



Impact of Government Expenditure on Agricultural Productivity in South Africa

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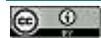
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Abstract

Government expenditure has been considered to be having an extent of impact on economic performance at both sectoral level and aggregate national level. Evidence from literature, however shows that this notion has not been generally accepted across countries and sectors. Considering the significance of agriculture in an economy most especially in Africa, and the consequent role of government, this study examines the impact of government expenditure on agricultural productivity in South Africa using annual time series data from 1983 to 2016. It is shown that there exists a long-run relationship between government expenditure on agriculture and agricultural productivity, and a positive significant effect only to be expected in the long-run. The finding underscores the non-negotiable role of the South African government funding of agricultural sector in an era of climate change and a highly commercialized agricultural system. Furthermore, considering the low and declining pattern of government expenditure in the sector in South Africa, the desired productivity growth impact will only be experienced in the long-run all things being equal. Improving government funding in the sector could accelerate the desired agricultural productivity in the short-term.

Keywords: Agricultural productivity; Government expenditure; Food security; ARDL; South Africa.



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1. Introduction

Agriculture plays an indispensable role in the economic development process of developing countries and this role cannot be overemphasized. Wangusi and Muturi (2015), noted that agriculture is perceived to be an engine for overall economic development of developing countries. Dethier and Effenberger (2012), and Diao *et al.* (2010) noted that the agricultural sector undeniably contributes to employment generation, poverty reduction, improved livelihood of rural households and greater food security in the sub-Saharan Africa (SSA) region of the world. Agricultural productivity is an integral part of food security both at the micro-household level and national or international aggregate level. At the micro level, agricultural productivity influences supply of food at the household (i.e. food availability, food produce retained for household use) and the quantity of agricultural produce available for sale. This by extension has impact on the incomes of farmers and farm labourers, and the utilization of income to purchase other necessary food items for household consumption (that is economic food access), and household food expenditure which improves household real income or not. At the macro level which is the national and international levels, concerns for agricultural productivity is imperative for food security in the era of rapid population growth, increasing per capita food demand, food and agricultural commodity price instability and volatility and environmental challenges. Further explanation of agricultural-food security link is observed in the situation where agricultural commodity supplies depend on growth in productivity which is being affected more negatively by constraints in the availability of land and water resources for agricultural use. Hence, without doubt agricultural productivity is an important determinant of long-lasting food availability, access and stability which are elements of food security concerns, enhancement of farm and agro-industries as well as labour employment and welfare. Therefore, Asenso-Okyere and Jemaneh (2012) and Costaa *et al.* (2013) noted that raising agricultural productivity is necessary because it is the main sustainable and practical option needed to reduce food prices and improve food security situations Africa.

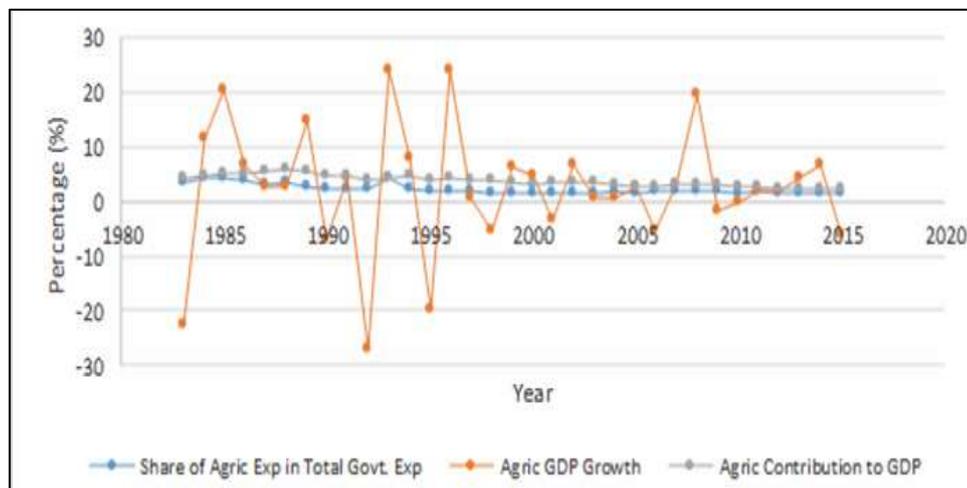
Despite the importance of agricultural productivity, increasing productivity has not really been the experience in the Sub-Saharan African region. This concern of low agricultural productivity has led to increasing discussions on the causes of such in the region in recent years (Alabi, 2014). Reduction in agricultural investment has been identified as one of the key factors among several others that contributes to poor agricultural performance, productivity and growth (Islam, 2011). One of such investments is public domestic expenditure on agriculture. The rationale for government involvement in the agricultural sector include correcting externalities, providing goods that

