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The Impact of Government Agricultural Expenditure on Economic Growth in Zimbabwe

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Abstract:
A vibrant and an efficient agricultural sector would enable a country to feed its growing population, generate employment, earn foreign exchange and provide raw materials for industries. The agricultural sector has a multiplier effect on any nation's socio-economic and industrial fabric because of the multifunctional nature of agriculture. The main objective of this study was to investigate how government expenditure on agriculture has affected economic growth in Zimbabwe from 1980-2009. The Log linear growth regression model was employed where gross domestic gross was the dependant variable and the explanatory variables are the factors which affect it which include government agricultural expenditure. The expenditures of government on agriculture were divided into three functions namely extension, credit assistance and research and development. The regression analyses were performed using Econometric-views 7 (E-views 7) statistical package. Regression was carried out on time series data for the period 1980 to 2009. The data was tested for stationarity and for autocorrelation. Problems of non stationarity of data were corrected by integrating the trending series. Results from the empirical analysis provide strong evidence indicating that agriculture is an engine of economic growth. The results from this study suggest that spending more on agricultural research and development can improve economic growth and ultimately reduce poverty. However, it can also be concluded that insufficient government agricultural expenditure on extension and credit assistance adversely affected economic growth in Zimbabwe, based on the results of the study.
Keywords: Economic growth, government expenditure on agriculture, multiplier, Zimbabwe

INTRODUCTION

The relationship between agriculture and economic growth has being re-examined in the literature, in recent years. Economic growth is fundamental for sustainable development and poverty reduction (Kalakech, 2009). It is enhanced by strengthening the agricultural sector, encouragement of investments, expansion of infrastructure, improvement of education and health services and environmental restoration (Kalakech, 2009).

The potential contribution of agriculture to economic growth has been a greatly debated subject among development economists. Much of the early work on this issue coincided with the debate on the role of agriculture in promoting economic development in less developed countries in the aftermath of extended periods of colonial rule (Lewis, 1954, Fei and Ranis, 1961; Johnston and Mellor, 1961; Schultz, 1964).

BACKGROUND

In Zimbabwe, agriculture has been the mainstay of the national economy accounting for about 15 to 20 percent of GDP but with a majority of the country's population engaged in this sector (WFP, 2009). It generates a large proportion of foreign exchange earnings, although the share of agricultural exports in the country's total exports has declined from 39 percent in 2001 to 14 percent in 2006 (WFP, 2009). According to Muchapondwa (2009), the agricultural sector is still of great importance to Zimbabwe and any hopes of reviving the economy will necessarily have to include strategies focused on the agricultural sector.

Rukuni, Eicher & Blackie (2006) also reiterated that Zimbabwe has been dominated by agriculture although it contributed only 15-20% to Gross National Product in most years. It also provides an income to over 75% of the population and in most years 95% of all food and beverages have been produced locally. Agriculture also accounted for 30% of formal employment and more than 40% of total national exports (Rukuni, Eicher & Blackie, 2006).

