Economic Study of Government Expenditure and the Most Important Factors Affecting the Performance of the Agricultural Sector in Egypt

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Abstract: There is no doubt that governments must be having a role in enhancing economic sectors. This paper aimed at; improve understanding of the role of government expenditure and other factors like Subsidies, Trade Openness, Non Agricultural GDP, Arable Land and Prices in agricultural performance. The old theory about production factors are capital, land and labor is followed. Where indicated that the value added is the sum of the returns to land, labor and invested capital directly involved in the productive activity. This basic model is based on the fact that total agricultural output is a homogeneous linear function of three specific factors of production, in addition to the total intermediate inputs. The three factors are labor, land, and capital. The price of the final product, the price of intermediate production inputs, and the productivity index are considered. Regarding other influential factors, the model assumed their stability.

The paper relied on secondary data from Egypt through the period (1987-2022). Natural logs, Augmented Dickey-Fuller, Johansen co-integration test and VECM are used to capture short and long-run dynamics of agricultural economic growth. The results indicated that; Government Expenditure in agricultural found in a positive relationship to growth in Agricultural Value Added. That result emphasis the important role of public expenditure in increasing the growth of agricultural sector in the case of Egypt's economy. In spite of, government tendency towards diminishing government expenditure, this result consistent to: the growth of agriculture can be further realized through adequate investment from public finance.
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I.INTRODUCTION

There is no doubt that governments must be having a role in enhancing economic sectors. (Kimea and Kiangi, 2018) said, the concept of ruling state was replaced by the welfare state where the government/state has to protect and promote wellbeing of the people. Consequently, there has been a substantial increase in the roles and functions of state and this resulted in an increased role and functions of the state in various countries. In developing countries spending to agriculture is one of the most important governing instruments for promoting economic growth and alleviating poverty in rural areas (Fan and Saurkar, 2006).

But there is doubt about ways of the government's interference in these economic sectors. Public expenditure witnessed much debate in thoughts of economic development in the past decades between agreeing and refuse. For example; (Diamond, 1986) Aggregate public expenditure promotes aggregate demand. On the other hand (Daniel and Oliver, 2005) indicated that: public expenditure and its functional composition have a negative impact on the growth of the national output.

A huge number of studies that discussed the impact of aggregate public expenditure on economic growth have been conducted. However, few studies which focused on the impact of public expenditure on the agricultural sector conducted. Agricultural sector in developing countries is the main engine of the economy and needs much care of governments to promote this economically important sector, which suffers a lake of investments locally and foreign investments. The governments tried to promote the agricultural sector through public expenditure in special areas such as agricultural infrastructure, agricultural research and farmer's subsidies in the forms of input subsidy and output price subsidy.

In spite of, Egyptian government attitude towards decreasing public expenditure recently, disaggregation of public agricultural expenditure into its different types of spending becomes important to cater to the tradeoffs between them. As so it is important to understand and analyze the impact of public expenditure and private investment on agriculture growth to help policy makers and decision takers in drawing accurate agriculture policy. As stated by (Stephen and Lawrence, 2007) chronic budget deficits and a perceived lack of control over government expenditures are continuing problems in many developing countries. To overcome these problems, donors have put considerable emphasis on governance reforms including public expenditure management reforms and improvements to the budgetary process, both in terms of budget formulation and execution. Here an important question arises: to what extend governance influence performances of agriculture growth? Especially when the level of governance is associated with all these types of agricultural spending even it is public or private expenditure (Elzaabalawy, 2020). So, it is important to depict to what extend governance influences the performance of agricultural growth. The research tried in the beginning stages to use Governance indicators as explanatory variable, and disaggregating agricultural public expenditure into three categories of spending (agricultural research, farmers' subsidy, and government investments in agricultural infrastructure). Meanwhile, inadequate data availability prevented the continuing in that manner. As a result the research aimed at assesses the impact of agricultural public expenditure as bulk on agriculture production in Egypt.

The current study aims to improve understanding of the role of government expenditure composition in agricultural performance. We have expanded (López and Galinato's, 2007) original rural spending nation coverage.

II. Methodology

The old theory about production factors are capital, land and labor is followed. Where (Tsakok, 1990) indicated that the value added is the sum of the returns to land, labor and invested capital directly involved in the productive activity.