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are not efficiently, sufficiently produced and unequally distributed by market systems which are often unfair to rural dwellers that rely on agriculture for their living, addressing information imbalances in agricultural technology generation and adoption, agricultural research and development, and regulations which altogether have implication for agricultural productivity (Armas *et al.*, 2012; Mogues *et al.*, 2015). Furthermore, climate change issues and challenges, growing population which has been projected to reach 95 million by 2050 in South Africa and land resource constraints have necessitated government agricultural investment. It therefore becomes curious to reappraise level of government investment in agriculture and question if the current public investment level is able to drive agricultural productivity growth in the case of South Africa. Thus, the specific objective of the article is to examine the long and short run relationship between government agricultural expenditure and agricultural productivity in South Africa. Other parts of the paper are organised as follows: trend analysis of agricultural sector performance, brief review of literature, methodology, empirical results and discussion, and conclusion are presented in sections two to six respectively.

South Africa agricultural sector is dualistic in nature, consisting of a vibrant commercial which occupies about 80% of agricultural land and a smallholder farming sector that occupies the remaining 20% of agricultural land (Chisasa, 2015; OECD, 2011). Compared to the averages in Africa and the world, the agricultural sector energy intensity in South African is noticeably higher. The performance of South African agricultural sector with respect to the sectors' growth and contribution to total GDP has been abysmally low and appalling. Figure 1 illustrates that growth in the agricultural sector was highest in the years 1993, 1996 and 2008 accounting for 24 percent, 23.98 percent and 19.4 percent respectively. Aside these years, the sectors growth has been low and unstable as shown in Figure 1. Similarly, Figure 1 indicates that the sector has consistent declining contribution to total GDP in South Africa. The year 1988 is observed to be the year the sector recorded its highest contribution to total GDP in the country with about 5.8 percent contribution. Between 1995 and 2015, the average contribution stood at a low level of 3.12 percent. In the same manner, the share of government expenditure in the agricultural sector in South Africa has been low over the years. The average share of government spending in the sector to total government spending between 1995 and 2015 is 1.7 percent. It appears there is a neglect of the agricultural sectors in South Africa. This was also articulated in an earlier study by Meyer *et al.* (2009) that there is government underinvestment in agricultural research, deterioration in public sector support service delivery which are imperative to maintaining agriculture sector and inadequate infrastructural investment in agriculture. Without doubt and as equally noted by Mogues *et al.* (2015) and Goyal and Nash (2017), this low share falls short of the 2003 Maputo agreement which was reaffirmed at the Malabo Declaration in 2014 by African heads of state and government pledge to allocate 10 percent of their national budgets to the agricultural sector as part of the Comprehensive Africa Agriculture Development Programme (CAADP). This worrisome trends of the agricultural sector performance in South Africa questions the ability of the sector to be a driver of food security.

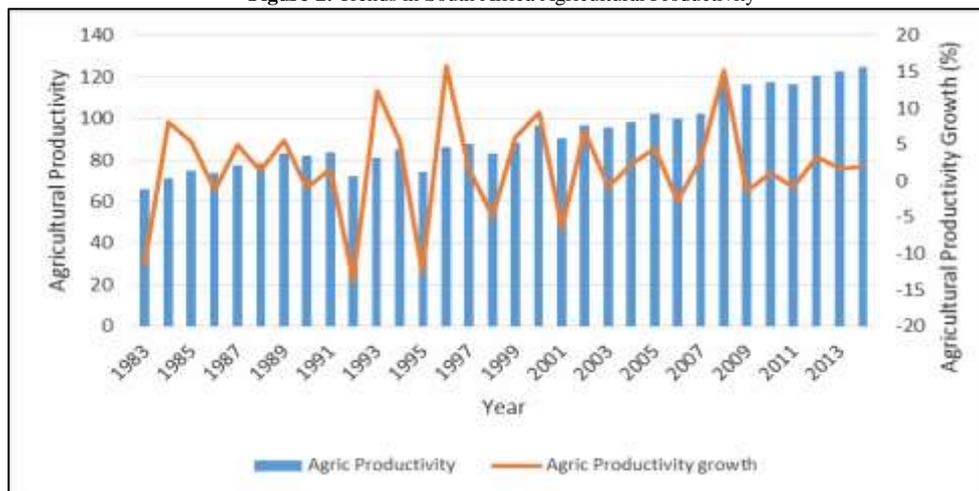
Figure-1. Trends in Agriculture GDP Growth, Contribution to Total GDP and Share of Agricultural Sector Public Expenditure in Total Expenditure