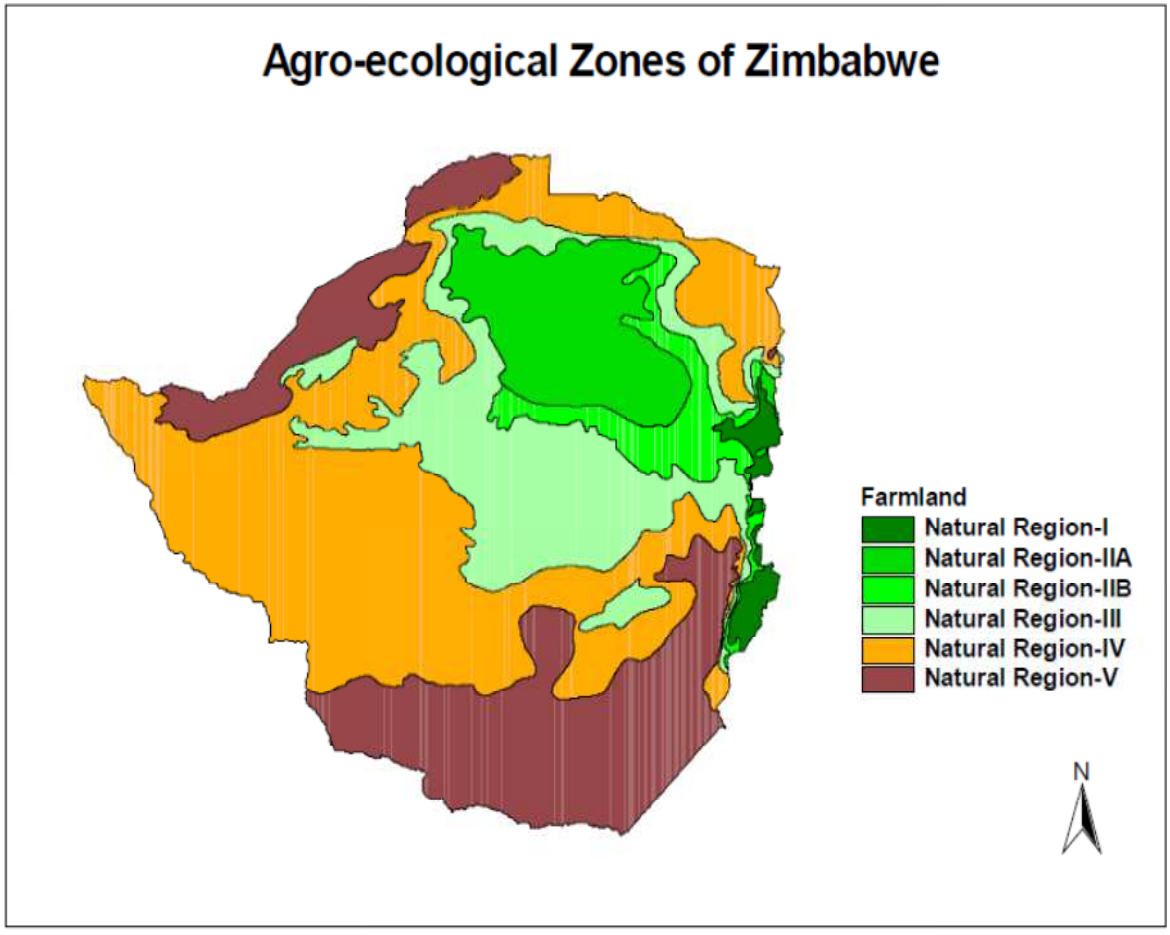
The economy of Zimbabwe is relatively diversified but dependent mainly on agriculture. The agricultural sector, as is often the case with less developed countries (LDCs), plays a key role in Zimbabwe's development strategies. In prosperous agricultural years, tobacco and cotton exports account for 25% of total exports while the sector as a whole can account for 45% of all exports (FAO, 2001). However, the agricultural sector only accounted for 12% of all exports by 2008 (WFP, 2009).

According to literature, the high pay-off input model (Eicher and Staatz, 1984) envisaged that more inputs will be accompanied by higher output; that is higher investment in agriculture will result in higher contribution of the agricultural sector to economic growth. This was not the case in Zimbabwe after 1985 when more funds were channelled towards small holder farmers through Agricultural Finance Corporation, (AFC), a parastatal lending institution (credit assistance).

Zimbabwe`s agricultural sector in 1999 contributed 27.5% of GDP and this has been declining since 2000 (FAO, 2006), and by 2008 it accounted for 15-20% of GDP (WFP, 2009). Various other agricultural performance indicators provide further evidence of the relative deterioration of the agricultural sector since then. For instance, the total agricultural production per capita and the food production per capita index have been falling, particularly since 2000. This partly explains the rampant food shortages that Zimbabwe has witnessed, with consequent increases in domestic food prices and the dramatic increases in agricultural imports that have been observed since 2000. However according to Garcia (2007), the government of Zimbabwe has had extraordinarily high expenditure relative to GDP and most of the funds were channelled towards agriculture to support Farm Mechanisation Programme in 2007. This study seeks to investigate how variations in these expenditures on agriculture have affected economic growth in Zimbabwe since 1980.

The study was carried out in Zimbabwe which is a land locked country in Southern Africa. The country has a total land area of 39, 6 million hectares. Thirty-three million hectares are reserved for agriculture while the rest is reserved for national parks, forests and urban settlements (Manzungu, 1999).

The land in Zimbabwe is divided into five natural regions on the basis of soil type and climatic factors (refer to Figure 1). The bulk of Mashonaland (West, East and Central), Midlands and Manicaland Provinces are under regions I, II and III, while Matabeleland (North and South) and Masvingo Provinces are under natural regions IV and V (Bell & Roberts 1991). The three Mashonaland Provinces constitute the breadbasket of the country. Zimbabwe's farming sector can produce, and has produced in the past, exportable surpluses of maize and certain other food crops. But severe constraints on prime land use have resulted in less than full capacity utilization of its natural resources (Central Statistical Office, 2003)..



Agro-ecological zones in Zimbabwe
Source: FAO (1999)
About 38 per cent of the country was deemed to have natural farming potential (Bell & Roberts 1991).

Agriculture in Zimbabwe

Agriculture in Zimbabwe (1980-2000): After independence, more priority was given to agriculture as a means to achieve economic development (Manzungu, 1999). Moreover these priorities in agricultural finance were changed to include the small-scale farmers. The growth with equity programme (1980-1990) was designed to redress the colonial legacy in favour of communal farmers. This is because of the two main features of agriculture at independence in 1980 which were the duality of agriculture and the high degree of government intervention in the sector intended to stimulate production.