It is the same approach and arguments relied upon by (Lopez and Galinto, 2007), where the basic econometric model explains the relationship between the per capita share of agricultural GDP, expressed as value added, and total government expenditure on the agricultural sector. Which we summarize as follows:

This basic model is based on the fact that total agricultural output (Q) is a homogeneous linear function of three specific factors of production, in addition to the total intermediate inputs (X). The three factors are labor (L), land (C), and capital (K). The price of the final product (P), the price of intermediate production inputs (V), and the productivity index (A) are considered. Regarding other influential factors, the model assumed their stability.

Producers determine and choose intermediate inputs according to the prevailing market price, and then work to maximize their profits, which results in maximizing the total return of the sector as a whole from the specific factors of production or the value added of the sector:

$$G\ (P, V, L, C, K/A) = \max P.Q\ (L, C, K, X/A) - V.X \qquad (1)$$

It is known that government policies affect the prices of both inputs and outputs, and thus the level of productivity. The focus was on three brief policy indicators:

Total expenditure on the agricultural sector (E). And the proportion of expenditure on subsidies and private goods out of total government expenditure (S). And the trade openness index (T).

In addition, the local prices of inputs and outputs are affected by changes in global prices Pw, Vw, and production as well as local prices are affected by the general condition of the non-agricultural sectors (Y).

According to the nature of the production function, which is characterized by the presence of Linear Homogeneity, the per capita share of total value can be expressed in terms of the capital intensity of each worker in the sector K = K/L, and the per capita share of agricultural land C =

C/L, so that the final form of the shortened expression for the share Per capita, the total value added in the sector is as follows:

$$G = G/L = g\,(Pw, Vw, E, S, T, Y, K, C) \qquad (2)$$

According to economic theories and the results of previous studies, it is expected that the performance of the agricultural sector will improve with an increase in final product prices Pw, as well as with an increase in government spending E, and also with an improvement in the performance of other non-agricultural sectors. It is also expected that the performance of the agricultural sector will improve when the per capita share of agricultural land and capital increases. On the other hand, the performance of the agricultural sector is expected to decline when the prices of production inputs Vw increase, and when the proportion of government spending on subsidies and private goods decreases. While the impact of increasing trade openness remains ambiguous.

Upon practical application of the model, some variables were modified. Instead of dividing prices into input prices and final product prices, the agricultural production price index in real terms (PI) was used, and the capital variable K was canceled due to the lack of accurate data regarding to the agricultural sector. The aim of the research is to study the long-term relationship between the model variables.

Therefore, the previous short form was putted in linear form as follows:

$$LnAVA = \beta_E E + \beta_{SE} SE + \beta_{TO} TO + \beta_{NA} NA + \beta_C C + \beta_{PI} PI + \varepsilon \qquad (3)$$

where:
LnAVA- Per Capita Agricultural Value Added
E- Per Capita Agricultural Government Expenditure
SE- Subsidies and other transfers % of expense
TO- Trade (% of GDP) Trade openness
NA- Per capita Non Agriculture GDP
C- Per capita Arable land
PI- real price index of agricultural production
ε – Identically and independently distributed shocks.

Natural logs used to make the relation between independent and dependent variables in the linear form (Gujarati, 2004). Natural logs impose a constant percentage effect of a covariate on the dependent variable, several studies made use of logs to minimize or eliminate the bias that may arise from using different units between the dependent and independent variables (Jambo, 2017). Equation (4) shows a multi-linear equation of the effects of Per Capita government expenditure, subsidies and other transfers, trade openness, Per Capita non-agricultural GDP, Per Capita arable land and real price index of agricultural on agricultural value added growth.

$$ln(AVA_t) = \beta_0 + \beta_1 lnE_t + \beta_2 lnSE_t + \beta_3 lnTO_t + \beta_4 lnNA_t + \beta_5 lnC + \beta_6 lnPI + \beta_7 ln(AVA_{(t-1)}) + \varepsilon_t \qquad (4)$$

Where:
Ln refers to the logarithm of each variable (E, SE, TO, NA, C, PI) at current period t, β is the regression coefficient, $lnAVA_{(t-1)}$, is the logarithm of agricultural value added the previous period and εt is the stochastic error term.

