AGRICULTURAL EXPENDITURE AND ECONOMIC PERFORMANCE IN ZIMBABWE (1980-2005)
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ABSTRACT
This paper seeks to test the general notion that agriculture is the backbone of the Zimbabwean economy. In this respect, the study will look at the effects of central government’s expenditure towards the agricultural sector and the subsequent effect of this on economic activities. Zimbabwe, like many other world countries, has supported the agricultural sector given its positive forward and backward linkages with other economic sectors. When Zimbabwe got its independence in 1980, it inherited a heavily government backed agricultural sector from the Smith Administration. The results of this study indicate that increased agriculture expenditure before 2000 has boosted production in the sector and strengthened forward and backward economic linkages. However, the land reform programme of 2000 and subsequent reduction in sound government support to the sector contributed immensely to the economic crises in Zimbabwe. This paper recommends effective government support to the agricultural sector through credible productive policies and financial & non-financial resources.

KEY WORDS
Agriculture expenditure, economic performance

1.0 Introduction
Zimbabwe in 1980, when it became independent from British rule, inherited a developed and predominantly white controlled economy. The country was still under the 1965 economic and political international sanctions imposed against the Unilateral Declaration of Independence (UDI) government, headed by Ian Smith. The government of Smith had, as such, instituted policies that promote self sufficiency and economic independence. Henceforth, the new black government of Zimbabwe adopted the previous regime’s economic policies that supported a dualistic economy; the agricultural and industrial sectors. The agricultural sector was heavily supported by the central government, financially, investment, production and marketing of sector output. It is upon this aforementioned background that this research paper wishes to investigate the effects of central government agricultural expenditure on economic growth for the period 1980 to 2005.

1.1 Background of this study
In Zimbabwe, and most developing countries, agriculture is the backbone of economic growth and development. The agricultural sector is the main source livelihood and has got strong forward linkages with other economic sectors. More importantly, the agricultural sector and related activities accounts for over 70% of formal employment in Zimbabwe. Related agricultural activities include trade and investment opportunities in processing of this sector’s output. In addition, the export of agricultural output constitutes the major source of export revenue in Zimbabwe. Major export crops in Zimbabwe (that is tobacco and cotton) and horticultural produce (flowers, fruits) accounted for over 60% of export receipts annually.

1.2 An overview of the Agricultural sector performance and economic contribution in Zimbabwe
The performance of the agricultural sector in Zimbabwe is closely linked to poverty alleviation, creation of employment and
generation of national income. The sector employs over seventy percent of the economically active population and over 60% of its output is absorbed by the manufacturing sector. The 40% output balance is either consumed or exported in its natural form. More so, the sector’s contribution to export proceeds makes it key to economic performance and general livelihood of the Zimbabwe.

Zimbabwe follows a dualistic agricultural system, which it inherited from the British rule. That is, it has predominantly commercial and communal farming. The commercial sector is pre-dominated by large and medium-scale farms and the major driving force is to make profit. In this sector, land is privately owned, in the form of leases, and 100% of the output goes to the market. With communal farming, land is collectively owned and much of the production is for family consumption with surplus sold to generate income.

Exports of Zimbabwe are largely commodities; unmanufactured output. These include unprocessed agriculture output, raw minerals and low value-added manufactured goods. The relationship between the agricultural sector and other economic sectors, such as, manufacturing, mining and service sectors is strictly interwoven. As a result, policies and factors that affect the agricultural sector will have a direct bearing on the forward chain. For instance, the adverse weather conditions (resulting in droughts) over the periods 1982, 1992 and 2002 were reflected in low economic output (measure by gross domestic product).

Having realized the critical contribution of the agricultural sector to general economic growth and human development, the government of Zimbabwe prioritized the funding and investment in this sector. These activities include the formation and capitalization of agricultural colleges, such Gwebi Agricultural College; and high budget allocation to the sector for the purchase of inputs and equipment. The irrigation schemes were partially boosted, a few dams were constructed and communal farmers were allocated Extension Agricultural workers. These measures by the government boosted agricultural output and the general welfare of communities until 1999.