With the advent of Economic Structural Adjustment Programme (ESAP) in 1990, trade barriers, price controls, subsidies and production quotas were removed (Manzungu, 1999). In the mid-1990s, the government anticipated ESAP would transform the nation's small-scale, subsistence agriculture into widespread commercial farming and generate annual agricultural growth greater than the rate of population growth. Its aim was to develop the necessary physical and social infrastructure in rural areas, but little of this has happened. With budget allocations for rural infrastructure and other capital projects down, farmers lacked the roads and adequate transport systems, as well as the processing, storage and distribution systems, they require in order to be competitive (Saprin, 1999).

Agriculture in Zimbabwe (2000-2009): According to Zumbika (2000), the formation of Agribank in January 2000 negatively affected the smallholder farmers. The government created the Agricultural Development Assurance Fund (ADAF) as a fund specifically meant for extending loans to smallholder farmers by so doing filling the gap which was left by Agricultural Finance Corporation (AFC).

More support was also made available to farmers through The Mechanisation Programme which was financed by the Reserve Bank of Zimbabwe. It has benefited farmers in both the commercial and communal sectors. The Government, through the RBZ, which took into cognisance the high cost of acquiring machinery on individual farmer basis, took it upon itself to revolutionalise farming by providing the machinery to farmers. The equipment procured includes combine harvesters, tractors, harrows, ploughs, planters and other animal drawn farm implements. As at 4 January 2008, a total of 646 tractors and 28 combine harvesters had been delivered to beneficiaries (RBZ, 2008).

In a bid to reinforce existing support measures in the agricultural sector, the bank enhanced its funding activities under the Agricultural Sector Productivity Enhancement Facility (ASPEF). This was geared at ensuring a full support system of the farm mechanisation programme. A cumulative amount of $62.215 trillion had been disbursed to 25 477 applicants by 4 January 2008 (RBZ, 2008).

The Fast Track Land Reform Programme (FTLRP) was officially launched in July 2000 culminating in extensive land transfers to local black farmers (Moyo, 2001). The main objectives of the FTLRP are to speed up the identification of not less than five million hectares of land for compulsory acquisition for resettlement, to accelerate the planning and demarcation of acquired land and settler emplacement on this land, and to provide limited basic infrastructure and farmer support services (Moyo, 2006). Compulsory acquisition was largely to be made from white commercial farmers, private companies, and absentee landlords. According to Moyo (2006), FTLRP beneficiaries have been issued many different types of temporary licenses which the government intends to convert, in time, to permanent leases. This uncertainty regarding tenure arrangements within the FTLRP has been a source of tenure insecurity among FTLRP beneficiaries (Zikhali, 2008).

MATERIALS AND METHODS

Data sources and type: The study was carried out using secondary data. Unless otherwise specified all the data was drawn from the Central Statistics Offices (CSO), Ministry of Finance (MOF) and Ministry of Agriculture (MOA) of Zimbabwe. In this study annual time series data was used covering the period from 1980 to 2009. The variables under consideration are real Gross Domestic Product, real government agricultural expenditure on extension, real government agricultural expenditure on research and development, real government agricultural expenditure on credit assistance, real government expenditure on non agriculture, real investment expenditure, real consumption expenditure and a dummy for FTLRP.

Model specification: A modified log linear growth model used by Fan, Hazel and Thorat (2000) was adopted for this study. This is because it is the most appropriate model to ascertain the relationship between government agricultural growth and economic performance in the country since it shows the relationship of the resources (expenditure) used by government on agriculture and its contribution to the overall economy (GDP). Therefore, these public expenditure, exports and imports data have been interpolated. The log linear regression model is as follows:-

$$\text{Log GDP} = A_0 + A_1 \text{Log AE Ext} + A_2 \text{Log AE R\&D} + A_3 \text{Log AE CA} + A_4 \text{Log NAE} + A_5 \text{Log I} + A_6 \text{Log C} + A_7 \text{FTLRP} + u$$

Where Log GDP is the logarithm for Gross Domestic Product (GDP), A_0 is a constant and A_1, A_2, A_3, A_4, A_5, A_6 and A_7 are parameters to be estimated. Log AE ext, Log AE R&D, AE CA, Log NAE, Log I and Log C are the logarithms for government agricultural expenditure on extension, government agricultural expenditure on research

and development, government agricultural expenditure on credit assistance, government expenditure on non agriculture, investment expenditure and consumption expenditure respectively. FTLRP is the dummy variable of Fast track land reform programme and the letter *u* represents error term. The regression analyses will be performed using Econometric-views 7 (E-views 7) statistical package.

Variables used in the model: Gross Domestic Product (GDP) is the total of all expenditures on final goods and services produced per period of time usually a year (Lipsey & Crystal, 1999). Government agricultural expenditure (AE) is the amount of money which is allocated to the agricultural sector by the government (MOF, 2009). Government agricultural expenditure is composed of government expenditure on extension (AE Ext), research and development (AE R&D) and credit assistance (AE CA). The overall impact of government agricultural expenditure on GDP is expected to be positive since it is an injection into the circular flow of income. However literature shows that the relationship is mixed. It can be positive, negative or constant.

