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THE ROLE OF PUBLIC AGRICULTURAL SPENDING AS A PANACEA FOR AGRICULTURAL SUBSECTOR PRODUCTION: EMPIRICAL EVIDENCE FROM CAMEROON

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Abstract

The purpose of the paper was to analyse the role of public agricultural spending as a panacea for agricultural subsector production in Cameroon. The data were taken from World Bank development database and processed using growth model, and error correction model. Despite the agricultural sector's significant contributions to the country's economy throughout the years, the country has made little headway in reducing it. Recent interest in the relationship between government spending and economic output has not focused on the central question of whether government spending, particularly agricultural spending increases agricultural subsector output or otherwise. With instantaneous and compound growth rates of 6.7 percent and 6.93 percent, 3.03 percent and 3.08 percent, 13.66 percent and 14.64 percent, respectively, the results demonstrated stagnation in agricultural and livestock subsector production and labor. In contrast, public agriculture spending increased at a faster rate, with instantaneous and compound growth rates of 6.09 percent and 6.27 percent, respectively. In the short run, agricultural land, labor, and public agricultural spending all have a substantial impact on animal productivity. Cutting public agricultural spending by 25% is the most cost-effective way to maintain crop and livestock production in the short term. Incentives such as tax reductions and infrastructure development should be established to attract more private investors, knowledge transfer, and significant capital inflows to ensure the agricultural sub-long-term sector's viability. In the short term, privatization of the government's agricultural development projects will be critical for efficient use of public resources.

Key words: *public agricultural spending, livestock, crop, error correction model*

INTRODUCTION

Several studies have been carried out on the nexus between public expenditures and agricultural growth around the world [6, 17, 25, 13, 3, 16, 20, 26]. They focused on aggregate economic output and public spending with little or no emphasis on disaggregated economic production and governmental spending. As a result, a study is needed to experimentally address the information gap and record the extent to which public agricultural investment, particularly in the crop and animal subsectors, might be sustainable over years particularly in the instance of Cameroon. The direction and growth rates of crop subsector production, animal subsector production, public agriculture spending and labor are all explicitly determined in this study. It also looks at the impact of government agricultural spending on crop and livestock production, as well as the impact of changes in government agricultural spending on crop and livestock production. The findings of this study will serve as a foundation for policy development and advocacy in Cameroon, helping to sustain the crop and animal sectors.

Agriculture is the backbone of society in most developing countries, providing food for people, jobs for workers, and trade for economies at the local, national, and worldwide levels. However, as we approach closer to the Sustainable Development Goals (SDGs), agriculture's chances of being at the vanguard of reducing hunger, ending poverty, and ensuring sustainable development may be jeopardized. Hunger levels were slowly rising prior to the COVID-19 epidemic and its social and economic consequences, and this was especially true in Sub-Saharan Africa (SSA) [12, 22]. In 2019, 690 million people were predicted to be malnourished, with 235 million of them living in Sub-Saharan Africa. This suggests that significant more resources will be necessary to attain Zero Hunger, and that these resources will need to be intelligently deployed. Increasing agricultural investment is one strategy to attain Zero Hunger. This is stressed in the Sustainable Development Goals, particularly Target 2 of sustainable goal development (SDG) which asks for increased investment and regional pledges to boost agricultural productivity by 2030 [22].

Cameroon is losing steam after a long era of shock resistance with one of the most resilient and diverse economies in the Economic and Monetary Community of Central African States (CEMAC). Despite difficult worldwide economic conditions, the Cameroonian economy has maintained a consistent Gross Domestic Product (GDP) growth rate since the 2008 financial crisis, increasing from 3.3 percent in 2010 to 4.6 percent in 2012, and then to 5.8 percent on average from 2013 to 2015. Apart from oil production, the primary sector (particularly subsistence farming) and several sections of the tertiary sector were the main drivers of economic growth (notably transport and telecommunications), The GDP growth rate remained strong, but slowed from 5.9% in 2015 to 4.5 percent in 2016 [2]. However, the fiscal policy of supporting significant backbone projects, particularly in the agriculture sector, in the context of diminishing oil revenues has resulted in an increase in budget deficits, although being somewhat expansionist. The budget deficit increased from 2% of GDP in 2015 to 6.5 percent of GDP in 2016, reflecting a 1.6 percent increase in governmental expenditures and a 1.9 percent drop in revenue (of which 0.9 percent was in oil revenue) [2].