Source: SARB, World Bank

Figure 2 shows the trends of agricultural productivity in South Africa during the period 1983-2014. Looking at the Figure 2, it is seen that the trend in agricultural productivity growth rate in South Africa has been mixed and fluctuating overtime. This clearly indicates that South Africa has not experienced a sustained increase in agricultural productivity over the period of time considered. The average annual percentage growth in agricultural productivity for example, decreased from 1.13 percent during the period 1983-1987 to about -1.26 percent during the period 1988-1992. This is however expected considering the political unrest during the apartheid system of government. However, with the coming in of a democratic system of government in the country and the opening of the country to the international community, an increase in the average annual growth rate from what was obtained between 1993-1997 to about 4.52 percent was recorded. Unfortunately, the positive growth was not sustained as agricultural productivity growth rate declined to 2.19 percent and 1.20 percent during the periods 1998-2002 and 2003-2007, respectively. The average annual productivity growth rate however increased from 1.20 percent to 3.02 percent in the period 2008-2014.

Figure-2. Trends in South Africa Agricultural Productivity



Source: FAO, World Bank

2. Literature Review

Issues relating to government spending remained a subject of extensive theoretical and empirical investigation over the past decades, with various studies examining two contrary hypotheses i.e. Wagner's hypothesis and Keynesian hypothesis. Wagner hypothesizes that increase in government expenditure is a result of increase in national income while Keynes expressed same idea using different concept that increasing government expenditure leads to a growth in economic growth in an economy. Several of these studies (Babatunde, 2011; Frank *et al.*, 2014; Lingxiao *et al.*, 2016; Magazzino, 2012; Odhiambo, 2015) have been examined majorly at the aggregate level, which is based on the assumption that government expenditure in different sector has the same effect on the economy. However, this ought not to be so considering the fact that the importance of each sector to the economy differs, so would the government expenditure on each sector differ. Consequently, the impact of components and volume of government expenditure in each sector will vary. Benos and Zotou (2014); Dunne and Tian (2015) and Atilgan *et al.* (2017) also looked at this issue via sector-vis-à-vis-aggregate level. For instance, Atilgan *et al.* (2017) examined government health expenditure led growth hypothesis in Turkey.

Narrowing down to impact of government agricultural expenditure, it is observed that the impact has been related majorly to total factor productivity and economic growth outcomes. In the study of Tijani *et al.* (2015) where the error correction model was employed, only capital expenditure on agriculture was found to have significant positive impact on the Nigerian economy. A study carried out by Iganiga and Unemhilin (2011) using value of agricultural output as a proxy for agricultural productivity and applying a parsimonious error correction model found out that agricultural productivity in Nigeria is significantly and positively influenced by government capital expenditure in the short-run, the effect is however not instantaneous this is so because the effect is felt after one lag time period. Similar study carried out in Nigeria by Ele *et al.* (2014) found a contrary result that the effect of capital expenditure though positive, it however has an instantaneous effect. Likewise, the study of Iganiga and Unemhilin (2011) accounted for value of productivity rather than volume that this study intends to consider, as value could have been affected by various real economic activities.

The study of Baba *et al.* (2010) where agricultural GDP was used as a proxy for agricultural productivity also show that agricultural productivity in India is significantly and positively impacted on by public and private investment in agriculture in the country. Evidence from the study of Lee and Hsu (2009) indicates that returns to public agricultural investments appear to be more significant in the long-run. Likewise, evidence from a disaggregated analysis of government spending in the agricultural sector by Benin *et al.* (2012) shows that capital expenditure has significant long-run effect, whereas recurrent expenditures, have more short-run effects only on agricultural performance. Benin *et al.* (2009), applied a simultaneous estimate equation modelling approach to investigate the effect of public investment on agricultural productivity which is proxy by value of total agricultural output per capita of a household. The study shows that one percent increase in public spending on the agriculture sector is linked with about 0.15 percent increase in household agricultural production. Equally, development expenditure components (expenditure on health, education, and road) were found to have a larger effect on productivity.