Government expenditure on non agriculture (NAE) encompasses the amount of money which is allocated to other sectors besides agriculture. In Zimbabwe, these sectors include mining, manufacturing, health, education, services, electricity, construction and tourism. The overall impact of government expenditure on non agriculture on GDP is expected to be positive if increased expenditure is as a result of increase in taxes. However if the increase in expenditure non agriculture sector is as a result of diversion of taxes from agriculture (with higher elasticity of production than non agriculture sector) then the overall impact will be negative.

Investment expenditure (I) is expenditure on capital goods. It includes gross private investment, which is the value of output retained by the business sector, additions to the stock of residential housing and net change in business inventories. Increase in investment expenditure is expected to increase GDP through the multiplier since it is an injection into the circular flow of income. However investments affect production over time, and growth is a gradual process.This means that there is a lag experienced between investment and the eventual economic benefits. A positive relationship between investment expenditure and GDP is expected.

Consumption expenditure (C) is the flow of goods and services purchased by consumers for consumption uses. If individuals increase their levels of consumption spending at each level of disposable income, the level of aggregate expenditure increases. If the amount of consumption expenditure decreases, then GDP decreases. Therefore consumption expenditure is expected to be positively related to GDP (Lipsey & Crystal, 1999).

The dummy variable of Fast track land reform programme (FTLRP) was included to capture the changes in land ownership patterns in the country. The details of the FTLRP have already been well-covered in Chapter 1 and 3. However data on actual transfers are still not available in a form that can be easily obtained and analyzed at the national level. A dummy variable, which assigns a zero (0) value to periods prior to the implementation of FTLRP in 1980 to 1999 and a value of 1 to the period from its inception (2000) to date, was incorporated to cater for FTLRP.

The error term (*u*) is used to capture errors and misses in the relationships. The error term is justified on omissions of the influence of innumerable chance events and measurable errors. A constant (A_0) is included since this ensures that the model will be unbiased that is the mean of the residuals will be exactly zero (Gujarati, 1995).

RESULTS

Descriptive Results: Figure below shows the trend of real government agricultural expenditure on extension. It shows that real government agricultural expenditure on extension was fluctuating from 1980 to 2009 but it generally increased from the period mostly due increase attributable to wages and salaries for extension services (World Bank, 1991). There was a sharp increase in real government agricultural expenditure on extension during 1980 to 1988 but aggregate grain production was fluctuating over the period. A notable decline, however, was experienced during ESAP (1990 to 1994) when support to agriculture declined considerably.

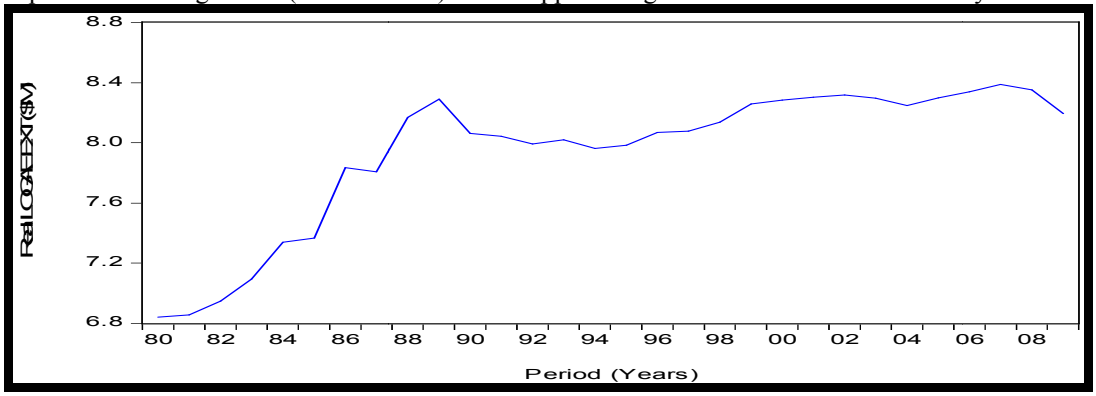


Figure2: Trend of real agriculture expenditure on extension by government in Zimbabwe (1980-2009)

Real government agricultural expenditure on credit assistance, illustrated on Figure 3, fluctuated over the period 1980 to 2009. Just like government agricultural expenditure of extension, it also generally exhibits an overall upward trend. It had two sharp declines, one from 1990 to 1994, during ESAP and another one in 1998 when the funds were diverted to pay the war veterans after which it sharply increased after 1999.

