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**Article**

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# The Empirical Analysis of the Determinants of Government Expenditure in South Africa from 1970 to 2016

**Glenda Maluleke**[1]

**Abstract**. This study empirically examines the determinants of government expenditure in South Africa over the period 1970 to 2016. The study employed the Johansen-Juselius cointegration test and error correction techniques. The results revealed that there is a long-run relationship between government expenditure and its determinants. The study found that urbanization rate, national income, poverty rate and the wage rate significantly influence the size of government expenditure in South Africa. Therefore, the study recommend that government create job opportunities, increase its expenditure in developing rural areas, and find ways to manage the public sector wage bill. The study concludes that population growth, trade openness and inflation, are not important in determining government expenditure in South Africa.

**Keywords:** wage rate; urbanization; national income; co-integration; error correction model

**JEL Classification:** H50

## 1. Introduction

Government expenditure is on the increase in almost every country including South Africa. The government provides goods and services such as health care, education, and social services to the public through income distribution and resources allocation. The provision of public goods and services by the South African government has further contributed to the increase in government expenditure. Spending by government has continued to rise due to an increase in demand for public goods such as health care, electricity and education. In 2012, social services provided by the South African government consisted of 57% of public expenditure, yet it was 49% a decade previously (National Treasury, 2012). Government expenditure as a percentage of GDP has increased from 19.4 percent in 1970 to 29.9 percent in 2016 (see Figure 1). According to Menyah and Wolde-Rufael (2012), the share of government expenditure in GDP in South Africa has increased in absolute and in relative terms over the years. During the pre-1994 period, government expenditure was low compared to post-1994. Figure 1 shows the trend in government expenditure as a percentage of GDP from 1970 to 2016.



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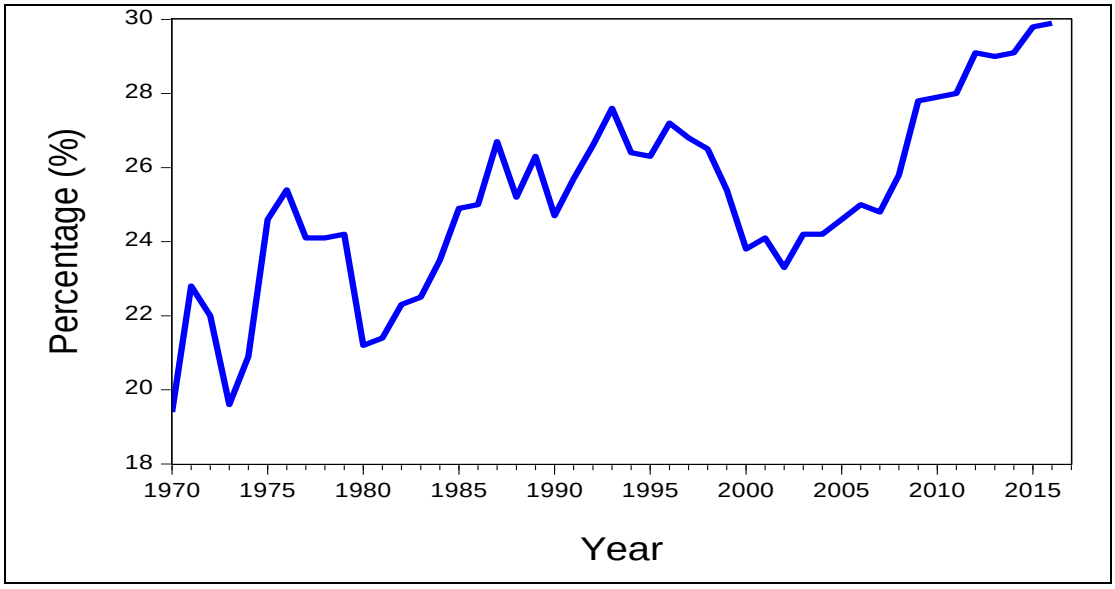