By end of 1999, the government of Zimbabwe embarked on an agrarian reform program that adversely affected the sector’s performance. The positive result of such a move by the government was the redistribution of land to black Zimbabweans. Previously peasant farmers were awarded an opportunity to venture into profitable commercial and A2 farming activities. However, the short run effect was a drastic fall in both agricultural and industrial output and soaring of unemployment figures. The success of the agrarian reform, therefore, is an area that needs further research. This positive movement in agricultural performance and national output in Zimbabwe thus requires an economic and empirical analysis.

Table 1: Performance of the economy

<table>
<thead>
<tr>
<th>Year</th>
<th>GDP growth rate</th>
<th>Agriculture growth rate</th>
<th>Manufacturing growth rate</th>
<th>Inflation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980</td>
<td>10.6</td>
<td>19.5</td>
<td>14.7</td>
<td>5.4</td>
</tr>
<tr>
<td>1982</td>
<td>2.6</td>
<td>14.9</td>
<td>7.7</td>
<td>10.6</td>
</tr>
<tr>
<td>1984</td>
<td>-1.9</td>
<td>9.2</td>
<td>4.5</td>
<td>20.2</td>
</tr>
<tr>
<td>1986</td>
<td>2.1</td>
<td>-8.2</td>
<td>3.1</td>
<td>14.3</td>
</tr>
<tr>
<td>1988</td>
<td>7.6</td>
<td>3.2</td>
<td>5.3</td>
<td>7.4</td>
</tr>
<tr>
<td>1990</td>
<td>7.0</td>
<td>12.1</td>
<td>5.9</td>
<td>17.4</td>
</tr>
<tr>
<td>1992</td>
<td>-9.0</td>
<td>-23.2</td>
<td>8.5</td>
<td>42.1</td>
</tr>
<tr>
<td>1994</td>
<td>6.8</td>
<td>7.3</td>
<td>10.0</td>
<td>22.3</td>
</tr>
<tr>
<td>1996</td>
<td>7.3</td>
<td>21.4</td>
<td>4.0</td>
<td>21.4</td>
</tr>
<tr>
<td>1998</td>
<td>-0.9</td>
<td>2.3</td>
<td>3.4</td>
<td>34.5</td>
</tr>
<tr>
<td>2000</td>
<td>-6.4</td>
<td>3.2</td>
<td>2.5</td>
<td>55.9</td>
</tr>
<tr>
<td>2002</td>
<td>-4.8</td>
<td>-22.7</td>
<td>1.2</td>
<td>133.2</td>
</tr>
<tr>
<td>2004</td>
<td>-2.5</td>
<td>7.0</td>
<td>-9.5</td>
<td>382.0</td>
</tr>
</tbody>
</table>

Source: CSO Statistical (Various) Yearbooks, MCF (2005).
The table above shows a decline in economic performance in Zimbabwe especially after the turn of the new millennium. Interesting to note in table 1 above, is the abrupt decline in GDP growth rate in 2000. From this year, 2000, unemployment rate increased, production capacities decreased and inflation soared.

The contribution of agriculture and forestry to gross domestic product (GDP) fluctuated between eight and twenty three percent during the period 1980 and 2005 as can be seen in figure 1 above. These fluctuations, firstly, are a reflection of changes in government policies and activities, coupled with rainfall variations. Secondly, adverse movements in world commodity prices, especially agricultural and mining produce, have negatively impacted on the sector’s contribution to the national output.

1.3 A snapshot of Agricultural crops and regions in Zimbabwe

Table 2 below gives a summary of major crops grown in Zimbabwe by purpose, which is food security and export revenue.

Table 2: Summary of crops grown in Zimbabwe by purpose

<table>
<thead>
<tr>
<th>Food security</th>
<th>Foreign exchange</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maize</td>
<td>Tobacco</td>
</tr>
<tr>
<td>Wheat</td>
<td>Cotton</td>
</tr>
<tr>
<td>Potatoes</td>
<td>Fruits and vegetables</td>
</tr>
<tr>
<td>Soya</td>
<td>Bananas</td>
</tr>
<tr>
<td>Fruits and vegetables</td>
<td>Ground nuts</td>
</tr>
<tr>
<td>Bananas</td>
<td>Paprika</td>
</tr>
<tr>
<td>Groundnuts</td>
<td>Sugar cane</td>
</tr>
<tr>
<td>Sorghum / Millet</td>
<td>Citrus</td>
</tr>
<tr>
<td>Barley</td>
<td>Tea /Coffee</td>
</tr>
<tr>
<td>Sugar cane</td>
<td>Beef / Chicken</td>
</tr>
<tr>
<td>Citrus</td>
<td>Flowers</td>
</tr>
<tr>
<td>Tea / Coffee</td>
<td>Potatoes</td>
</tr>
</tbody>
</table>