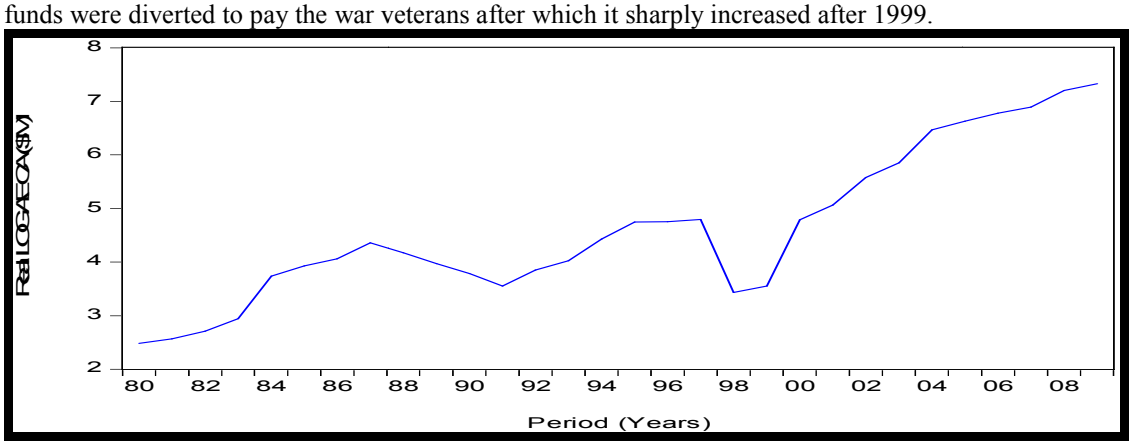


Figure 3: Trend of real agriculture expenditure on credit assistance by government in Zimbabwe (1980-2009)

Real government agricultural expenditure on research and development illustrated on Figure 4 was also fluctuating over the period 1980 to 2009 just like real government agricultural expenditure on extension and real government agricultural expenditure on credit assistance but its overall trend is downward sloping. Literature also supports this overall trend, for instance Rukovo *et al*, (1991) explains that there was a shift in the focus of government research to the small scale sector, although with a decline in the total allocation to research from 10.8 per cent prior to independence to on average 7.9 per cent of agricultural expenditure in the 1980s.The sharp declines were realised when the Zimbabwean economy was faced with economic difficulties mainly in 1992 (due to drought), 2002 (due to drought) and 2008 (economic crisis).

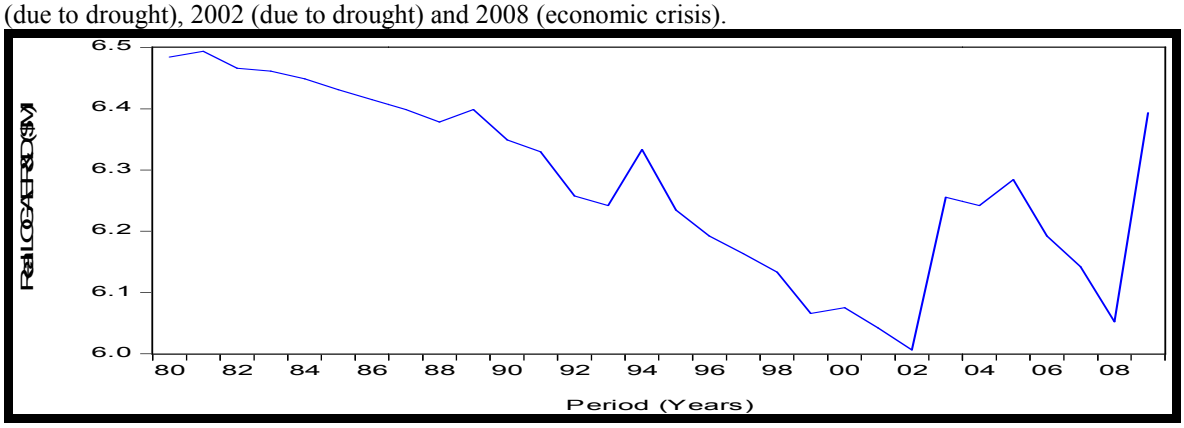


Figure 4: Trend of real agriculture expenditure on research and development by government in Zimbabwe (1980-2009)

The trend of overall real agriculture expenditure by the government using data collected from CSO is illustrated on Figure 5. It shows that real agriculture expenditure generally increased from 1980 to 2009 which can be attributed mainly to increase in government agricultural expenditure on credit assistance as illustrated on Figure 5.1 and increase in government agricultural expenditure on extension as illustrated on Figure 5.2. From 1980 to 1990, real agricultural expenditure generally increased mainly due to growth with equity programme explained in chapter one. However as a result of the introduction of ESAP in 1990, the amount of money allocated to agriculture declined since it was one of the conditions of the programme. After the abolition of ESAP in 1995 agricultural expenditure steadily increased from 1994 until 2004. The steady increase was also sustained as a result of Agribank issuing more loans to smallholder farmers since 2000, and the introduction of the Farm Mechanisation Programme by the RBZ in 2006.