**Figure 1. Government Expenditure as a Percentage of GDP: 1970-2016**

*Source: Own compilation from SARB, (2017)*

In Figure 1, it can be seen that government expenditure as a percentage of GDP increased from 26.4 percent in 1994 to 29.9 percent in 2016. In 1970, the government expenditure as a percentage of GDP was 19.4 percent. This has been the lowest government expenditure as a percentage of GDP since 1970. For the period of 1977 to 1979, the government expenditure as a percentage of GDP was kept at 24 percent before it decreased to 21 percent between 1980 and 1981. It has continued to increase since 2008, and it has been maintained at 29 percent since 2012 (see Figure 1). In the 2012/13 financial year, the budget exceeded one trillion rand for the first time. For 2013/14, the budget increased by about 8.9% to R1.15 trillion and the bulk was allocated to social services, which include health, education, housing and social welfare (National Treasury, 2013).



The factors that influence the growth of government expenditure have been a central concern for economists going as far back as Wagner (1893). Wagner (1890) suggests that government spending has a tendency to increase relative to national income, while the Keynesian theory posits that the increase in national income is caused by the growth in government expenditure. Many studies have suggested that key determinants of government expenditure include macro-economic variables such as inflation, public debt, and openness (Rodrik, 1998; Shonchoy, 2010; Zakaria & Shakoor, 2011). Demographic factors such as population growth and urbanization have also been found to be the determinants of government expenditure by studies such as Shelton (2007) and Kimakova (2009). In a study regarding South Africa, Seeber and Dockel (1978) outlined the factors influencing government expenditure as the needs of the citizens; the stage of country development; political processes including budgetary procedures; and the efficiency of the government in providing services to its people.

This study is significant as many of the studies on the determinants of government expenditure are on the developed countries. There are a few studies on the determinants of government expenditure that have been done in developing countries, in general, and in South Africa, in particular. Some of the studies done in South Africa focused on the relationship between government expenditure and national income. These include Ansari *et al*. (1997); Akitoby *et al.* (2006); Ziramba (2008); Menyah and Wolde-Rufael (2012). Based on these studies, it cannot be concluded that national income is the only determinant of government expenditure. Although there are a number of studies on the dynamics of government expenditure in South Africa, very few studies have studied the key determinants. Some of the studies include Seeber and Dockel (1978); Abedian and Standish (1984); and Alm and Embaye (2010).

The objective of this study is to determine the factors behind the increasing government expenditure in South Africa during the period 1970 to 2016, by using co-integration and error correction techniques. In addition, the study will provide valuable information to policy makers in the public sector, which will assist in the formulation of policies. It will also contribute to the literature in South Africa by providing a new understanding into the drivers of government expenditure in the country.

The rest of the study is organised as follows: Section 2 presents the related literature review; section 3 describes the empirical model specification data and the estimation techniques, while section 4 provides the empirical results, and section 5 concludes the study.

## 2. Literature Review

Several theories have explained the growth or size of government expenditure over the years. Prominent among such theories are Wagner's Law and the Peacock and Wiseman theory. The earliest theory of government growth is Wagner's Law, which states that as the economy grows, government functions and activities also increase (Wagner, 1893). The law indicates that the government embarks on new activities in the interest of the citizens and its purpose is to meet their economic needs. In turn, these will lead to an increase in government expenditure. It also suggests that as the national income of a country increases, so does its government expenditure. Wagner observes government expenditure as an endogenous factor that is determined by the growth of national income (Tang, 2001). Therefore, national income leads to government expenditure. According to Bird (1971), Wagner's Law suggests that the relationship between government expenditure and economic growth is that during the process of economic development, government spending has a tendency to increase relative to national income. This means that the state has to provide the necessary capital funds to finance large-scale capital expenditures.