Despite the agricultural sector's significant contributions to Cameroon's economy over the years, recent performance has been poor. Before the discovery of oil in 1978, the agricultural industry in Cameroon contributed as much as 30% of the country's GDP. Unfortunately, roughly a decade later, agriculture's contribution of GDP dropped to 24%, with a minor rebound to 27% in 1990. [15, 4, 14, 9, 10]. On the other hand, it fell to 19.8 percent in 2010 [31, 14, 9]. According to national accounts data, value-added growth in the primary sector averaged 4% between 2003 and 2012, outpacing GDP growth (which averaged 3.3%), but was relatively high only in 2007 (5.9%) and 2008 (5.2%), and could not maintain this level despite increased public sector investment [30, 31].

Between 1960 and the late 1980s, the Cameroon government established agricultural development programs defined by the promotion of export and industrial crops as a source of foreign cash and as a means of improving living circumstances in rural areas. Small-scale farmers were viewed as tools in the policy to ensure mass production. The government, on the other hand, guaranteed prices and tightly regulated the procurement and selling of agricultural goods like cocoa and coffee (price stabilization mechanisms). Other policy instruments included the formation of massive development projects and the establishment of development firms, which allowed the government to be present among farmers, provides technical guidance, and develops the infrastructure needed to better their lives. The policy's outcomes have been described as "mixed." Despite efforts to boost agricultural research and producer technical oversight, yields remained poor [8, 1]. However, the government amended its intervention strategy by establishing a development organization in each agricultural zone with financial and administrative autonomy, with the goal of establishing a "new type" of relationship between the government and farmers. When determining agricultural prices, factors such as producer income (rather than only the interests of urban customers) were taken into account. Intensive training for rural extension workers and production and processing management (by state agencies) were also pushed [1].

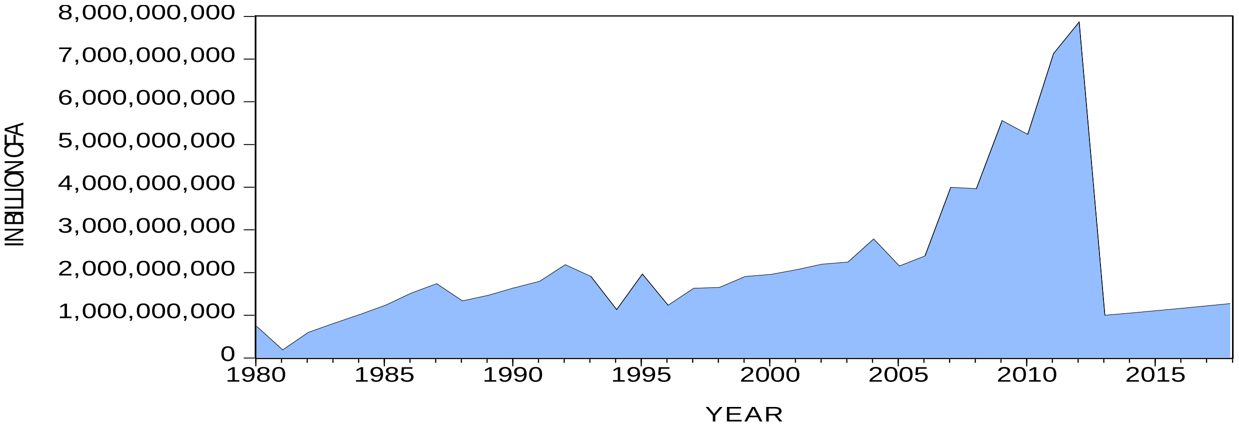


Fig. 1. Trend of Public Agricultural Spending in Cameroon
Source: Eviews data analysis output, 2022.

The government of Cameroon announced a New Agricultural Policy (NAP) in 1990, in line with the first SAP, to gradually commercialize development operations, empower farmers, and diversify agriculture. The NAP was funded by the Breton Woods Institutions and other key donors. After 1990, the NAP was reoriented to focus on the following goals, which are also included in the current NAP, which was enacted in 1999 and considers agriculture to be the driving force behind Cameroon's social and economic development, increase food security by increasing output and revenue [21], and encourage professional and inter-professional organization of diverse investors who are also partners in agricultural development. Cameroon's government prepared a rural sector development strategy paper as part of the highly indebted poor countries program. As a result, current agricultural policies are organized around seven strategic pillars: sustainable agricultural product production and supply; sustainable natural resource management; promotion of local and community development; development of appropriate funding mechanisms; and development of employment and vocational training in agribusiness [1].