The study carried out by Armas *et al.* (2012) in Indonesia where OLS and GMM approaches were utilized for a 30-year period time series data revealed that component of agricultural spending matters for agricultural growth. From their study, government spending on public goods in the agriculture sector (agriculture and irrigation) has had a positive impact on agricultural growth whereas spending of fertilizer subsidies shows a significant negative impact on agricultural productivity in the country. Nadeem and Mushtaq (2012), carried out a cointegration analysis on relationship between total factor productivity and investment in agriculture. A long-run relationship between total factor productivity and investment in agricultural research and extension was established. The study further estimated that one percent increase in research and extension expenditure would increase total factor productivity by 0.571 percent in the long run. Granger-causality tests also show that there is bidirectional relationship between agricultural research and agricultural productivity. Similarly, in the study of Nadeem *et al.* (2013) a coefficient of

0.24, 0.31 and 0.15 in agricultural research, irrigation and extension expenditures respectively suggest that a 1% increase in the expenditure components would increase total factor productivity in agriculture by 0.24%, 0.31 and 0.15% respectively.

Aside government expenditure, quite a few other macroeconomic indicators that have some extent of impact on agricultural productivity and performance have been identified in several literatures. These indicators include; include climatic factors like rainfall, temperature and CO₂, investment, infrastructure, urbanization, agricultural land size, labour, credit, international trade and income among others. However, this study considers urbanization only. Urbanization which is defined as the increasing share of a nation's population living in urban areas compared to rural area reflects socioeconomic development as well as socioeconomic imbalance. Urbanization has various implications including food production and agricultural performance (Satterthwaite *et al.*, 2010). Urbanization reduces productive labour in agricultural areas and increases competition for land and water resources between agricultural and other non-agricultural sector. Specifically, urbanization leads to inaccessibility of land, land fragmentation, change in land supply, and rapid increment in land values which together does not create a positive environment for agricultural productivity (Iheke and Ihuoma, 2016). Considering the above brief literature review, in agreement with Nadeem and Mushtaq (2012) it is observed that majority of studies on the agricultural sector outcomes of agricultural public expenditure have focused on aggregate economic growth and agricultural sector GDP, not so much on other development outcomes, which does include volume of agricultural productivity which have implications for food security, hunger and malnutrition.

3. Material and Method

The implicit model formulated to investigate the impact of government agricultural expenditure and other variable on agricultural productivity is expressed as follows:

$$\ln AP = f\{\ln GAE, \ln U\} \dots \dots \dots (1)$$

Where $\ln AP$, $\ln GAE$, and $\ln U$ are the logarithm form of index of agricultural productivity, agricultural sector government expenditure, and urbanization respectively. Yearly time series data over the period of 1983 to 2016 used in this study were obtained from the websites of Food and Agriculture Organization, South African Reserve Bank and The World Bank Group. The variable urbanization was introduced in order to address bias associated with bivariate models. Urbanization as a third variable affecting agricultural productivity gives a trivariate model. Auto-Regressive Distributed Lag (ARDL) bounds testing approach which was developed by Pesaran *et al.* (2001) was used to test the existence of a long-run relationship among variables. The approach is able to accommodate variables which are of different order of integration provided none of the variable has order of integration greater than 1. It is also appropriate for small sample size (Pesaran *et al.*, 2001) and able to generate short-run and long-run coefficients simultaneously. To investigate the existence of a long-run relationship or otherwise among the variables examined in this study, the ARDL model formulated is expressed as follows:

$$\Delta \ln AP_t = \alpha_0 + \sum_{i=1}^p \Delta \alpha_1 \ln AP_{t-i} + \sum_{i=0}^p \Delta \alpha_2 \ln GAE_{t-i} + \sum_{i=0}^p \Delta \alpha_3 \ln U_{t-i} + \beta_1 \ln AP_{t-1} + \beta_2 GAE_{t-1} + \beta_3 \ln U_{t-1} + u_t \dots \dots \dots (2)$$