Peacock and Wiseman (1961) assume that government expenditure increases due to the growth in revenue. According to Peacock and Wiseman, government expenditure will increase with respect to the growth of the economy. Peacock and Wiseman (1961) state that this occurs because the increase in government expenditure is related to the revenue collected by the government. There is a large gap between the expectations of the people regarding public expenditure and the tolerance level of taxation. Government can therefore not ignore the demands made by people for public goods and services, particularly, when the revenue collection is increasing at constant rate of taxation. In addition, during certain periods such as war, government will increase tax rates in order to raise more funds to meet the increase in government expenditure. After this period, tax rates may remain at that level since citizens have become accustomed to them. Consequently, the increase in revenue collected will lead to an increase in government expenditure. These theories highlight that government expenditure has the tendency to increase as the state of the economy changes.



The empirical findings in existing studies on the determinants of government expenditure vary. In the United States, Huang and McDonnell (1997) examined the growth of government expenditure by using quarterly data for the period from 1948 to 1990. The results showed that income per capita, unemployment rate, total government civilian employment, and military spending all have a positive and significant relationship with total government expenditure ratio. The rate of openness and the two dependency ratios for the elderly and youth respectively were found to be insignificant in explaining the growth of government expenditure in the United States. Ofori-Abebrese (2012) examined the influence of inflation, real GDP, trade openness, population growth, and relative price on government consumption expenditure in Ghana from 1977 to 2007. The results of the study indicate that real GDP, trade openness, and inflation have a negative influence on government consumption expenditure. The study also found that higher relative price levels and larger population size increase government consumption expenditure. Furthermore, the findings of Ukwueze (2015) indicated that in Nigeria the extent of revenue, growth rate of national income (output), and private investment significantly influence the size of public expenditure both in the short-run and long-run while the external and domestic debts significantly influence the size of government expenditure only in the

short-run. Therefore, the study recommended that the revenue base should be expanded; a conducive environment should be created for private investment to thrive; and debt accumulation should be reduced and used for stabilisation only in the short-run.

Other studies have examined the effects of foreign aid and trade openness on government expenditure. Remmer (2004) studied the effect of foreign aid on government expenditure in middle- and lower-income countries by using data from 1970 to 1999. The results revealed that dependence on foreign aid leads to a growth of government expenditure in middle- and lower-income nations. The study further suggests that foreign aid is becoming an important determinant of government size. Turan and Karakas (2016) examined the effect of trade openness and per capita GDP on the size of government for Turkey and South Korea by using the ARDL approach to co-integration. The result shows that in the long-run, per capita GDP has a positive and significant influence on the government size in both countries. The results also indicate that per capita GDP has a significant and negative impact for Korea in the short run. The results further show that trade openness has a negative effect on government size in Turkey, while it has a positive effect in South Korea. The impact of trade openness is only significant for Turkey in the short run. The study suggests that, based on the experience of these countries, it is beneficial for a country to have a more open economy as a strategy of development. However, the strategy should be accommodated with the increase in government size to provide necessities that export-oriented industries demand.

Some studies have provided evidence that the support of Wagner's Law differs depending on the country. For example, Kolluri *et al.* (2000) examined Wagner's Law in G7 industrialised countries for the period 1960 to 1993. The results revealed that economic growth was positive and statistically significant for most countries that were tested. This indicates that national income has an important influence on government expenditure in the short-run. Tang (2001) also found that in the short-run, Wagner's Law is supported in Malaysia. The implication is that as economic activities expand, more government spending is required. In South Africa, Menyah and Wolde-Rufael (2012) evaluated the validity of Wagner's Law for the period from 1950 to 2007. The findings of the study show evidence of causality running from income to government expenditure which supports the Wagnerian proposition of an expanding public sector. This suggests that growth in government expenditure seems to be a result of economic growth or social progress. Based on the results, the study recommends that since economic growth is the determinant of government expenditure, South Africa have to achieve a higher economic growth to deal with the growing demand for social and infrastructure expenditure. On the other hand, Sinha (2007) studied Wagner's hypothesis for Thailand from 1950 to 2003 and concluded that there is no such evidence to support Wagner's Law in the country.