Most of the studies that have attempted to link public expenditure and growth have come across challenges, including the possibility of reverse causality as well as endogeneity of variables, the essential problem with reverse causality and endogeneity is that they both result in the correlation between the explanatory variables and the error term in the equation (Jambo, 2017). This means the estimates will not reflect the true population parameters and will lead to biased estimates and spurious correlation (Florens and Heckman, 2003).

. In practical application, the instrument was used for the per capita share of agricultural land, and the non-agricultural sector status index, which was measured by the per capita share of non-agricultural gross domestic product, as well as the per capita share of total government expenditure.

Regression analysis based on time series data implicitly assumes that the underlying time series are stationary, the classical *t* tests, *F* tests, etc. are based on this assumption, in practice, most economic time series are nonstationary, a stochastic process is said to be weakly stationary if it's mean, variance, and autocovariances are constant over time (Gujarati, 2004). The differencing approach is usually used when the time series is found to be non-stationary i.e. having a unit root. A series is denoted by I(0) if it has no unit root before the process of differencing is applied. If the series is found to be stationary after differencing, then it is denoted by I(1) meaning integrated of order 1 (Wooldridge, 2012). Augmented Dickey–Fuller (ADF) test used to check stationarity by finding out if the time series contains a unit root using EViews software. The differencing approach was then applied to transform the nonstationary series to stationarity by using EView commands.

Co-integration and vector error-correction model (VECM) were applied in this study. These techniques are believed to overcome the problem of spurious regressions and to give consistent and distinct estimates of long-run and short-run, which satisfy the properties of the classical regression procedure. However, two conditions must be met for co-integration to hold. First, individual variables should be integrated of the same order. Second, the linear combination of these variables must be integrated of an order one less than the original variables (Engle & Granger. 1987). Co-integration analysis can be carried out with the Johansen or Engle-Granger test approaches. However, when there is more than one co-integration equation the Johansen approach to co-integration analysis is preferred to the Engle-Granger approach (Kremers et al., 1992). Due to the existence of more than one co-integration Johansen approach and (VECM) were employed.

Equation (5) below shows Conventional ECM for cointegrated series with one explanatory variable (Engle et al, 1987; Wooldridge, 2012; Jambo, 2017).

$$\Delta y_t = \beta_0 + \sum_{i=1}^{n} \beta i \Delta Y_{t-1} + \sum_{i=0}^{n} \delta i \Delta x_{t-1} + \varphi z_{t-1} + \mu_t \qquad (5)$$

Z is the Error Correction Term ECT and is OLS residuals from the long –run cointegration regression:

$$y_t = \beta_0 + \beta_1 x_t + \varepsilon_t \qquad (6)$$

... and is defined as

$$Z_{t-1} = ECT_{t-1} = y_{t-1} - \beta_0 + \beta_1 x_{t-1} \qquad (7)$$

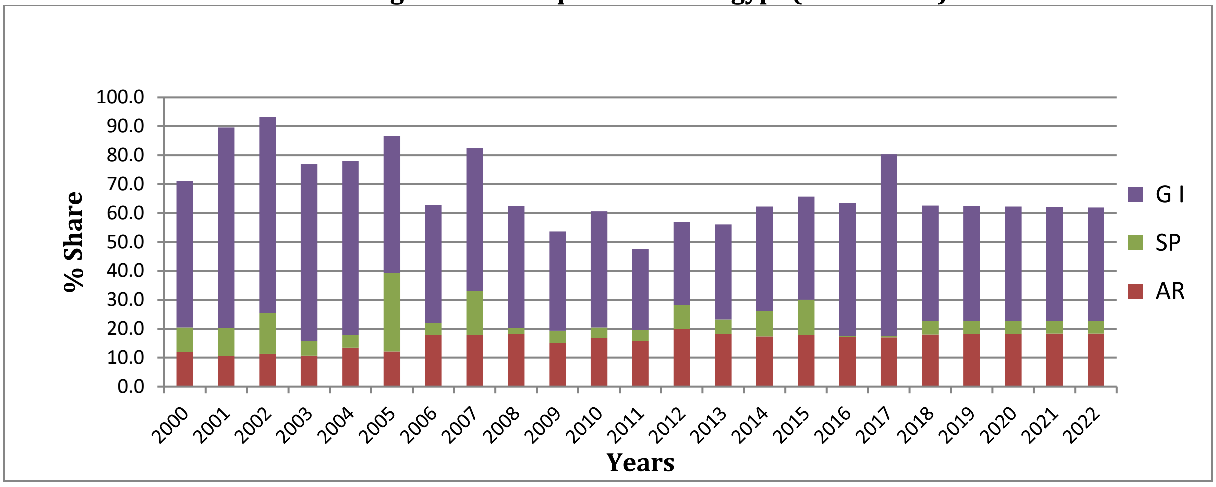
The term, error correction, relates to the fact that last period deviation from long-run equilibrium (the error) influences the short-run dynamics of the dependent variable. Thus, the coefficient of ECT, φ, is the speed of adjustment, because it measures the speed at which Y returns to equilibrium after a change in X.