Once cointegration is established, the long-run relationship is estimated using the conditional ARDL model specified as:

$$\ln AP_t = \delta_0 + \gamma_1 \ln AP_{t-1} + \gamma_2 \ln GAE_{t-1} + \gamma_3 \ln U_{t-1} + u_t \dots \dots \dots (3)$$

F-test of the joint significance of the coefficients of the lagged levels of the variables was used to test the hypothesis of no cointegration among the variables against the presence of cointegration among the variables. The null hypothesis of no cointegration between agricultural productivity, government agricultural sector expenditure, and urbanization is given as:

$$H_0 = \gamma_1 = \gamma_2 = \gamma_3$$

The alternative hypothesis is given as:

$$H_0 \neq \gamma_1 \neq \gamma_2 \neq \gamma_3$$

Decision on the rejection or acceptance of the null hypothesis is based on the two sets of adjusted critical values that provide the lower and upper bounds put forward by Pesaran *et al.* (2001). If the computed F-statistics falls above the upper bound critical value, then the null of no cointegration is rejected. If it falls below the lower bound, then the null cannot be rejected. Finally, if it falls between the lower and upper bound, then the result would be inconclusive. The short-run dynamics of ARDL model can also be found via the following equation;

$$\Delta \ln AP_t = \alpha_0 + \sum_{i=1}^p \Delta \alpha_1 \ln AP_{t-i} + \sum_{i=0}^p \Delta \alpha_2 \ln GAE_{t-i} + \sum_{i=0}^p \Delta \alpha_3 \ln U_{t-i} + \partial EMC_t \dots \dots \dots (4)$$

4. Results and Discussion

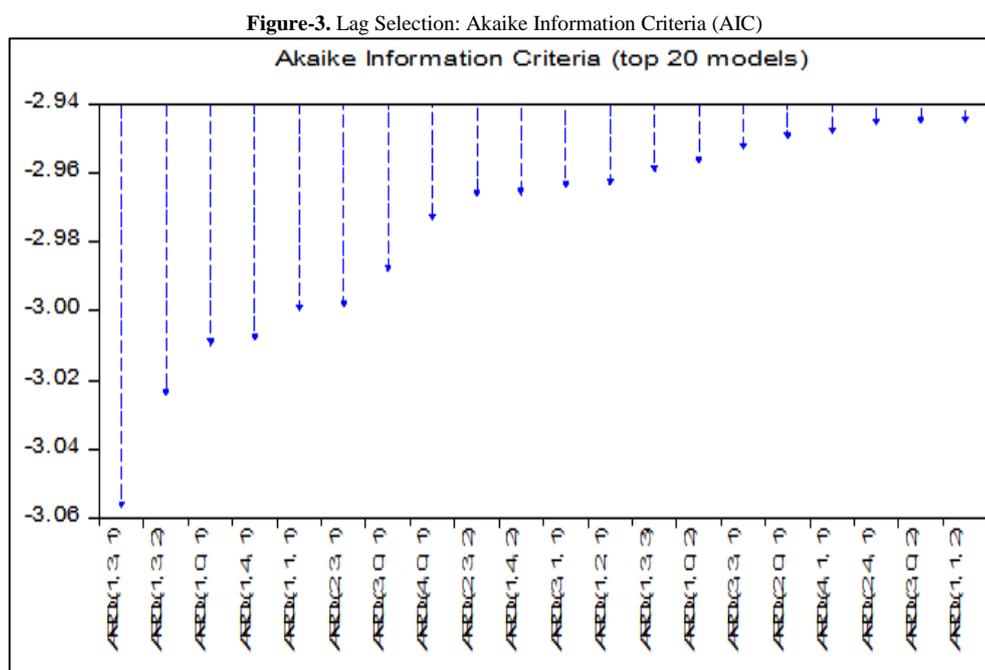
The result of the analysis is presented and discussed in this section. Table 1 shows the result of the ADF test of stationary for all the variables both in the levels and first difference where necessary. From the result, it can be deduced that we cannot reject the null hypothesis of unit root for both index of agricultural productivity and government expenditure on agriculture in their level form except for urbanization that is stationary at level I(0).

However, when a first differencing was carried out on both agricultural productivity and government expenditure, the null hypothesis of unit root was rejected. This implies that these variables (index of agricultural productivity and government expenditure on agriculture) are stationary of order one I(1). Given that all the variables are stationary at most at I(1), which is required for the application of ARDL approach, we proceeded to testing whether the variables are cointegrated using the ARDL bound testing approach.