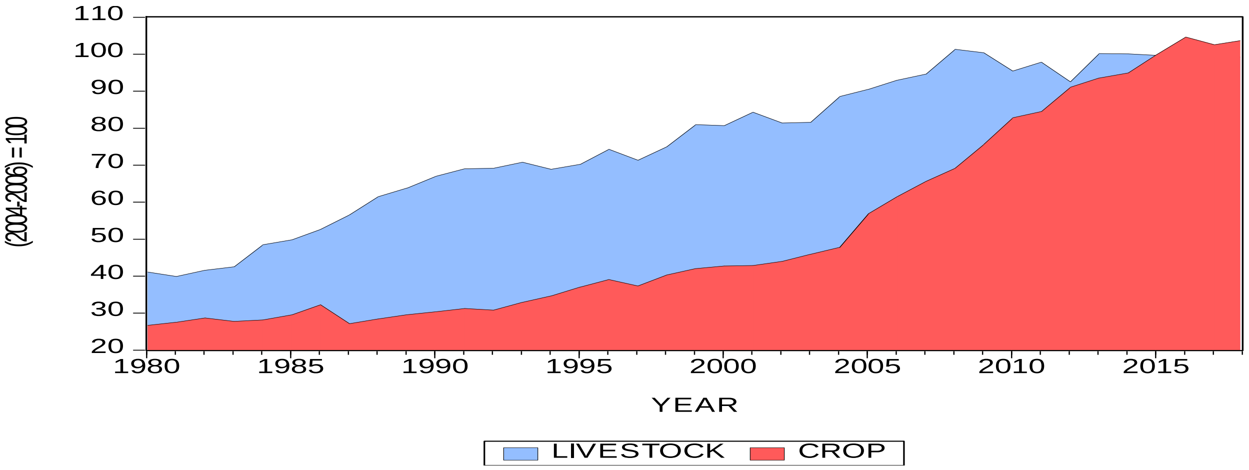


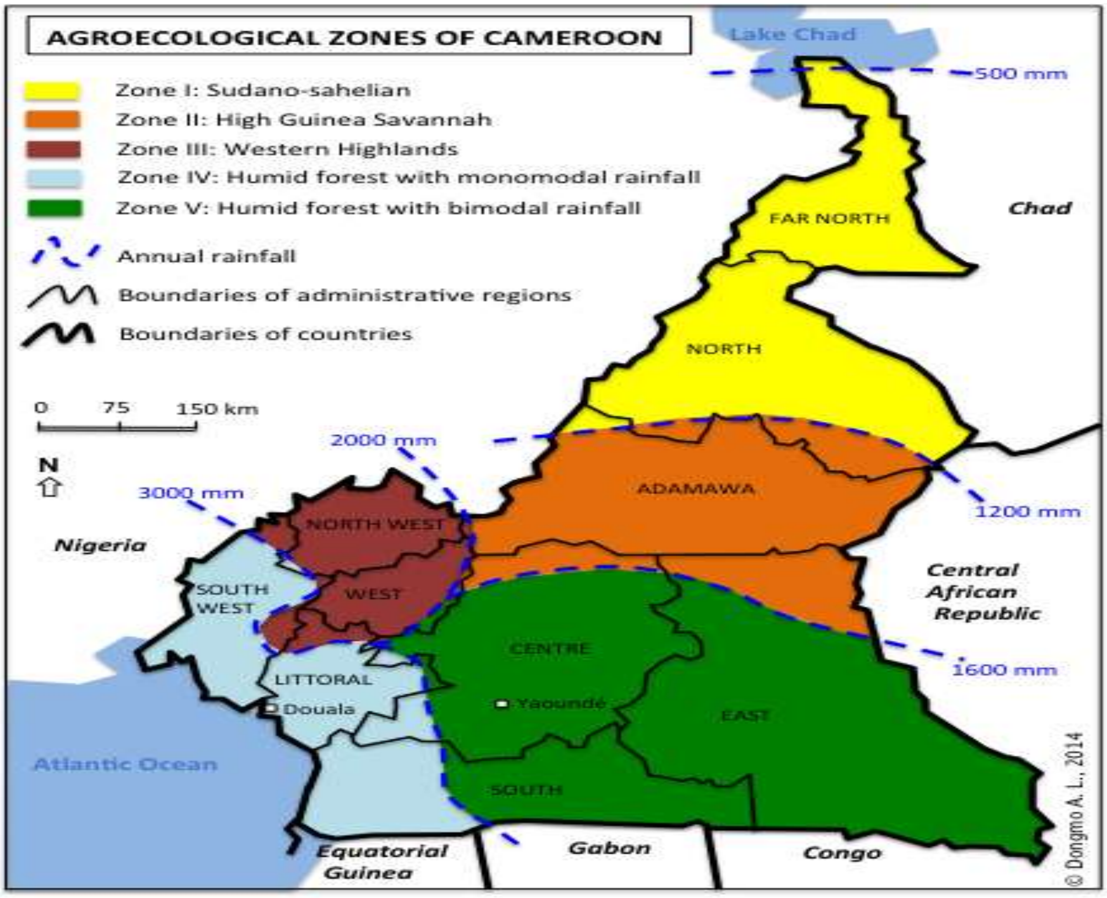
Fig. 2. Crop and Livestock Subsectors Production in Cameroon
Source: Eviews data analysis output, 2022.