Zimbabwe is divided into five natural regions on the basis of soil type, rainfall received and other climatic factors. The first three regions are suitable for intensive crop and livestock production, whereas the remaining two offer limited scope for farming activities. Thus natural regions 4 and 5 are usually associated with cattle ranching and game1.

2.0 Literature Review

2.1 Theoretical literature review

The Schultz high-payoff input theory

After observing years of poor results from attempts to transfer the highly productive agricultural technology of advanced nations to poor nations based on the diffusion model, T. W. Schultz (1964) pointed out that:

There are very few reproducible agricultural factors in technically advanced countries that are ready made for most poor communities. In general, what is available is a body of useful knowledge that has made it possible for the advanced countries to produce, for their own use, factors that are technologically superior to those employed elsewhere. This body of knowledge can be used to develop similar, and as a rule superior, new factors appropriate to the biological and other conditions that are specific to the agriculture of poor communities. This can only be possible through increased agriculture expenditure that facilitates research and development especially technological, (p147).

Schultz focused on two central themes, that is investments in agricultural technology development and investments in human capacity. In the former, Schultz focused on how to create and provide farmers with new higher-payoff technology embodied in capital equipment

and other inputs, whilst in the latter he was concerned with labour productivity.

**Kuznets’ theory**

Kuznets S (1961) summarised the importance of agriculture expenditure to a developing nation. According to Kuznets, agriculture expenditure makes a direct contribution to growth of national product by increasing the total product. Kuznets proposes three interrelated aspects of economic growth as propelled by agriculture expenditure. An increase in total and per capita product, an increase in domestic and international flow of goods and services and rapid shifts in the structure of an economy with prolonged and sustained economic growth.

**The Lewis model**

The Lewis model is a structural change model that explains how labour transfers in a dual economy from areas with surplus to where it is needed and describes the process of industrialisation. For Lewis growth of the industrial sector drives economic growth. The Lewis model argues economic growth requires structural change in the economy whereby surplus labour in traditional agriculture sector with low or zero marginal product, migrate to the modern industrial sector where there is high rising marginal product. Transferring surplus labour from rural to urban areas has no effect on agricultural productivity of rural workers is zero.

**Fei-Ranis (1961)**

The Fei-Ranis model demonstrates that development of the economy is through both the industrial sector as well as the agricultural sector. Initially there is transfer of surplus labour from the agricultural to the modern sector, which would facilitate an economy, to be fully commercialised. Fei and Ranis assumed that the level of wages is fixed by institutional factors. Growth takes place through reinvestment of profits in both the industrial and agricultural sector. Beyond some point the supply curve ceases to be completely elastic as it begins to rise.

**2.2 Empirical literature review**

Kawagoe et al (1985) compares estimated Cobb-Douglas coefficients from studies that estimated separate equations for developed countries and developing countries. Kawagoe, Hayami and Ruttan investigated effects of investments in agriculture to agricultural productivity and economic growth. They split their sample of forty-three countries into twenty one developed countries and twenty two less developed countries. They found all the convectional variables as well as technical education to be important in explaining output levels for the developed countries. For the less developed countries, land and fertiliser were not found to be significant explanatory variables, but livestock was more important when compared to the developed countries.

Fan S et al (2000) using state level data for 1970 – 1993, developed a simultaneous equation model to estimate the direct and indirect effects of different types of government expenditure on rural poverty and growth in India. Agriculture growth and food price changes were identified as important contributing factors to the decline in rural poverty in the areas around Saith, Ahluwalia, Srinivasan, Ghose, Gaiha, Bell and Rich. The primary purpose of the study was to investigate the causes of the decline rural poverty in India and particularly to determine the role that government investment have played, using a pooled time-series, cross state data set.