Table-1

| Variables | Level | | First Difference | | Order of Cointegration |
|-----------|---------|---------|------------------|---------|------------------------|
| | ADF | p value | ADF | p value | |
| lnAP | 0.3062 | 0.9746 | -7.9678 | 0.0000 | I(1) |
| lnGAE | -1.2287 | 0.6496 | -6.3898 | 0.0000 | I(1) |
| lnU | -5.9160 | 0.0000 | - | - | I(0) |

Constructing the model needed to analyse the relationship between agricultural sector productivity and government expenditure on agriculture and urbanization requires an optimal lag order selection. Consequently, as shown in Figure 3, an optimal lag order of ARDL (1,3,1) as selected by Akaike Information Criteria (AIC) was used in executing the ARDL short-run and long-run relationship estimation between the variables.



The mixture of I(0) and I(1) variables used in this study justifies the use of ARDL Bounds test approach for cointegration relationship confirmation among the variables. The cointegration result in Table 2 shows clearly that the calculated value of F-stat 6.384 is greater than the upper bound values at all the levels of significance. This implies there is an existence of long-run relationship among the variables. This shows that long-run and short-run estimation analysis can be carried out.

Table-2. Bounds Testing for Cointegration Analysis

| F Test: | | | | | |
|-------------|-------------------|----------------|---------------------------------|------------|---------------------|
| F-statistic | Degree of Freedom | Critical Value | Pesaran <i>et al.</i> , (1999)a | | Conclusion |
| | | | I(0) Bound | I(1) Bound | |
| 6.384288 | 2 | 10 % | 2.63 | 3.35 | Cointegration Exist |
| | | 5% | 3.1 | 3.87 | |
| | | 2.5% | 3.55 | 4.38 | |
| | | 1% | 4.13 | 5.0 | |

Source: Authors Computation from E-views 10

Table 3 presents the result of long-run and short-run relationship estimates between agricultural productivity, public expenditure on agriculture, and urbanization. The variable of concern in this study (government expenditure on agriculture) exhibits significant positive effect at $p < 0.10$ on agricultural productivity in the long-run. This suggests that a unit increase in South African government expenditure on agriculture could yield only about 0.11 percent increase in agricultural productivity in the country. It however indicates that the current pattern of government expenditure in the sector is too limited to generate a significant magnitude in agricultural productivity in the long-run. Considering the short-run effect of government agricultural expenditure as well, it can be deduced that government expenditure on agriculture can only be observed after 2 year lag time period flowing the result of

D(LNGAE(-2)) which is significant at $p < 0.05$ level of significance. Viable explanation for these includes recipient of resource, allocation of resource and inefficient utilization of resources. Valdés and Foster (2010), argue that even though public spending can promote increase in agricultural productivity, the mix in spending on public goods needed to be considered. For instance, government expenditure on agriculture relates to institutional infrastructure (research and development; agricultural support; markets) and/or hard infrastructure (roads and railways), however, the productivity effect of these elements of expenditure cannot be instantaneous. Such example is expenditure on research and development which would take time to realise productivity impact. Aliber and Hall (2012), also avered that even though public expenditure on agriculture has increased, not much of this is reaching the intended beneficiaries at the household level. This is based on the fact that government departments which oversee the expenditure are inefficiently utilising the resources, have inadequate appreciation of their clientele as well as prioritise underspending over having a broad impact.

Urbanization (U) has an unexpected sign, which is positive (1.46) and significant ($p < 0.05$) in the model, which indicates a positive long-run relationship with agricultural productivity at 5% level of significance. According to the result, 1 percent increase in urbanization rate would lead to only 1.48 increase in agricultural productivity in the long-run in South Africa. Also, the short-term coefficient of urbanization is again positive (69.51), and statistically significant at 1 percent significance level. A possible reason for this positive relationship is increasing agricultural mechanization and agricultural intensification in the face of high-level urbanization. According to Sims et al. (2016) and Takeshima et al. (2016), agricultural mechanization is an option to mitigate the impact of migrating labour and rising labour costs, facilitate increased output, and expand area under cultivation.