## 3. Methodology

### 3.1. Model Specification and Data

The empirical model used in this study is the modified version of the model used by Shelton (2007), Huang and McDonnell (1997), and Fielding (1997), and is expressed as follows

$$GE_t = \alpha_0 + \beta_1 POV_t + \beta_2 URB_t + \beta_3 PG_t + \beta_4 Y_t + \beta_5 INF_t + \beta_6 TO_t + \beta_7 WR_t + \mu_t \ldots\ldots\ldots\ldots (1)$$

The variables are converted to logarithms in order to obtain elasticity coefficients on these variables and minimise the impact of outliers. In a log-linear specification, equation (1) is of the form:

$$InGE_t = \alpha_0 + \beta_1 InPOV_t + \beta_2 InURB_t + \beta_3 InPG_t + In\beta_4 Y_t + In\beta_5 INF_t + In\beta_6 TO_t + In\beta_7 WR_t + \mu_t \ldots\ldots\ldots\ldots (2)$$

where $GE$ is government expenditure measured by ratio of government expenditure to GDP, $POV$ is poverty rate measured by consumption per capita, $URB$ is urbanization rate measured as people living in urban areas, $PG$ is population growth, $Y$ is national income measured by real GDP per capita, $INF$ is inflation rate of the general price level and is measured by the consumer price index, $WR$ is wage

rate and the unit labour cost in the manufacturing sector will be used as the proxy, $TO$ is trade openness and measured by the ratio of imports plus an export to GDP, and $\alpha_0$ is constant term, $\beta$*'s* are the coefficients, $\mu_t$ is error term and $t$ is the time/period.

There are a number of proxies that have been proposed in literature to measure poverty. Some studies have used the Gini coefficient and income per capita as measures of poverty.[1] In this study, consumption per capita will be used as a proxy for poverty rate. According to Odhiambo (2009, p. 323), "this measure is consistent with the World Bank's definition of poverty as the inability to attain a minimal standard of living measured in terms of basic consumption needs". When government expenditure is allocated to investment which will promote economic growth, it can assist in reducing poverty by creating employment. Government expenditure plays a major role in reducing poverty. When inequality continues to grow, poverty will increase and this will lead to more redistribution through transfers of social services and provision of public goods and services. Milanovic (2000) concludes that countries with high inequality of income redistribute more to the poor while Basset *et al.* (1999) found that there is a negative relationship between inequality and government transfers. Therefore, the expected sign for the coefficient of poverty is expected to be positive in this study.

According to Alm and Embaye (2010), as the population grows, the density of population is likely to increase as more people move in urban areas and government intervention will be required as market solutions become less efficient. As people move to urban areas, the standard for the demand of health, education and security services rises. This will lead to an increase in government expenditure. However, many studies that examined the impact of urbanization on government size have found mixed results. Some studies found a positive relationship between urbanization and government size (Jin & Zou, 2002; Kimakova, 2009). Some studies such as Rodrik (1998) determined that urbanization has a negative impact on government size. Therefore, a prior expectation is that urbanization will either have a positive or negative relationship with government expenditure in this study.



According to Peacock and Wiseman (1961), population growth can cause a rise in government expenditure such as education, health and security since it is the responsibility of the government to provide basic services to the public. The establishment of social service facilities, schools and hospitals has to be developed with population growth in mind. The relationship between population and government expenditure is ambiguous. Shonchoy (2010) and Alesina and Wacziarg (1998) found a negative relationship between population and government expenditure. For this study, a positive relationship between population growth and government expenditure is expected.

The principle of the Wagner's Law claims that the ratio of government expenditure to GDP is positively related to GDP per capita (Shelton, 2007). In this study, real GDP per capita is used as a proxy for income. Some empirical studies on the relationship between national income and government expenditure identified a negative relationship (Landau, 1983). In other cases, a positive relationship was found (Huang & McDonnell, 1997; Fielding, 1997). Therefore, the coefficient of national income determined in this study could be either positive or negative.