This study found that cutting public agricultural spending by 25% is the most cost-effective way to maintain crop and livestock production in the short term. Incentives such as tax reductions and infrastructure development should be established to attract more private investors, knowledge transfer, and significant capital inflows to ensure the agricultural sub-long-term sector's viability. In the short term, privatization of the government's agricultural development projects will be critical for efficient use of public resources.

MATERIALS AND METHODS

The Research Area

The research was place in Cameroon, which is divided into 10 regions: Centre, Littoral, Adamawa, Far-North, North, South, East, West, North-West, and South-West. The country has a total land area of 475,442 square kilometers and is located in Africa's Central region between latitudes 2 and 13 degrees north and longitudes 9 and 16 degrees east of the equator [28]. The most widely grown crops in Cameroon include groundnuts, vegetables, cassava, and beans. Meanwhile, poultry, goats, sheep, cattle, and pigs bring in the most money in the livestock industry. From a household viewpoint, farming and agriculture in Cameroon is small-scale, informal, and subsistence, taking place on tiny plots of land and reliant on limited infrastructure, limited access to capital, and low-value chain linkages for final goods or markets.



Map 1. Map of Cameroon showing the different regions and agro-ecological zones
Source: www.maponline.com [32].

Method of Data Collection

The study was conducted using annual time series data spanning 39 years (1980-2018). The World Bank Development database indicators were used to collect data for agriculture and livestock subsector production. Cameroon's Ministry of Economic and Planning provided data on public agricultural spending. The Food and Agriculture Organization (FAO) provided labor data, while the World Fact Fish database provided data on malnutrition.

Data Analysis Techniques

The growth model was utilized to determine the direction and rates of variable growth. The influence of public agricultural spending on agricultural subsectors production, and the consequences for malnutrition were investigated using the Vector Error Correction Model. The impact of changes in public agricultural spending (two (2) scenarios at 25%) on agricultural subsectors production was studied using Monte Carlo Simulation.

Model Specifications/Variables selection

The following is the growth model that was used to determine the direction and growth rates of the variables of interest:

$\ln Y_t = \alpha + \beta_{crop} t + \mu_t$ …………………… (1)
$\ln Y_t = \alpha + \beta_{pagr} t + \mu_t$ …………………....(2)
$\ln Y_t = \alpha + \beta_{liv} t + \mu_t$ ……………………...(3)
$\ln Y_t = \alpha + \beta_{lab} t + \mu_t$ ……………………. (4)

where:
α = intercept;
β = vector of the trend variable and μ is the econometric error term.
β_{crop}, β_{pagr}, β_{liv},β_{fdi}, β_{lab} =coefficients of the trend variable for crop subsector production, public agricultural spending, livestock subsector, and labour respectively.

Because the study looked at both absolute and relative change in the parameters of interest, a semi-log growth rate model was devised instead of a linear trend model. The slope coefficient, which quantifies the constant proportional/relative change in Y for a given absolute change in the value of the regressor t, is the most important parameter in equations (1-4).

To begin, multiply b by 100 to obtain the instantaneous growth rate (IGR) at a given point in time.