Gunning (1997)’s empirical results of econometric investigation of five Sub-Saharan African countries showed that there is statistical evidence of a long-term relationship between agriculture expenditure and economic growth. Gunning concluded that agriculture expenditure has a positive impact on
economic growth and emphasised that for developing countries to develop and foster economic growth, there is need for increasing agriculture expenditure which facilitates investments on agriculture technology which would increase agricultural productivity thus output and help boost economic growth and development.

Ajao O. A (2000) of the Agriculture Economics and Extension Department in Nigeria carried out a study examining effects of agricultural productivity, due to increased agriculture expenditure, on economic growth for Sub-Saharan African countries in the context of diverse institutional arrangements using data envelopment analysis method. Time series data for a thirty year period (1970-1999) which consisted of information on agriculture production and means of production such as records of agriculture production, rural population and number of tractors in use, fertiliser use, agricultural areas as well as gross domestic product was used. A decomposition of total factor productivity measure revealed that agriculture expenditure facilitates technological change and have got a positive impact on economic growth and development which leads to reduction of poverty in Sub-Saharan African countries.

3.0 Methodological framework
Most empirical studies have found agricultural performance as a key to economic growth. Other factors that play a crucial role in economic growth of a country include exports, money supply, gross investment, government policies and external factors, such as global financial crises. The model to be used in this study is an extension of the work based on both the theoretical and empirical literature and specifically to meet the conditions in Zimbabwe.

3.1 Model specification: This research will estimate the following model:

\[ GDP^* = \beta_0 + \beta_1 AGRICEXP^* + \beta_2 \]
\[ EXPO^* + \beta_3 MSS^* + \beta_4 GVTEXT^* + \beta_5 SUBS^* + \beta_6 DD^* + \mu \]

Where; GDP is the Gross Domestic Product
AGRICEXP is agricultural expenditure
EXPO is agriculture exports
MSS is money supply
GVTEXT represents total government expenditure (less agriculture expenditure)
\( \mu \) is the stochastic error term
SUBS is subsidies to the agriculture sector from the central bank
DD is the dummy for drought

The variables with asterisks are the transformed logged variables, that is, each of the above variables are in logarithms (as captured by *). Logarithms help to solve the problem of heteroscedasticity and coefficients obtained in the estimated results can be readily read as elasticities. \( \beta_0, \beta_1, \beta_2, \beta_3, \beta_4, \beta_5 \) and \( \beta_6 \) are the coefficients to be estimated.

3.2 Expected signs
\( \beta_0 > 0, \beta_1 > 0, \beta_2 > 0, \beta_3 < 0, \beta_4 > 0, \beta_5 > 0 \) and \( \beta_6 < 0 \)

3.3 Justification of variables in the model
Gross Domestic Product
Gross Domestic Product (GDP) is being used as a proxy variable for economic activity between 1980 and 2005. This variable captures also domestic productive capacity.

Agriculture Expenditure
Agriculture expenditure is the major of interest in this study and is included to ascertain between it and GDP. Schultz (1978) found a positive relationship between economic performance and agriculture expenditure, suggesting that higher agriculture expenditure implies a brighter prospect in the host economy.
Agricultural Exports
Agricultural exports seek to measure external factors to the Zimbabwean economy. Agricultural exports constitutes over 60% of Zimbabwean exports, hence, chances in trade policies, practises and movements in exchange rates will have a direct implication on the agricultural sector and the economy at large.

Money supply
Effects of money supply are transmitted to economic activity through interest rates and inflation.

Subsidies
Subsidies are included in the model to capture government intervention activities in the agricultural sector.

Dummy for drought
Since Zimbabwe experienced several years of drought for the period under review, a dummy will be included to take into consideration such natural adverse conditions.

In table 3 above, the coefficients of agriculture expenditure, agriculture exports, government expenditure and agriculture subsidies carry positive signs as predicted by economic theory.

The error term
The error term shows the impact of other variables not included in the model that affect GDP.

3.4 Sources of data
This research will make use of annual time series data from the Central Statistical Office (CSO), Ministry of Finance, Reserve Bank of Zimbabwe (RBZ), World Bank country database, and African Development Bank country statistics.

3.5 Estimations and interpretation of Results
The data used in this research was first tested for stationarity using the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests. All econometric tests in this study were done using E-views 3.1 statistical package. Table 3 below gives the result output of the estimated model specified above (in 3.1).