The relationship between inflation rate and government spending is mixed. Opler (1988) has theorised that inflation leads to growth in the real public expenditure share of real GDP; while Lin (1992) established that inflation reduces government expenditure share of real GDP. In this study, the relationship between the rate of inflation and government expenditure is expected to be negative as inflation reduces the real value of government revenue which limits the government's ability to spend.

Government provides goods and services that the private sector would not be able to provide. An increase in the provision of public goods leads to an increase in the price of government output. The wage rate has been used by Alm and Embaye (2010) and Thamae (2013) to show the true cost of public service provision in determining the factors that explain the growth of government expenditure

[1] See (Odhiambo, 2009).

in South Africa and Lesotho, respectively. The expected sign of the wage rate is positive because of the supply side effects of the Baumol Disease (Baumol, 1967).

Rodrik (1998) suggests that the relationship between trade openness and government size can be explained by the compensation hypothesis. The dependency of a country on foreign trade increases the volatility in domestic markets brought by dependence on the development of its trading partners. This creates incentives for the government to provide social security against internationally generated risks. Trade openness and government expenditure are expected to have a positive relationship as observed by Rodrik (1998). Trade openness and government expenditure are expected to have a positive relationship as the country that is open has a greater demand for government transfers in the form of social protection (Cameron, 1978). Additionally, as observed by Rodrik (1998), trade openness has a positive correlation with the government expenditure.

This study uses annual time series data of South Africa, covering the period 1970 to 2016. The data for the variables were obtained from the South Africa Reserve Bank (SARB) and the World Bank Economic Indicators.

### 3.2. Estimation Techniques

In this study, the error correction model (ECM) will be used. The estimation of the model in the study will involve three steps. The study begins by determining the order of integration of the variables by using the Augmented Dickey Fuller (ADF), Dickey-Fuller Generalised Least Square (DF-GLS), and Phillips-Perron (PP) unit root tests. The second step is to determine the existence of a long-run relationship among the variables in the model (2) by using the Johansen-Juselius co-integration test. To determine the number of co-integrating vectors, Johansen (1988) and Johansen and Juselius (1990) suggested two procedures, namely the maximum eigenvalue and the trace statistic to be used to examine the number of vectors. The maximum eigenvalue test statistic is given by:

$$\lambda_{max}(r, r+1) = -T \ln (1 - \hat{\lambda}_{r+1}) \quad (3)$$



The trace test statistic is in the form of:

$$\lambda_{trace}(r) = -T \sum_{i=r+1}^{n} \ln(1 - \hat{\lambda}_{r+1}) \quad (4)$$

Lastly, if a long-run relationship exists between government expenditure and its determinants, the estimation of the ECM will be conducted. To estimate the ECM, firstly the error correction terms for the government expenditure equation are derived. In the second stage, Hendry and Ericsson's (1991) general-to-specific estimation technique is used. The general-to-specific estimation technique involves the estimation of the general model and then one-by-one eliminates the insignificant variables until parsimonious results are attained (Huang, 1994). The ECM in this study is expressed as follows:[1]

$$\begin{aligned}\Delta InGE_t = \alpha_0 &+ \sum_{i=1}^{m} \Delta InGE_{t-i} + \sum_{i=0}^{n} \beta_1 \Delta InPOV_{t-i} + \sum_{i=0}^{n} \beta_2 \Delta InURB_{t-i} + \sum_{i=0}^{n} \beta_3 \Delta InPG_{t-i} \\ &+ \sum_{i=0}^{n} \beta_4 \Delta InY_{t-i} + \sum_{i=0}^{n} \beta_5 \Delta InINF_{t-i} + \sum_{i=0}^{n} \beta_6 \Delta InTO_{t-i} + \sum_{i=0}^{n} \beta_7 \Delta InWR_{t-i} \\ &+ \gamma ECM_{t-1} + \mu_t \quad (5)\end{aligned}$$

Where $\Delta$ is the first difference, $\gamma$ is the speed of adjustment and should be negative and significant, and $ECM_{t-1}$ is the lagged error term. The $\gamma$ coefficient is the feedback effect and shows how much of the disequilibrium is being corrected, that is, the extent to which any disequilibrium in the previous periods affects any adjustments in $Y_t$ period (Asteriou & Hall, 2007).