IGR= β X 100 ……………………….. (5)

where:
IGR = Instantaneous growth rate and
β = is the least-square estimate of the slope coefficient

Second, the compound growth rate (CGR) over time is calculated by taking the antilog of β, subtracting 1 from it, and then multiplying the difference by 100. In each of the five scenarios, the compound growth rate (CGR) in % can be calculated using equations 7-10 as follows:

CGR = ($e^{\beta i}$ -1)*100 ……………………… (6)

Finally, if is positive and statistically significant, growth accelerates; if is negative and statistically significant, growth decelerates; and if is not statistically significant, growth stagnates.

The Vector Error Correction Model is used to investigate the impact of government agricultural spending on the agricultural sector.

The theory of production with the Cobb Douglas (CD) functional form serves as the theoretical underpinning for the interaction between public agricultural spending and the agricultural subsector. All factors of production, according to [24], are subject to the law of diminishing returns. As seen in equation 7, the classical theory of production posits that output is a function of capital and labor input.

$$Y_t = A_t K_t^{\alpha} L_t^{1-\alpha} \quad (7)$$
$$0 < \alpha < 1$$

where:
Y_t is the output
K_t is the capital input
L_t is the labour input.

A_t is often referred to by macroeconomists as a measure of technological development, although it is ultimately just a measure of productive efficiency because an increase in A t boosts the productivity of other components. A_t is also known as total factor productivity (TFP) in common empirical jargon [11]. The CD functional form is used to analyze the production process, not because it is a basic instrument that can be handled quickly or as a crude estimation tool, but because of the benefits it offers. These benefits are due to its generalized form's ability to handle many inputs. It does not introduce distortions of its own, even in the face of market defects. The ability to manage diverse scales of manufacturing is further enhanced by the unconstrained CD production functional form. Various econometric estimating difficulties, such as serial correlation and heteroscedasticity, can be effectively and efficiently handled. It is suggested that the majority of its criticism is focused on its inflexibility, and that all other assumptions may be loosened except for one evident assumption. It is also claimed that it facilitates computations and has explicit uniformity, parsimony, and flexibility features. Simultaneity is also a challenge that can be overcome. It is also a good representation of aggregation technology [7].

Given that capital (public agricultural spending), land, and labor are the essential factors for agricultural output, variables including agricultural land, labor, and public agricultural spending were used in this study. As a result, our CD-production function could be described as follows:

$$Y_t = A_t AGL_t^{\alpha} PAS_t^{\gamma} LB_t^{\delta} \quad ....(8)$$

where:

$$\alpha + \gamma + \delta = 1$$

Y_t is crop or livestock production
AGL is agricultural land
PAS is public agricultural spending
LB is labour.

The inputs (AGL, PAS, LB) and outputs (crop or livestock production Y) have a nonlinear connection and the three inputs interact. The nonlinear CD must be linearized in order to estimate the parameters, β, γ, δ, A, Taking both sides of the natural log of $Y_t = A_t AGL_t^{\alpha} PAS_t^{\gamma} LB_t^{\delta}$, we obtain the following equation for estimation:

$$lnY_t = lnA_t + \alpha lnAGL_t + \gamma PAS_t + \delta LB_t \ldots\ldots (9)$$

α, γ and δ are estimated parameters representing elasticity. Therefore, following Djomo et al. (2017), the model can be specified as:

$$\ln Y_t = \ln\beta_0 + \beta_1 \ln X_{1t} + \beta_2 \ln X_{2t} + \beta_3 \ln X_{3t} + ECT_{t-1} + \varepsilon_t \ldots\ldots (10)$$

where:
Y_{it}^* is Crop or Livestock subsector output (Tons)
X_{1it} is Agricultural land (hectares)
X_{2it} is Labour (employed persons in the agricultural sector)
X_{3t} is Public Agricultural Spending (FCFA)
ECT_{t-1} is error correction term.

The impact of changes in public agriculture spending on agricultural subsectors production is modelled as follow:

$$lnY_{it}^* = \alpha_{0i} + \alpha_1 lnX_{1it} + \alpha_2 lnX_{2it} + \alpha_3 * \left(lnX_{3it} + \vartheta_{3,it}\right) + ECT_{t-1} + \zeta_{it} \ldots\ldots (11)$$

where:
Y_{it}^* is Crop or Livestock subsector output (Tons)
X_{1it} is Agricultural land (hectares)
X_{2it} is Labour (employed persons in the agricultural sector)
X_{3t} is Public Agricultural Spending (FCFA)
ECT_{t-1} is error correction term
ϑ_{3it}= uncertainties in the measurement ofX_{3it}
ζ_{it}= exogenous white noise disturbance on the model.