The research relied on secondary data for all the variables included in the model, from Egypt through the period (1980-2022). Agricultural Value-Added (AVA) data obtained from the World Bank Development Indicators. Agriculture includes forestry, hunting, and fishing, as well as cultivation of crops and livestock production. Value added is the net output of a sector after adding up all outputs and subtracting intermediate inputs. It is calculated without making deductions for depreciation of fabricated assets or depletion and degradation of natural resources (World Bank, 2022). Total government expenditures in agriculture (E) and data on budget and actual expenditure components obtained from Ministry of Finance reports (MOF, 2022) and Central Agency for Public Mobilization and Statistics bulletins (CAPMAS, 2022), these two sources provide annual reports and bulletins about the general budget of the state and general budget final account, in addition to International Monetary Fund data, which introduces Expenditure by Functions of Governments (IMF, 2022). Data on (SE, TO, NA, PI) obtained from World Bank statistics, world development indicators (WB, 2022). Arable land (C), data obtained from Ministry of Agriculture and Land Reclamation (MALR, 2022).

III. Results and Discussions

Figure 1 shows the most important types of agricultural expenditure in Egypt and their percentage share allocations of the period (2000-2022) according to data availability. Government agricultural expenditure contained three major elements; Government Investments in Infrastructure (GI), Agricultural Research (AR), and Subsides Programs (SP). These three elements represent about 69.4% of actual budgetary expenditure in agriculture (as an average). GI received much priority having more shares than all the types. The percentage chare of GI in total agricultural expenditure reached about 46.3% as the average in the hall period. AR comes in the second priority, representing 15.5%. Lastly, SP takes about 7.6% as an average of the percentage share allocations.

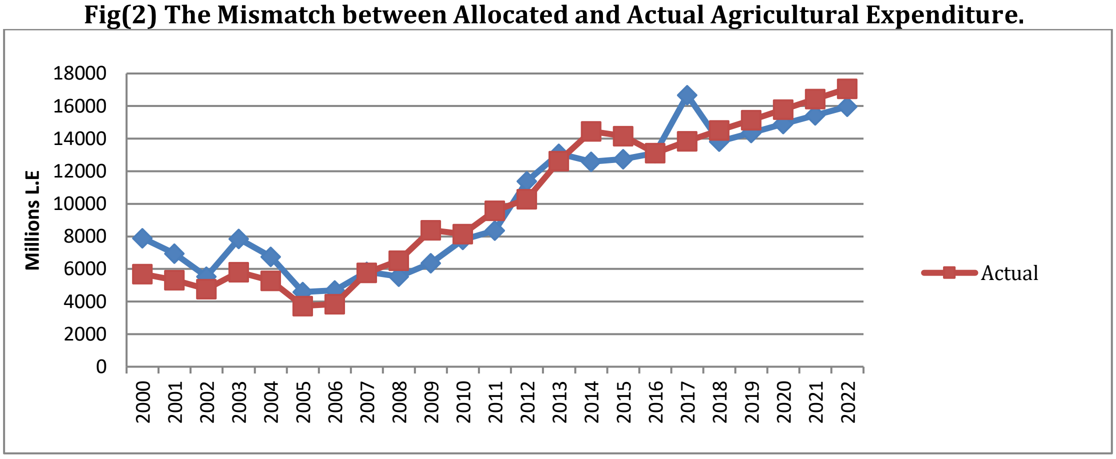
Fig(1) Percentage Shares of Government Investment, Subsidies Programs and Agricultural Research to Total Agricultural Expenditure in Egypt (2000-2022).