Table-3. ARDL Long-run Estimates

| ARDL (1, 3,1) selected based on Schwarz criterion | | | | |
|---|-------------|----------------|-------------|--------|
| Dependent variable: Agricultural Productivity (<i>lnAP</i>) | | | | |
| 39 observations used for estimation from 1983 to 2016 | | | | |
| Variable | Coefficient | Standard Error | t-statistic | Prob. |
| <i>Long-run Estimate</i> | | | | |
| C | -3.0475 | 2.1867 | -1.3936 | 0.1767 |
| <i>lnGAE</i> | 0.1116 | 0.0649 | 1.7191 | 0.0990 |
| <i>lnU</i> | 1.4767 | 0.6562 | 2.250515 | 0.0343 |
| <i>Short-run Estimate</i> | | | | |
| D(<i>lnGAE</i>) | 0.0053 | 0.0451 | 0.1175 | 0.9075 |
| D(LNGAE(-1)) | 0.0008 | 0.0469 | 0.0164 | 0.9871 |
| D(LNGAE(-2)) | -0.1066 | 0.0423 | -2.5202 | 0.0191 |
| D(LNU) | 69.5095 | 12.7559 | 5.4492 | 0.0000 |
| CointEq(-1)* | -0.9114 | 0.1696 | -5.3729 | 0.0000 |

Source: Authors Computation from EViews 10

The short-run estimates results including the error correction term is also presented in Table 3. The most important term in this table is the value of error correction (ecm) that is highly significant. The estimated error correction coefficient of -0.9114 which is highly significant at $p < 0.01$ has a negative sign as required. This imply a high speed of adjustment to equilibrium after a shock. Approximately, about 91.4% of disequilibria from the previous year's shock converge back to the long run equilibrium in the current year.

Furthermore, a number of tests were performed to examine the validity of the model. The tests include Jarque-Bera to determine whether the residual are normally distributed, Breusch-Godfrey test to check for serial correlation, and Breusch-Pagan-Godfrey to test for Heteroskedasticity in the model formulated. The result of the Jarque-Bera test in Table 4 shows that the probability is more than 0.05 percent. This implies that the null hypothesis of normally distributed residuals cannot be rejected. In other words, the residuals are normally distributed as required. Also, the test for the presence of serial correlation in the model using the Breusch Godfrey test as reported in Table 4 shows the prob. χ^2 values is more than 0.05 percent, thus the null hypothesis of no serial correlation cannot be rejected, indicating that the model is free of serial correlation. Breusch-Pagan-Godfrey Heteroskedasticity Test also indicates evidence of Homoscedasticity of residuals. The stability test of the estimate using both CUSUM Test and CUSUM of Squares Test as shown in Figures 4 and 5 was further confirmed to be positive. These diagnostic results suggest that the model in this study is valid.

Table-4. Diagnostic Tests

| Normality Test: Residuals are normally distributed | | | |
|--|----------|------------------|----------|
| Jarque-Bera | 0.758108 | Probability | 0.684509 |
| Breusch-Godfrey Serial Correlation LM Test: No serial correlation | | | |
| F-statistic | 0.190815 | Prob. F(2,19) | 0.8277 |
| Obs*R-squared | 0.553304 | Prob. Chi-sq.(2) | 0.7583 |
| Breusch-Pagan-Godfrey Heteroskedasticity Test | | | |
| F-statistic | 0.522979 | Prob. F(7,23) | 0.8080 |
| Obs*R-squared | 4.256673 | Prob. Chi-sq.(7) | 0.7498 |