The behavior of crop and livestock subsectors output under various scenarios was explored due to the stochastic nature of this model. The simulated scenarios include a 25% increase in public agriculture spending and a 25% drop in public agricultural spending.

RESULTS AND DISCUSSIONS

Table 1 shows the outcome of the direction and growth rates. With instantaneous and compound growth rates of 6.7 percent and 6.93 percent, respectively, there was standstill in agricultural subsector production. In the livestock subsector, there was also stagnation, with instantaneous and compound growth rates of 3.03 percent and 3.08 percent, respectively.

Table 1. Direction and growth rates

	Crop Production	**Livestock Production**	**Public Agricultural Spending**	**Labour**
@TREND	0.06*** (8.41)	0.03*** (8.27)	0.06*** (3.29)	0.005 (0.31)
@TREND^2	-0.0002 (-0.48)	2.08E-05 (0.09)	0.003 *** (3.01)	0.001 (1.57)
C	4.28 (155.86)	4.44 (351.13)	24.06 (377.74)	15.75 (248.93)
R-squared	0.984	0.986	0.975	0.78
Adjusted R-squared	0.982	0.984	0.972	0.75
S.E. of regression	0.04	0.01	0.09	0.09
Sum squared resid	0.02	0.005	0.13	0.13
Log likelihood	31.30	44.48	17	17.11
F-statistic	456.77	506.26	283.64	25.69
Prob(F-statistic)	0.000	0.000	0.000	0.000
Mean dependent var	4.79	4.68	24.84	15.95
S.D. dependent var	0.32	0.15	0.59	0.19
Akaike info criterion	-3.33	-4.88	-1.64	-1.66
Schwarz criterion	-3.18	-4.73	-1.50	-1.51
Hannan-Quinn criter.	-3.31	-4.86	-1.63	-1.64
Durbin-Watson stat	1.12	1.77	1.11	0.74
Instantaneous growth rate (%)	6.7	3.03	6.09	0.58
Compound growth rate (%)	6.93	3.08	6.27	0.58
Direction of growth	Stagnation	Stagnation	Acceleration	Stagnation

*** is significant at 1% N.B. Values in parentheses are t statistics
Source: Eviews data analysis output, 2022.

This could be explained by program duplication within subsectors, which could imperil growth rates due to policy reversals. This contrasts with the findings of [20], who showed a negative growth rate of -0.87% for the total agricultural industry in Cameroon from 1970 to 2014. In addition, labor stagnated, with instantaneous and compound growth rates of 0.58 percent and 0.58 percent, respectively. This could be attributed to professional structures' insufficient capacity to train young and nimble human resources to contribute to the agriculture sector's long-term viability. When compared to [27]'s findings, which indicated instantaneous and compound growth rates of 2.58 percent and 2.61 percent, respectively, these figures show a decline in labor growth rates in Cameroon. In contrast, public agriculture spending increased at a faster rate, with instantaneous and compound growth rates of 6.09 percent and 6.27 percent, respectively. This could be attributable to the completion point of highly indebted developing country programs, which made funding available to enhance the agriculture sector in Cameroon.

Table 2 summarizes the results of unit root tests performed under the ADF at the level and first difference. The findings show that all of the variables under investigation were not stationary at the level, but were stationary at the first difference at the 1%, 5%, and 10% level of significance.

Table 2. Augmented Dickey Fuller (ADF) test

Variables	**ADF Results**				
	At level		At First difference		Decision
	t-statistic	probability	t-statistic	probability	
Crop	-1.51	0.80	-7.15	0.000***	I(1)
Livestock	-1.20	0.89	-3.75	0.031**	I(1)
Agricultural land	-0.36	0.98	-4.51	0.004***	I(1)
Public agricultural spending	-2.57	0.29	-7.01	0.000***	I(1)
Labour	0.67	0.99	-3.22	0.09*	I(1)

***, **and * indicate stationary at 1%, 5% and 10% level of significance
Source: Eviews data analysis output, 2022.

As a result of examining Table 2, it is clear that all of the variables are stationary at first difference and are thus classified as an I(1) process. The trace statistics at a 5% level of significance are used in the unconstrained cointegration test.