Source: Calculated using data from the Ministry of Finance reports, Central Agency for Public Mobilization and Statistics bulletins and Ministry of Planning, Monitoring and Administrative Reform (2000-2022).

Figure (2) below depicts the mismatch between allocated and actual agricultural expenditure. This mismatch between the budget allocated amounts and the actual amounts released makes it difficult to plan and predict future policies for the country (Jambo, 2017). Budget predictability is crucial to the assessment of technical efficiency in spending or the efficiency of budget system implementation and programs (World Bank 2011). High budget deviations connote fiscal indiscipline, which is inimical to stable growth. They may also embody waste (Olomola, A. et al, 2014). The average of deviation between allocated and actual agricultural expenditure reached about 18.75% in (2000- 2008). This average reached about 13.85% in (2009-2022). According to the Public Expenditure and Financial Accountability partnership, actual expenditures should not deviate by more than 10 percent from the budget to qualify as efficient budget execution World Bank (2011). As stated by Lim (1983) Agricultural government expenditure instability may affect the development of the agricultural sector.

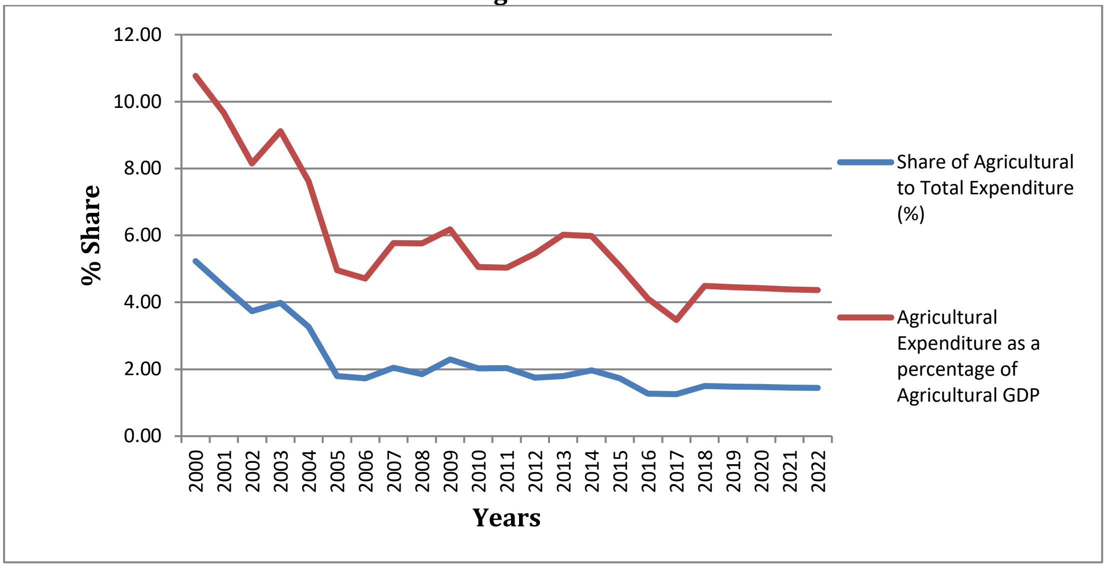
Fig(2) The Mismatch between Allocated and Actual Agricultural Expenditure.



Source: Calculated using data from the Ministry of Finance reports and Central Agency for Public Mobilization and Statistics bulletins (2000-2022).

Figure 3 explains the continuous decline in agricultural expenditure as a percentage share of national expenditure from 9.8% in 1987 to 5.23% in 2000 to 1.26% in 2017. This means other sectors were receiving more funding than the agricultural sector. The decline also continued in agricultural expenditure as a percentage of agricultural value added from 11.12% in 2000 to 3.47% in 2017. Since 1990 Egypt adapted economic reform and liberalization policy, which depends mainly on eliminating state intervention in the production process and reducing public expenditure. The agricultural sector has been at the forefront of other sectors of the national economy in initiating liberalization and privatization reforms World Bank (2009). This policy reflected in diminishing agricultural expenditure in forms like; reduction in farmers' subsidies, investments and agricultural research actual budgetary released.