[1] See (Mehra, 1991)

## 4. Empirical Results and Analysis

### 4.1. Stationarity Test Results

For all the tests, the null hypothesis of the presence of unit root (non-stationarity) was tested against the alternative hypothesis of the absence of a unit root (stationarity). The stationarity test results are reported in Table 1. The results show that the variables are not stationary in levels. This is shown by the calculated test statistics which are lower in absolute terms than the critical values. Since all the variables are not stationary in levels, the next step is to difference the variables once in order to perform stationary tests on differenced variables. When all the variables are differenced, the results indicate that the variables are stationary in first difference. The results are consistent in all the tests used. The ADF, DF_GLS, and PP tests reject the null hypothesis of non-stationarity for all differenced variables and conclude that all variables are stationary and are integrated of the same order *I*(1). The results are presented in Table 1.

**Table 1. Stationarity Test Results for all Variables**

| Stationarity of all Variables in Levels | | | | | | |
|---|---|---|---|---|---|---|
| | ADF | | DF-GLS | | PP | |
| Variable | Intercept | Trend and intercept | Intercept | Trend and intercept | Intercept | Trend and Intercept |
| GE | -2.38 | -2.36 | -0.88 | -2.77 | -2.35 | -3.16 |
| POV | -0.13 | -2.12 | -0.09 | -2.16 | -0.27 | -1.52 |
| URB | -1.08 | -0.86 | -1.36 | -1.64 | -1.08 | -1.07 |
| PG | -1.20 | -1.65 | -0.84 | -1.74 | -1.21 | -1.80 |
| Y | -0.87 | -1.44 | -0.85 | -1.49 | -0.52 | -1.04 |
| INF | -2.57 | -2.45 | -1.30 | -1.37 | -2.12 | -3.14 |
| WR | -1.50 | -2.37 | 0.05 | -2.16 | -1.48 | -2.36 |
| TO | -1.81 | -1.99 | -1.62 | -2.04 | -1.77 | -1.96 |
| Stationarity of all Variables in First Difference | | | | | | |
| GE | -7.33*** | -7.23*** | -2.42** | -4.12*** | -8.00*** | -7.90*** |
| POV | -4.68*** | -4.68*** | -4.70*** | -4.68*** | -3.64*** | -3.54*** |
| URB | -5.61*** | -4.91*** | -1.75* | -3.72** | -5.63*** | -6.79*** |
| PG | -7.63*** | -7.58*** | -7.46*** | -7.67*** | -7.57*** | -7.53*** |
| Y | -4.21*** | -4.28*** | -4.17*** | -4.22*** | -4.21*** | -4.22*** |
| INF | -6.24*** | -6.33*** | -5.33*** | -6.32*** | -8.95*** | -11.20*** |
| WR | -7.07*** | -7.04*** | -7.14*** | -7.19*** | -7.14*** | -7.17*** |
| TO | -6.12*** | -6.05*** | -6.18*** | -6.17*** | -6.37*** | -6.32*** |

*Source: Author's computation based on Eviews 9*

*Notes: *, ** and *** denotes stationarity at 10%, 5% and 1% significance levels respectively*

### 4.2. Co-integration Test Results

Since it has been established that the variables under consideration are integrated of the same order, this study proceeds to perform a co-integration test. Both the trace statistic and the maximum eigenvalue test reject the null hypothesis of no co-integration at the 5% level of significance. This is confirmed by the calculated trace statistic and the max-Eigen statistic that have been found to be greater than the critical value. The trace statistic reveals that there are four co-integration equations while the max-Eigen statistic reveals that there is one co-integrating equations at 5% level of significance. This shows that there is a long-run relationship between government expenditure and its determinants, namely poverty rate, population, urbanization, national income, inflation rate, trade openness, and wage rate. Table 2 shows the results of the Johansen-Juselius co-integration test based on the trace test and on the maximum eigenvalue.