### Table 3: Ordinary Least Square Results

Dependent Variable: LGDP  
Method: Least Squares

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>0.411113</td>
<td>0.172585</td>
<td>2.382088**</td>
<td>0.0029</td>
</tr>
<tr>
<td>LAGRICEXP</td>
<td>0.237932</td>
<td>0.036680</td>
<td>6.486057*</td>
<td>0.0091</td>
</tr>
<tr>
<td>LEXPO</td>
<td>0.067008</td>
<td>0.110511</td>
<td>0.608969</td>
<td>0.1194</td>
</tr>
<tr>
<td>LMSS</td>
<td>-0.544951</td>
<td>0.134243</td>
<td>-4.059427*</td>
<td>0.0006</td>
</tr>
<tr>
<td>LGVT EXP</td>
<td>0.340108</td>
<td>0.163414</td>
<td>2.081265**</td>
<td>0.0505</td>
</tr>
<tr>
<td>LSUBS</td>
<td>0.030919</td>
<td>0.016342</td>
<td>1.891948</td>
<td>0.0731</td>
</tr>
<tr>
<td>DD</td>
<td>-0.067008</td>
<td>0.073123</td>
<td>-1.916367**</td>
<td>0.1370</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.797293</td>
<td>Mean dependent var</td>
<td>11.14480</td>
<td></td>
</tr>
<tr>
<td>Adjusted R-squared</td>
<td>0.726616</td>
<td>S.D. dependent var</td>
<td>2.489159</td>
<td></td>
</tr>
<tr>
<td>S.E. of regression</td>
<td>0.144805</td>
<td>Akaike info criterion</td>
<td>-0.827683</td>
<td></td>
</tr>
<tr>
<td>Sum squared resid</td>
<td>0.419370</td>
<td>Schwarz criterion</td>
<td>0.537353</td>
<td></td>
</tr>
<tr>
<td>Log likelihood</td>
<td>16.75988</td>
<td>F-statistic</td>
<td>173.4341</td>
<td></td>
</tr>
<tr>
<td>Durbin-Watson stat</td>
<td>1.892995</td>
<td>Prob(F-statistic)</td>
<td>0.000000</td>
<td></td>
</tr>
</tbody>
</table>

* Significant at 5% and ** 10% significance level respectively.
(gross domestic product) by 0.24%. These results substantiate the existence of a positive connection between agriculture expenditure and economic growth in Zimbabwe. Although agriculture exports variable has a positive relationship with economic growth it is not significant. This outcome calls for further analysis but quickly suggestions are that of probably restrictions placed on local agricultural commodities by other countries and also the fact that Zimbabwe exports unmanufactured agricultural output which fetch lower prices on international markets.

A money supply variable is negatively signed and significant at 5% level of significance implying that money supply, which in not in tandem with economic growth, will adversely affect economic growth. The subsidies coefficient, although it carries the expected positive sign, it is marginally insignificant. The coefficient of dummy for drought variable is significant at 10% level of significance and negatively signed indicating the adverse effects of natural catastrophes on economic performance. The dummy is also exposing the depressing impact on output caused by the government’s fast tract land reform programme.

Estimation results show that there is no autocorrelation (Durbin Watson statistic = 1.892995) and that the model is correctly specified (adjusted R-squared = 0.726616); that is about 73% of variations in GDP are captured by the exogenous variables in the model.

4.0 Conclusion and Recommendations
The main objective of this paper was to assess the effects of agriculture expenditure on economic growth in Zimbabwe. The study supported the hypothesis that the agriculture sector is vital in stimulating and promoting sustainable economic growth in Zimbabwe. The positive impact of agriculture expenditure on Zimbabwe’s economic growth provides a basis for sound policy formulation and implementation by responsible authorities. The support of the government, financial and otherwise, on the agricultural sector has a strong economic bearing on the overall performance of the economy through forward and backward linkages, volume and value of exports. Thus, an increase in agricultural expenditure that is put into production activities will be directly transmitted into increased industrial activities and hence national output, revenue and employment.

The research also highlighted the influence of political actions on economic activities, first to the agricultural sector and second to other economic sectors. Investment in the agricultural sector is pertinent to curb challenges of unforeseen adverse natural conditions, like droughts.

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