Fig 3 Agriculturl Expenditure as Percentage Share of Total National Expenditure and Agricultural GDP



Source: Calculated using data from World Bank, Ministry of Finance reports and the Central Agency for Public Mobilization and Statistics bulletins (1987-2022).

3.1. Stationarity Test Results

Table 1 showed the results of the stationary test for the model variables, where it was found that some variables are stationary at level I(0), and others are stationary at level I, while the results of the Augmented Dickey-Fuller (ADF) test indicated stationarity of those variables after taking the first difference. The P values in the table indicate rejection of the null hypothesis at a significance level of 1% and 5% for all variables after taking the first difference.

Table 1: Stationarity (ADF) Test Results.

Variable name	ADF test	P-VALUE
Ln AVA (Per Capita Agricultural Value Added) at I(0)	-1.269733	0.8785
Ln AVA (Per Capita Agricultural Value Added) at I(1)	-5.350667	0.0006**
Ln E (Per Capita Agricultural Government Expenditure) at I(0)	-2.906928	0.1730
Ln E (Per Capita Agricultural Government Expenditure) at I(1)	-5.727477	0.0002**
Ln SE (Subsidies and other transfers % of expense) at I(0)	-2.074528	0.5415
Ln SE (Subsidies and other transfers % of expense) at I(1)	-6.817044	0.0000**
Ln TO (Trade (% of GDP) Trade openness) at I(0)	-5.069716	0.0013**
Ln NA (Per capita Non Agriculture GDP) at I(0)	-3.807996	0.0283*
Ln C (Arable land (hectares per person) at I(0)	-2.697402	0.2437
Ln C (Arable land (hectares per person) at I(1)	-6.947532	0.0000**
Ln PI (real price index of agricultural production) at I(0)	-5.309685	0.0007**

Source: Authors Own Computation using EViews.
** And * denotes significance at 1% and 5% level, respectively.

3.2. Co-integration Test Results

After the ADF stationarity test, the Johansen Co-integration test implemented in Eviews to examine the long run relationship between the independent variables and AVA. Order of integration determined by the number of times that the series should be differenced before it actually become stationary. It follows that if two or more series are integrated of the same order, then a linear relationship could be estimated.

The Johansen test consists of the maximum rank, the eigenvalue, and the trace statistic. The maximum rank determines the number of co-integrating vectors or equations when estimating a regression with more than two explanatory variables. At a maximum rank of zero, there is no co-integration. The trace statistic determines if a co-integrating equation exists at each maximum rank. A co-integration equation exists at a point where the trace statistic is less than the 5% critical value (Jambo, 2017).

Table 2 indicated the existence of three co-integration equations in the Johansen test. The asterisk shows the trace statistic to be lower than the critical value at the maximum rank of three. Max-eigenvalue test indicates three co-integrating equations at the 0.05 level. As a result, variables are co-integrated and have a long run relationship. Consequently, the Vector Error Correction model estimated.

Table2: Johansen tests for co-integration

Rank	Eigenvalue	Trace Statistic	5% Critical Value	P-VALUE	Max-Eigen Statistic	5% Critical Value	P-VALUE
None*	0.807744	175.8656	125.6154	0.0000	54.41466	46.23142	0.0054
At most 1*	0.752064	121.4509	95.75366	0.0003	46.02125	40.07757	0.0096
At most 2*	0.644278	75.42964	69.81889	0.0166	34.10896	33.87687	0.0469
At most 3	0.424490	41.32068	47.85613	0.1782	18.23243	27.58434	0.4751
At most 4	0.347031	23.08825	29.79707	0.2417	14.06543	21.13162	0.3597
At most 5	0.216104	9.022816	15.49471	0.3633	8.034793	14.26460	0.3752
At most 6	0.029496	0.988023	3.841466	0.3202	0.988023	3.841466	0.3202

* denotes rejection of the hypothesis at the 0.05 level
Source: Authors Own Computation using EViews.