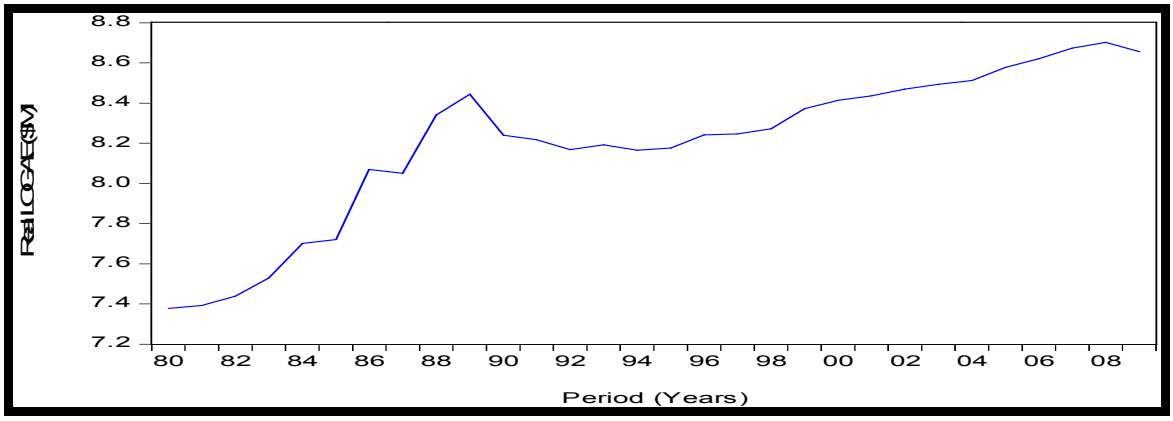


Figure 5: Trend of real agriculture expenditure by government in Zimbabwe (1980-2009)

Empirical Results

Unit root tests: Stationarity of the time series was tested using the Augmented Dickey-Fuller Test (ADF). If the absolute value of the ADF is less than the absolute critical value, the test accepts the null hypothesis that the variable is not stationary. If the calculated ADF test statistic is greater than critical t-values, reject the null hypothesis. The Unit Root tests were conducted on the 8 variables which are shown on Table 2 below.

The test statistics over the entire range at levels were less than the critical values for the ADF at 90% level of confidence except government agricultural expenditure on extension. This confirms that the (time series) variables are non-stationary as predicted by economic theory. It is therefore possible to accept the null hypothesis of non-stationarity of economic growth data. As is well known, the non-stationary data series are poor candidates for reliable regression Statistical Properties of Variables since they yield spurious results that are useless for predictive purposes, it was therefore necessary to correct them for non stationarity.

Table 2: Unit root tests

Variable	ADF test statistic	DW	Order of Integration	Decision
Log GDP	-3.75*	1.72	I(1)	Stationary
Log AE CA	-4.30*	1.94	I(1)	Stationary
Log AE EXT	-2.73***	2.10	I(0)	Stationary
Log AE R&D	-4.87*	1.57	I(1)	Stationary
Log NAE	-3.25**	2.39	I(1)	Stationary
Log I	-15.56*	2.13	I(2)	Stationary
Log C	-3.98*	2.03	I(1)	Stationary
FTLRP	-5.29*	2.00	I(1)	Stationary

*, ** and *** stand for level of significance at 1%, 5% and 10% respectively

The Unit Root tests showed that all other variables except government agricultural expenditure on extension required to be differenced in order to become stationary since the absolute calculated ADF test statistics were less than critical t-values. After taking the first difference GDP, government expenditure on GDP, government agricultural expenditure on credit assistance, government agricultural expenditure on research and development, government non agricultural expenditure, consumption expenditure and a dummy of fast track land reform programme become stationary. However investment expenditure required second differencing to become stationary at 99% level of confidence. Both GDP, government agricultural expenditure on credit assistance, government agricultural expenditure on research and development, consumption expenditure and a dummy of fast track land reform programme becomes stationary at 99% level of confidence after first differencing. Government agricultural expenditure on extension variable was also stationary at 90% level of confidence. This means that all the mean, variance and auto covariance at various lags remain the same no matter at what point we measure them.

Johansen cointegration tests: The series for all the variables in the model used were tested for cointegration using the trace tests and maximum eigenvalue tests as explained on 4.4.9. Although the trace test indicate that the 5 cointegrating variables and the maximum eigenvalue tests indicates that there are 4 cointegrating variables, on Table 3, both indicates that the real GDP and the explanatory variables are cointegrated at 95% level of confidence. The detailed results obtained from the cointegration tests are shown on Appendix J.