Table 3 reveals that the trace statistic value exceeds the critical value, meaning one (1) co-integrating equation at a 5% level of significance, indicating a long-term link between variables. However, crucial values are bigger than trace statistics in the subsequent cointegration equation, meaning that the null hypothesis of cointegration is rejected.

Table 3. Cointegration Rank Test based on Trace Statistics

Hypothesized		**Trace**	**0.05**	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.64	71.03	69.81	0.03
At most 1	0.32	32.97	47.85	0.55
At most 2	0.26	18.53	29.79	0.52
At most 3	0.12	7.17	15.49	0.55
At most 4	0.05	2.04	3.84	0.15

Trace test indicates 1 cointegratingeqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values
Source: Eviews data analysis output, 2022.

Table 4 shows the impact of public agricultural spending on the output of agricultural subsectors. The results demonstrate that agricultural land, labor, and public agricultural spending account for 49 percent and 66 percent of the variation in crop and animal subsector production, respectively. Furthermore, the findings demonstrate that labor has a considerable impact on crop yield in theshort term. In the short run, agricultural land, labor, and public agricultural spending have a substantial impact on cattle output.

The coefficient of labor, in particular, was negative and significant at the 5% level. This means that 1% increase in labor will decrease crop production by 0.04%. The labor coefficient, on the other hand, is positive and significant at the 5% level. This means that a 0.02 percent increase in labor will enhance animal production. The negative association between labor and crop output may be due to smallholder farmers' use of manual tools, which may have a major impact on their productivity and, as a result, reduce aggregate crop production. Also, the adoption of any farm management practice may not have any significant role in increasing farm output. This result is contrary to the findings of [23]. It's possible that the positive association between labor and livestock productivity is due to the fact that livestock production requires less labor than crop production. Agricultural land has a negative coefficient that is substantial at the 1% level.

Table 4. Effect of public agricultural spending on agricultural subsector output

Variables	Crop production		Livestock production	
	coefficient	t-statistics	coefficient	t-statistics
ln Agricultural land	-0.0003	-0.91	-0.0004***	-2.94
ln Labour	-0.0004**	-2.14	0.0002**	2.56
ln Public agricultural spending	-0.12	-0.88	0.15**	2.33
Error correction term (ECT)	-1.08***	-3.89	-0.29***	3.61
R-squared	0.49		0.66	
Adj. R-squared	0.39		0.49	
Sum sq. resids	491.65		174.66	
S.E. equation	4.11		2.75	
F-statistic	4.80		4.07	
Log likelihood	-98.13		-77.79	
Akaike AIC	5.84		5.13	
Schwarz SC	6.14		5.66	
Mean dependent	0.29		0.25	
S.D. dependent	5.29		3.89	
Determinant resid covariance (dof adj.)	6.50E-10		3.97E-10	
Determinant resid covariance	2.21E-10		4.87E-11	
Log likelihood	144.81		167.23	
Akaike information criterion	-5.76		-5.78	
Schwarz criterion	-3.96		-2.85	

*** and ** are significant at 1% and 5% respectively
Source: Eviews data analysis output, 2022

This means that 1% increase in agricultural land reduces livestock and crop production by 0.04% and 0.03% respectively. This result could be explained by market failures [5], and the heterogeneity in productivity by farm size within the country [29].

The public agricultural spending coefficient is positive and significant at 5%, meaning that a 1% increase in public agriculture spending improved cattle subsector production by 15%. This could be owing to the government of Cameroon establishing numerous agricultural targeted programs after the completion of highly indebted poor nation projects. This finding is consistent with [19] findings, which revealed that disaggregated government expenditures resulted in positive externalities on Pakistan's economic production. As for the relationship between public agricultural spending and crop production, the result implies that 1% increase in public agricultural spending will reduce crop production by 12%.

This result suggests that there could be redundancy and inefficient use of resources in the various subsidy programmes [18].

Table 5 and Figures 5 and 6 show the impact of a 25% reduction in public agriculture spending on agricultural subsectors. The result demonstrates that baseline crop subsector production, which ranges from 55.80 tons to 218.42 tons with a mean of 105.26 tons, is lower than scenario 1, which has a mean of 125.88 tons and ranges from 56.88 tons to 256.86 tons. The crop subsector production increased by 17.84 percent as a result of this result.