3.3. Vector Error Correction Model Results:

As known, VECM gives results for both the short run period and the long run period. Meanwhile, all variables were insignificant in the short run, as indicated by table 3 Wald Test Chi Square P. values. Maybe that's happened because of; expenditure categories and other explanatory variables did not have an immediate effect on AVA, it need a time to appear its influence.

Equations (6) and (7) below illustrate the results of the VECM model. equation (7) illustrate the long run model, and resulted that: Government Expenditure in agricultural (E) found in a positive relationship to growth in Agricultural Value Added (AVA), where (Ln Et-1) coefficient was 1.334, which means a 1% increase in E increased AVA growth by 1.33%, ceteris paribus. Where, Figure 1 above depicts the most important components of (E): Government Investment in infrastructure, Subsidies Programs and Agricultural Research. That result emphasis the important role of public expenditure in increasing the growth of agricultural sector in the case of Egypt's economy. In spite of, government tendency towards diminishing government expenditure, this result consistent to (Selvaraj, 1993) the performance of agriculture can be further realized through adequate investment from public finance.

Table 3: Wald Test Chi Square

Variables	P.value
Ln E	0.5428
Ln SE	0.8191
Ln TO	0.4855
Ln NA	0.9040
Ln C	0.3553
Ln PI	0.3475

Source: Authors Own Computation using EViews.

Despite the government's tendency towards reducing spending on subsides for farmers, the results of the study indicated a positive relationship between farmer subsides programs and per caita agricultural value added growth. As shown by subsidies and other transfers coefficient of Ln SE = 0.248, where a 1% increase in SE leads to a 0.25% increase in per capita agricultural value added, assuming ceteris paribus. This result contradicts the opinion of some economists that spending on farmers subsidies leads to reduced growth in the agricultural sector. But in the case of Egypt, farmer subsidies programs came to compensate for the shortcomings of agricultural extension and help small farmers who suffer from a lack of funding and weak agricultural extension programmes.

Estimated VECM with Ln AVA as target variable:

$$\Delta \text{Ln AVA}_t = -2.19\, ect_{t-1} + 0.556\, \Delta \text{Ln AVA}_{t-1} + 0.208\, \Delta \text{Ln AVA}_{t-2} + 1.334\, \Delta \text{Ln E}_{t-1} + 0.276\, \Delta \text{Ln E}_{t-2} + 0.248\, \Delta \text{Ln SE}_{t-1} - 0.126\, \Delta \text{Ln SE}_{t-2} + 0.173\, \Delta \text{Ln TO}_{t-1} - 0.028\, \Delta \text{Ln TO}_{t-2} - 0.452\, \Delta \text{Ln NA}_{t-1} + 0.129\, \Delta \text{Ln NA}_{t-2} + 1.223\, \Delta \text{Ln C}_{t-1} - 0.428\, \Delta \text{Ln C}_{t-2} - 0.185\, \Delta \text{Ln PI}_{t-1} + 0.029\, \Delta \text{Ln PI}_{t-2} - 0.013 \quad (6)$$

Cointegration equation (long-run model):

$$ect_{t-1} = 1.000\, \text{Ln AVA}_{t-1} + 0.000\, \text{Ln E}_{t-1} - 0.000\, \text{Ln SE}_{t-1} + 0.049\, \text{Ln TO}_{t-1} + 8.496\, \text{Ln NA}_{t-1} + 14.984\, \text{Ln C}_{t-1} - 0.000\, \text{Ln PI}_{t-1} + 0.003 \quad (7)$$

Where:

U(-1) = - 0.219** Adjusted R-squared = 0.6159
F-statistic = 4.7907** Durbin-Watson stat = 1.8786
** denotes significance at 1% Observations = 43

Results of the rest independent variables were consistent according to economic theories and the results of previous studies as following:

Trade openness (TO) found in a positive relationship to growth in per capita Agricultural Value Added (AVA), where (Ln TO_{t-1}) coefficient was 0.173, which means a 1% increase in TO increased AVA growth by 0.17%, ceteris paribus. As indicated it is small amount of change, may be the reason is that Egypt have huge population which reach about 110 million people, who represents huge market also could consume the surplus of production.