**Table 2. Johansen-Juselius Co-integration Test Results**

| Panel A: Trace Statistic | | | | | Panel B: Maximum Eigenvalue Statistic | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Null | Alternative | Trace Statistic | 95% Critical Value | Prob. | Null | Alternative | Max-Eigen Statistic | 95% Critical Value | Prob. |
| r = 0 | r ≥ 1 | 221.671 | 159.530 | 0.000 | r = 0 | r = 1 | 66.458 | 52.363 | 0.001 |
| r ≤ 1 | r ≥ 2 | 155.213 | 125.615 | 0.000 | r ≤ 1 | r = 2 | 44.447 | 46.231 | 0.077 |
| r ≤ 2 | r ≥ 3 | 110.766 | 95.754 | 0.003 | r ≤ 2 | r = 3 | 38.505 | 40.078 | 0.074 |
| r ≤ 3 | r ≥ 4 | 72.262 | 69.819 | 0.032 | r ≤ 3 | r = 4 | 26.410 | 33.877 | 0.296 |
| r ≤ 4 | r ≥ 5 | 45.852 | 47.856 | 0.076 | r ≤ 4 | r = 5 | 21.605 | 27.584 | 0.241 |
| r ≤ 5 | r ≥ 6 | 24.247 | 29.797 | 0.190 | r ≤ 5 | r = 6 | 12.376 | 21.132 | 0.511 |
| r ≤ 6 | r ≥ 7 | 11.871 | 15.495 | 0.163 | r ≤ 6 | r = 7 | 8.994 | 14.265 | 0.287 |
| r ≤ 7 | r ≥ 8 | 2.877 | 3.841 | 0.090 | r ≤ 7 | r = 8 | 2.877 | 3.841 | 0.090 |

*Source: Author's computation based on Eviews 9*

*Notes: r stands for the number of co-integrating vectors*

### 4.3 Error Correction Model Estimation Results

The Johansen-Juselius co-integration test has established that there is a co-integrating relationship. Therefore, the error correction model (ECM) can be estimated. The results of the parsimonious model are presented in Table 3.

**Table 3. The Error Correction Model**

| Dependent variable – lnGE | | | | |
|---|---|---|---|---|
| Variable | Coefficient | Std. Error | t-Statistic | P-value |
| $C$ | -0.024 | 0.010 | 2.461 | 0.019 |
| $DlnPOV$ | -0.765 | 0.453 | -1.690 | 0.101 |
| $DlnPOV_{t-2}$ | -1.280 | 0.637 | -2.009 | 0.053 |
| $DlnURB$ | -0.098 | 0.039 | -2.476 | 0.019 |
| $DlnPG$ | 0.086 | 0.071 | 1.206 | 0.237 |
| $DlnY$ | -0.862 | 0.618 | -1.395 | 0.173 |
| $DlnY_{t-1}$ | 0.726 | 0.356 | 2.038 | 0.050 |
| $DlnY_{t-2}$ | 1.198 | 0.684 | 1.752 | 0.089 |
| $DlnINF$ | -0.018 | 0.020 | -0.890 | 0.380 |
| $DlnTO$ | 0.143 | 0.116 | 1.235 | 0.226 |
| $DlnWR$ | 0.065 | 0.031 | 2.087 | 0.045 |
| $ECM_{t-1}$ | -0.676 | 0.153 | -4.434 | 0.000 |
| R-squared: 0.56 | | Adjusted R-Square: 0.41 | | |
| S.E Equation: 0.04 | | Sum Sq. resids: 0.05 | | |
| Durbin-Watson: 1.48 | | F-Statistic 3.73 (0.002) | | |
| Normality test | | 2.78 (0.252) | | |
| Heteroscedasticity test | | 0.61 (0.807) | | |
| Serial Correlation test | | 1.80(0.183) | | |