Source: Authors Computation from EViews 10

Figure-4. CUSUM Test

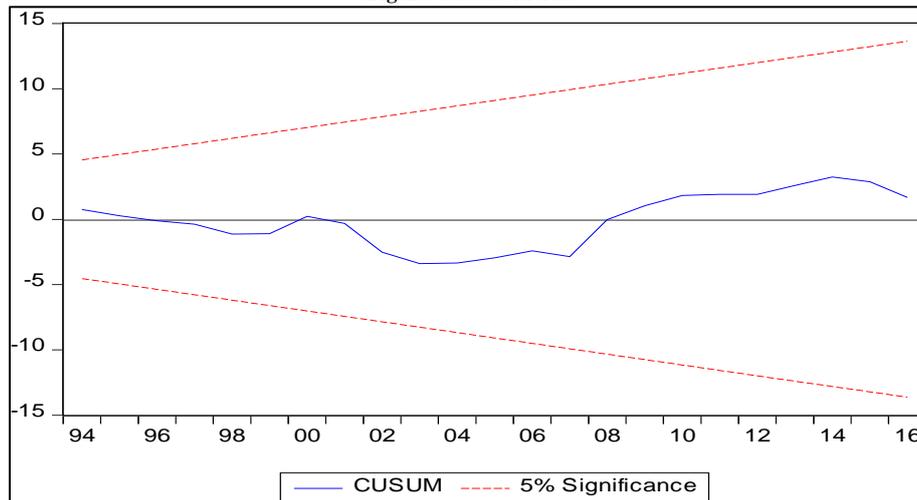
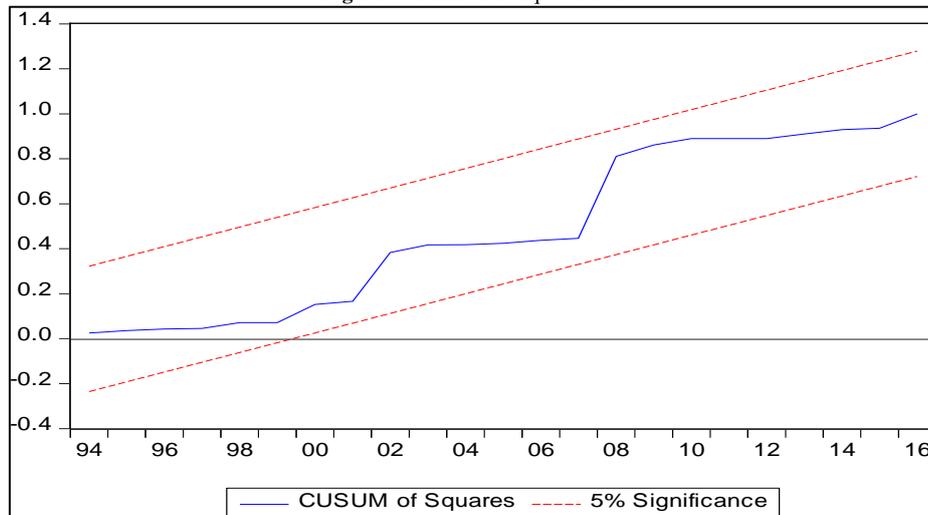


Figure-5. CUSUM of Squares Test



5. Conclusion

The role of government expenditure at both sectoral and aggregate levels in improving economic performance and social welfare cannot be understated. The recently introduced ARDL methodology was applied to investigate the impact of government expenditure on agricultural productivity. Urbanization was included in the agricultural productivity model in order to address biases associated with bivariate models due to omitted variables. Prior testing for long run relation among chosen variables, the Augmented Dickey-Fuller (ADF) test was used to examine stationarity characteristics of the variables. The Bounds cointegration test confirms the existence of long run relationship between agricultural productivity and independent variables examined. The study reemphasised that South Africa government expenditure has not in been accordance to the threshold that was signed at Malabo Declaration in 2014 by African heads of state and government. Estimations of ARDL model support the fact that government expenditure is important for agricultural productivity in South Africa despite the fact that the sector is dominated by private commercial farmers. However, the current expenditure pattern will only lead to a minute increase in agricultural productivity. Moreover, results show that about 91.1% deviations from long-run stable equilibrium would be corrected annually. Overall, the study finds government expenditure on agriculture in South Africa to be of significant effect on agricultural productivity.

By implication, it can be inferred that though the South African agricultural sector is dominated by private commercial farmers who are pivotal to food security in the country, yet the spending of government on agriculture in providing relevant input factors and infrastructures, as well as institutions in the face of climate change and exploding population is imperative for agricultural productivity and food security. In conclusion, though there is significant relationship between agricultural expenditure and productivity, it does not have much influence in the long run. There is also no significant relationship in the short run. This suggests (1) limited expenditure towards agriculture exhibiting the limited relationship; and (2) relative long-term investments with no short-term impact. Various reasons of the insignificant relationship in the short term were identified including inefficient resource utilisation, lack of prioritisation, prioritising underspending and the relative mix in spending of such expenditure. Significant positive relationship between urbanization and agricultural productivity was exhibited both in the long and short terms. The study recommends that the mix in spending of agricultural expenditure should focus on the short to medium term focusing on areas such as farmer support and infrastructure which have immediate impact. The

study also recommends that a significant increase in government investment by the South African government in the agricultural sector in order to enable the country stay food secure at the national level.

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