Mean while per capita non-agricultural GDP (Ln NA) has appositive relationship to (AVA) where (Ln NA_{t-1}) coefficient was 0.452, which means a 1% increase in NA increased AVA growth by 0.45%, ceteris paribus. This result assures the importance of non-agricultural sectors in improving the performance of agriculture sector.

Per capita arable land (**LnC_{t-1}**) was in an appositive relationship with AVA growth, where the coefficient of 1.223 a one percent increase in (C) resulted in a 1.22% rose in AVA, all other factors being constant. There is no doubt about this result, because Egypt with area of one million kilometers square and 110 million people needs more arable lands to make the performance of agriculture sector raising faster, where work force is available and lands obtainable.

Real price index of agricultural production (**$LnPI_{t-1}$**) also found in an appositive relationship with AVA growth, where the coefficient of 0.185 a one percent increase in PI resulted in a 0.185% rose in AVA, all other factors being constant. This result also indicated to what extend the price index of agricultural production is very small, that's may be because farmers are lack to technology and agricultural sector lack to modernization, may be the reason is tenure fragmentation which emphasize the importance of correcting Legislation direction, and marketing logistics in agriculture sector in Egypt.

Notes under equations (6, 7) above indicated that; The Durbin-Watson statistic value was 1.8786 showed the absence of autocorrelation in the residuals. The Durbin-Watson statistic takes a range of 0 to 4. Values toward zero indicate negative autocorrelation while values approaching four indicate positive autocorrelation (Durbin and Watson, 1950). Also reports a significant and error correction term off -0.219, suggesting that the speed of adjustment towards the long-run equilibrium state is 21.9%.

Breusch-Godfrey Serial Correlation LM Test results indicated the absence of serial correlation in variables table (4), which showed the fit and goodness of the model.

Table 4 Breusch-Godfrey Serial Correlation LM Test Results.

F-statistic	0.467894	Prob. F(2,13)	0.6365
R-squared	1.813051	Prob. Chi-Square(2)	0.4039

Source: Authors Own Computation using EViews.

IV. Conclusion

Price distortions and border restrictions have decreased as a result of a greater understanding of the economic inefficiencies and welfare costs related to government intervention in agriculture markets. The welfare consequences of the combination of public investment in the agricultural sector consequently take on a substantially greater significance. Government spending on investments and initiatives whose gains are internalized by agricultural companies and private interests entails significant opportunity costs in terms of the benefits of investments in the public goods that would have otherwise been supported with the same funds.

Subsidies reduce the productivity of complementary private investments, burden the taxpayers, and displace public goods. They might cause private investments to be delayed and encourage the redirection of private funds away from worthwhile endeavors and toward rent-seeking. Agriculture's expansion and the generation of rural income are hampered by the lack of investment in public goods caused by spending on private products that competes with them.

All variables were found nonstationary (with unit roots) at level. After first differencing, the augmented Dickey-Fuller test indicated stationarity in the variables. There was the existence of two co-integration equations in the Johansen test. VECM gives results for both the short run period and the long run period. Meanwhile, all variables were insignificant in the short run, maybe that's happened because of; explanatory variables did not have an immediate effect on agricultural GDP, it needs a time to appear its influence.

The importance of the composition of government expenditure in shaping the performance of the agricultural sector in the long term has become clear. Spending on education, agricultural scientific research, and infrastructure are considered factors that enhance agricultural productivity. However, the role of both the public and private sectors remains of great importance in practical terms, due to its acute influence on policies. Therefore, the composition of spending is important, and we must differentiate between agricultural spending and non-agricultural rural spending, as non-agricultural rural spending is more directed towards public goods.

In spite of, government tendency towards diminishing government expenditure, the results were consistent to the performance of agriculture can be further realized through adequate investment from public finance.

Results contradict the opinion of some economists that spending on farmer's subsidies leads to reduced growth in the agricultural sector. But in the case of Egypt, farmer subsidies programs came to compensate for the shortcomings of agricultural extension and help small farmers who suffer from a lack of funding and weak agricultural extension programmes.

Trade openness indicated small amount of positive change in agricultural sector performance, may be the reason is that Egypt have huge population which reach about 110 million people, who represents huge market also they could consume the surplus of production. the results assure the importance of non-agricultural sectors in improving the performance of agriculture sector.

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