Table 3: Johansen cointegration tests

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	**Eigenvalue**	**Trace Statistic**	**0.05 Critical Value**	**Prob.****
None *	0.993151	358.8582	159.5297	0.0000
At most 1 *	0.944467	219.3145	125.6154	0.0000
At most 2 *	0.799152	138.3726	95.75366	0.0000
At most 3 *	0.770729	93.42677	69.81889	0.0002
At most 4 *	0.571790	52.18699	47.85613	0.0185
At most 5	0.423835	28.43903	29.79707	0.0711
At most 6	0.264332	13.00091	15.49471	0.1148
At most 7 *	0.145588	4.405572	3.841466	0.0358

Trace test indicates 5 cointegrating variables at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.993151	139.5437	52.36261	0.0000
At most 1 *	0.944467	80.94189	46.23142	0.0000
At most 2 *	0.799152	44.94585	40.07757	0.0131
At most 3 *	0.770729	41.23978	33.87687	0.0055
At most 4	0.571790	23.74796	27.58434	0.1438
At most 5	0.423835	15.43812	21.13162	0.2594
At most 6	0.264332	8.595333	14.26460	0.3214
At most 7 *	0.145588	4.405572	3.841466	0.0358

Max-eigenvalue test indicates 4 cointegrating variables at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

Long run relationship: Table 4 shows results of long-run estimates in which real GDP was set as the dependent variable and the rest of the variables were defined as the explanatory variables. The detailed results obtained from the regression are shown on Appendix E. The whole model is scrutinised according to R^2. Both R^2 and adjusted-R^2 show quite significant outcomes at 93.7% and 91.5%, respectively. The adjusted R^2 of 0.915104 implies that about 92 % of the variations in GDP are explained by the explanatory variables (real government agricultural expenditure on extension, real government agricultural expenditure on credit assistance, real government agricultural expenditure on research and development, real government non agricultural expenditure, lag for real investment expenditure, real consumption expenditure and a dummy variable for FTLRP).

Table 4 Results of long run estimates

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	10.97208	0.908777	12.07347	0.0000***
LOGAEEXT	-0.213348	0.047566	-4.485332	0.0002***
LOGAECA	-0.043440	0.019247	-2.257029	0.0353**
LOGAERD	0.269084	0.127834	2.104955	0.0481**
LOGNAE	0.456308	0.038847	11.74629	0.0000***
LOGI(-1)	0.128505	0.018752	6.852854	0.0000***
LOGC	0.004903	0.012532	0.391286	0.6997
FTLRP	-0.080825	0.048626	-1.662184	0.1121
R-squared	0.937114	Mean dependent var		16.74937
Adjusted R-squared	0.915104	S.D. dependent var		0.271337
S.E. of regression	0.079059	Sum squared resid		0.125006
Durbin-Watson stat	1.623354	Long-run variance		0.001619

* (P<0.10) =10 percent significance level ** (P<0.05) =5 percent significance level *** (P<0.01) =1 percent significance level

The Durbin Watson Statistic of 1.623354 (1.5 < DW > 2.5) is close to the optimum level of 2 (E-Views, 1997) and shows that there is no autocorrelation between real GDP and the explanatory variables. The functional form of the equation is therefore expected to be near optimal on the basis of the results.

The results show that there is a negative relationship between real GDP and government agricultural expenditure on extension. The coefficient of -0.213348 means that for every one percent increase in real government agricultural expenditure on extension, real GDP decreases by 0.21% on average using the data from 1980 to 2009. This may have occurred as a result of information passed to farmers which was not appropriate to Zimbabwe's conditions. The p-value for real government agricultural expenditure on extension is 0.0002. It shows that the variable is significant at all levels. This shows that the variable real government agricultural expenditure on extension is significant in explaining real GDP since the absolute value of t-value exceeds 2. The variable is said to be statistically significant since the test statistic lies in the rejection region. However these results contradicts the findings by Eyo (2008) which shows that public credit to the agricultural sector was statistically insignificant in explaining agricultural growth and ultimately economic growth.

The variable for government agricultural expenditure on credit assistance was found to be negatively related to economic growth and statistically significant at 95 percent confidence level. This might be due to the fact that most farmers who received loans for farming purposes diverted funds to speculative purposes and therefore agricultural output declined (WFP, 2009). The results could also be attributed to natural disasters such as cyclone Eline which was experienced in 2000 and changes in climatic conditions such as droughts which were experienced in 1992, 1995 and 2002 undoubtedly affected not only agriculture but the entire economy.

A positive relationship between real GDP and government agricultural expenditure on research and development was obtained. The coefficient of 0.269084 means that for every one percent increase in real government agricultural expenditure on extension, real GDP increases by 0.27% on average. The variable real government agricultural expenditure on research and development is significant in explaining real GDP since the absolute value of t-value exceeds 2. The variable is said to be statistically significant since the test statistic lies in the rejection region.

