence of at least a long run causation from the independent variables to economic growth. The value of error correction term also connotes that 86% of disequilibrium in the short run that is corrected in the long run. Our results further show that gross fixed capital formation, employment by private sectors, consumption expenditure by government, household consumption expenditure and private sector employments are found to positively and significantly influence the growth of the economy in the short run. Interestingly, exports and domestic savings are found not to be significant drivers of growth in short run in South African economy. This is not entirely surprising as savings in itself is not expected to translate to growth but rather invested savings.

Table 4 – Short run results

Variables	Coefficient	Probability
GFCF	0.3577	0.000***
EXP	0.7512	0.0712
EMG	0.5480	0.5124
CG	0.4812	0.0003***
CH	0.0604	0.0000***
GDS	0.6312	0.6125
EMP	0.7986	0.000***
Coint Eq(-1)*	-0.8623	0.0000

*** connotes significant at 5%.

Table 4 displays the result of the Granger causality test. Evidence of bidirectional causality is found between gross fixed capital formation and economic growth. By implication, both investment and growth reinforce each other in the economy. Bidirectional causality was also established between private sector employment and economic growth. Unidirectional causality was established between household consumption and growth, savings and growth and export and growth. Both government expenditure on consumption and public sector employment are found not to have any causal relation with economic growth.

Table 4 – Results for Pairwise Granger Causality

Null Hypothesis	F- stat.	Prob.	Direction of Causality
GFCF does not Granger Cause GDP	9.73020	0.0008	Bidirectional causality
EXP does not Granger Cause LNTIN	0.69302	0.005	Unidirectional causality
EMG does not Granger Cause GDP	3.70324	0.0701	No causality
CG does not Granger Cause GDP	0.17694	0.6779	No causality
CH does not Granger Cause GDP	0.51851	0.003	Unidirectional causality
GDS does not Granger Cause GDP	0.61520	0.012	Unidirectional causality
EMP does not Granger Cause GDP	6.4318	0.0001	Bidirectional causality

CONCLUSION AND POLICY RECOMMENDATION

South Africa is one of the largest economies in African continent and one of the major players in BRICS economies. Consequently, many the African nations had a lots to learn from the growth and development strategies of the most developed African country. Evaluating the determinants of the growth process in South Africa is therefore strategically important, not only for South Africa but the rest of the African nations. Thus, this paper examines the determinants of economic growth in South Africa using quarterly data from 1967 to first quarter of 2022. The data on Gross fixed capital formation (GFCF), Final consumption by government (CG) and final consumption by household (CH), Gross Domestic Savings (GDS), total employment by public (EMG), and Exports (EXP), with Total employment by private sector (EMP) and GDP are sourced from South African Reserve Bank. The paper contributes to existing literature by breaking down the total employment into the private sector employment and public sector employment, and by breaking the consumption expenditure into household consumption expenditure and government consumption expenditure. The empirical findings from the Autoregressive Distributed Lag model (ARDL) shows that there exists long run relationship between economic growth and the variables under investigation. Gross fixed capital formation has a long run positive relationship with economic growth in South African economy. Export is also found to exert significant positive influence on economic growth. Gross domestic savings and private employment also have significant positive impacts on growth of the economy. However, both employment by government and consumption expenditure by government are found not to have significant positive impact on the growth of the economy.

The ECM further confirmed the long run relationship among the variables as well as established the short run positive and significant impacts of Gross fixed capital formation, household consumption expenditure, private employment and government expenditure on economic growth. Exports, savings and public sector employment do not exert significant impact in the short run. Evidence from causality test also show that there exists a bidirectional causal relation between gross fixed capital formation and economic growth, and also between private sector employment and economic growth. Unidirectional causality is established between each of the remaining variable and economic growth, with the exception of government consumption and public sector employment as they are both found not to have causal relation with economic growth in South African economy. Generally, this study reveals the importance of private sector development in the process of growth. The evidence from the study affirms that private sector plays an important in driving the growth process. As such, government must provide necessary enabling environment to simulate growth process. The study further recommends that South African government needs to strengthen her institutions to curb or minimise so as to ensure government consumption expenditure impact the growth process.

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