*Source: Author's computation based on Eviews 9*

The results for the ECM reveal that the key determinants that are significantly associated with government expenditure are poverty rate; urbanization rate; national income; and wage rate. The study did not find a significant relationship between government expenditure and population growth, inflation rate and trade openness. The estimated value of ECM is negative conforming to economic theory and it is statistically significant at 1% level of significance. The coefficient explains the rate at which the previous period's disequilibrium of the system is being corrected. The coefficient of 0.676 suggests that the government corrects its previous period disequilibrium at a speed of 68% per year. The diagnostic checks have revealed the suitability of the model.

The results show that past and current poverty rate have a negative and significant influence on government expenditure. This implies that a 1% increase in poverty will lead to a decrease in government expenditure. This means that in South Africa, poverty rate has an influence on the level of government expenditure. The findings do not support the study by Milanovic (2000), who found that countries with high inequality of income redistribute more to the poor while the study by Mehmood and Sadiq (2010) support the negative relationship between government expenditure and poverty.

Demographic factors are also determinants of government expenditure according to previous studies. The results reveal that there is a negative and significant relationship between urbanization and government expenditure in South Africa. This implies that a 1% increase in urbanization will lead to a 0.098% decrease in government expenditure. The negative impact of urbanization on government expenditure could be attributed to the positive effect of the population moving into urban areas. It could be that the population moving into urban areas are the economically active population who do not depend on the government for basic services such as health, education and security. The results are supported by similar studies that found that urbanization has a negative influence on the government size.[1]

The results further indicate that past national income has a positive and significant influence on government expenditure. The results does support Wagner's Law that national income leads to an increase in government expenditure. These findings imply that a 1% increase in national income will lead to an increase in government expenditure. The results are supported by similar studies that found evidence in favour of Wagner's Law.[2]

The results also show that the wage rate, which is a proxy for the true cost of public service provision, has a positive and significant influence on government expenditure. This implies that a 1% increase in the wage rate will lead to a 0.065% increase in government expenditure. This suggests that the cost of public goods and services is important in determining the level of government expenditure. This is not unexpected as the compensation of employees in South Africa accounts to more than 40% of government expenditure. The result supports Baumol (1967) that the growth of government expenditure is determined by the cost of public goods and services.



## 5. Conclusion and Recommendations

This study examined the determinants of government expenditure in South Africa from 1970 to 2016. The study employed the Johansen-Juselius co-integration test to examine the long-run relationship between government expenditure and its determinants. The results from error correction model showed that the coefficient of the error correction term is negative and statistically significant at 1% level of significance and it suggests that the government corrects its previous period disequilibrium at a speed of 68% per year. The results of this study show that urbanization rate, national income, poverty rate and the wage rate significantly influence the size of government expenditure. Population growth, inflation rate and trade openness were found to have an insignificant influence on government expenditure, which suggests that they are not important in determining government expenditure in South Africa.

Based on the findings, the recommendations from this study are as follows: Firstly, the government should create more projects such as Expanded Public Works Programmes (EPWP) that target all the sectors of the economy in urban and rural areas to create job opportunities. This can reduce the number of dependants on social assistance from the government and reduce poverty. Secondly, the government need to increase its expenditure in developing rural areas and should ensure that quality education and health services are available. Consequently, people would not need to move to urban

[1] See (Zakaria & Shakoor, 2011; Rodrik, 1998).
[2] See (Kolluri et al., 2000, Akitoby et al., 2006; Kalam & Aziz, 2009).

areas to obtain better infrastructure and acquire such services. Lastly, the government needs to find a way to manage the public sector wage bill to reduce government expenditure.

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