Real investment expenditure shows a positive relationship with real GDP. It has a coefficient of 0.209728 meaning that a one percent increase in real investment expenditure increases real GDP by 0.2097 %. This is supported by Fan and Rao (2003) who said that for economic growth to be achieved, investments in agriculture need to be complimented with policies and investments to spur non agricultural growth. Moreover, the study by Fan, Hazel and Thorat (2000), showed that investment has a positive relationship to economic growth. Investment has proved to be a statistically significant variable with a t-statistic of 8.439656 which is greater than 2 (following the rule of thumb). This suggests that investment is essential in trying to increase GDP.

Consumption turned to be positively related to be positively related to GDP. However this variable was found to be statistically insignificant since the t-statistic is less than 2. This is in contradiction with the findings of Fan, Hazel and Thorat (2000) since they found the variable to be significant. Consumption may have been found to be relatively insignificant because of underestimation of this variable by the Central Statistical Office due to the error of omission when the data was collected since the informal sector is dominant but is not considered when the data is collected.

The dummy variable for FTLRP shows that it is negatively related to economic growth but the variable indicates that it is statistically insignificant since variable has a t-statistic absolute value of 1.66 which is less than 2 (following the rule of thumb) hence no meaningful inferences could be drawn from the relationship. These results contradict to those found by Pender *et al*, (2001) in which they concluded that land redistribution in the Amhara region had promoted more intensive crop production which led to improved living standards of the occupants thereby positively contributing significantly to the Ethiopian economy

CONCLUSION

The main thrust of this study was to try to assess the impact of government expenditure on three functions of agriculture on economic growth in Zimbabwe. It was to find out whether increase in expenditure on functions of agriculture by the government increases or decreases GDP.

Results from the empirical analyses provide strong evidence indicating that agriculture is an engine of economic growth. Basing on the results of this study, it can be concluded that government expenditure on functions of agriculture affect economic growth significantly though differently. Real government agricultural expenditure on extension and real government agricultural expenditure on credit assistance negatively affected economic growth while real government agricultural expenditure on research and development positively affected economic growth.

Policy Recommendations: After obtaining the results from econometric estimation, it becomes obvious that there is need for a comprehensive, holistic framework that significantly increases the contribution of agriculture to economic growth. The variable for government agricultural expenditure on credit assistance was found to be negatively related to economic growth. Management of loans and farming implements need to be improved so that resources will not be misused. The repayment of loans should be enforced so that farmers will be obliged to use resources productively, which will reduce the burden on the already strained budget of the government. This

will improve the contribution of real government agricultural expenditure on credit assistance to economic growth which will ultimately benefit the Zimbabwean economy.
A positive relationship between real GDP and government agricultural expenditure on research and development was obtained. However there is need for increasing technical knowhow of farmers in order to increase productivity. The Zimbabwean government needs to provide more support for agricultural research and education. AREX should be allowed to retain the income generated. Moreover the government needs to capacitate the Department of Agricultural Research and Extension Services (AREX) to ensure that they are able to deal with challenges faced by farmers. AREX should also be readily accessible to farmers.

Furthermore, expenditure on agriculture research should also be improved to set up research policy which is user-determined. More funds should be made available to allow farmers to give an input on their current problems and challenges which will determine the direction of research. Farmers unions should also be encouraged by AREX to encourage farmer to farmer training which will benefit inexperienced farmer from the practical knowledge possessed by experienced farmers. On farm research needs to be encouraged so that farmers and researchers will be able to constantly work together and promote closer liaison between them.

The general trend of real agriculture expenditure by government is upward sloping and the overall trend economic growth is downward sloping in Zimbabwe. This implies that real agriculture expenditure did not contribute positively towards economic growth. For agriculture's contribution towards economic growth to be improved policy makers need to promote irrigation development in the semi-arid areas and also in areas where it rains sufficiently so that farmers can still irrigate an extra crop, produce fruits and vegetables or cultivate rice which uses a lot of water. Future increases in food production may come largely from irrigated areas since Zimbabwe has been prone to droughts in recent years such as 2002, 2005 and 2008. This will lead to increase in agricultural output and consequently the contribution of agriculture to economic growth and also lead to poverty reduction. For agriculture to contribute positively to economic growth, farmers should not always wait for government to capacitate them. Farmers should also use money obtained from non farming activities to boost their agricultural activities and to obtain training on farming techniques. Moreover, farmers can also form producer organisations so that they will become linked to markets and increase their incentive to produce more output profitably. This will increase agricultural output and will increase the contribution of the agricultural sector to the economy. Research is also needed to assess the quality of public expenditure management. It would be useful to review the broad trends, lessons and experience from agriculture public expenditure reviews. This would provide recommendations for policy reforms and suggestions on how government and private sector can work together to ensure public spending devoted to agriculture can be made to contribute positively to economic growth. The review should look at allocative efficiency of public spending allocated to agriculture, efficiency of service delivery for agriculture and specific institutional issues that emerge in relation to the annual budget planning cycle for agriculture. For this to be executed properly, it is essential to put in place the right personnel to administer the whole process of budget allocation and this process should include all the stakeholders across the spectrum.

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