The cattle subsector production baseline, which ranges between 49.94 tons and 722.76 tons with a mean of 233.24 tons, was lower than scenario 1, which ranges between 50.77 tons and 951.68 tons with a mean of 288.22 tons.

Table 5. Effect of a 25% decrease in public agricultural spending on agricultural subsectors

	Crop Subsector Production			Livestock Subsector Production		
	Baseline	Scenario 1	% Change	Baseline	Scenario 1	% Change
Mean	105.26	125.88	17.84	233.24	288.22	21.08
Median	86.73	107.55		159.96	184.73	
Maximum	218.42	256.86		722.76	951.68	
Minimum	55.80	56.88		49.94	50.77	
Std. Dev.	49.30	59.57		190.06	252.70	
Skewness	0.86	0.72		1.09	1.16	
Kurtosis	2.44	2.27		3.13	3.28	
Jarque-Bera	4.98	3.97		7.05	8	
Probability	0.08	0.13		0.02	0.01	
Sum	3789.61	4532.02		8163.52	10087.88	
Sum Sq. Dev.	85097.92	124225.1		1228233	2171280	

Source: Eviews data analysis output, 2022.

The cattle subsector's production increased by 21.08 percent as a result of this result. This means that cutting government agriculture investment and focusing on recurring spending will help the agricultural crop and livestock subsector grows faster. This conclusion is consistent with the findings of [16], who found that reducing government spending enhanced agricultural growth in Cameroon from 1985 to 2016.

Table 6 and Figures 7 and 8 show the impact of a 25% increase in public agriculture spending on agricultural subsectors. According to the findings, baseline crop output ranged from 55.80 to 218.42 tons, with a mean of 105.26 tons.

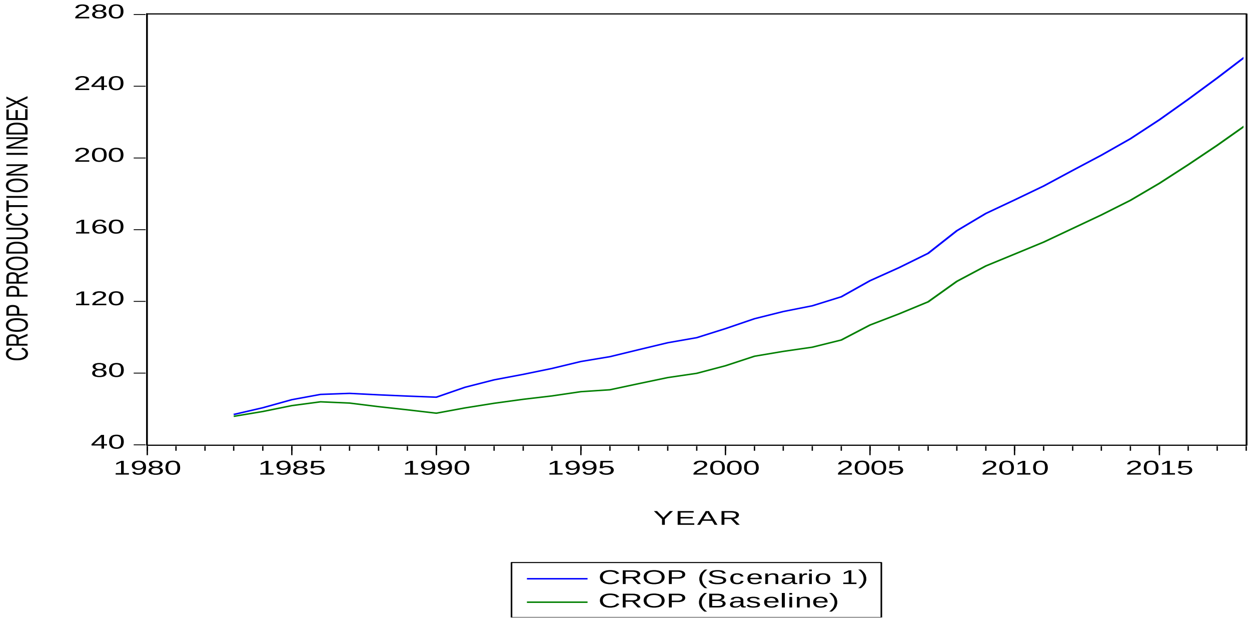


Fig 4. Effect of a 25% decrease in public agricultural spending on crop production
Source: Eviews data analysis output, 2022.

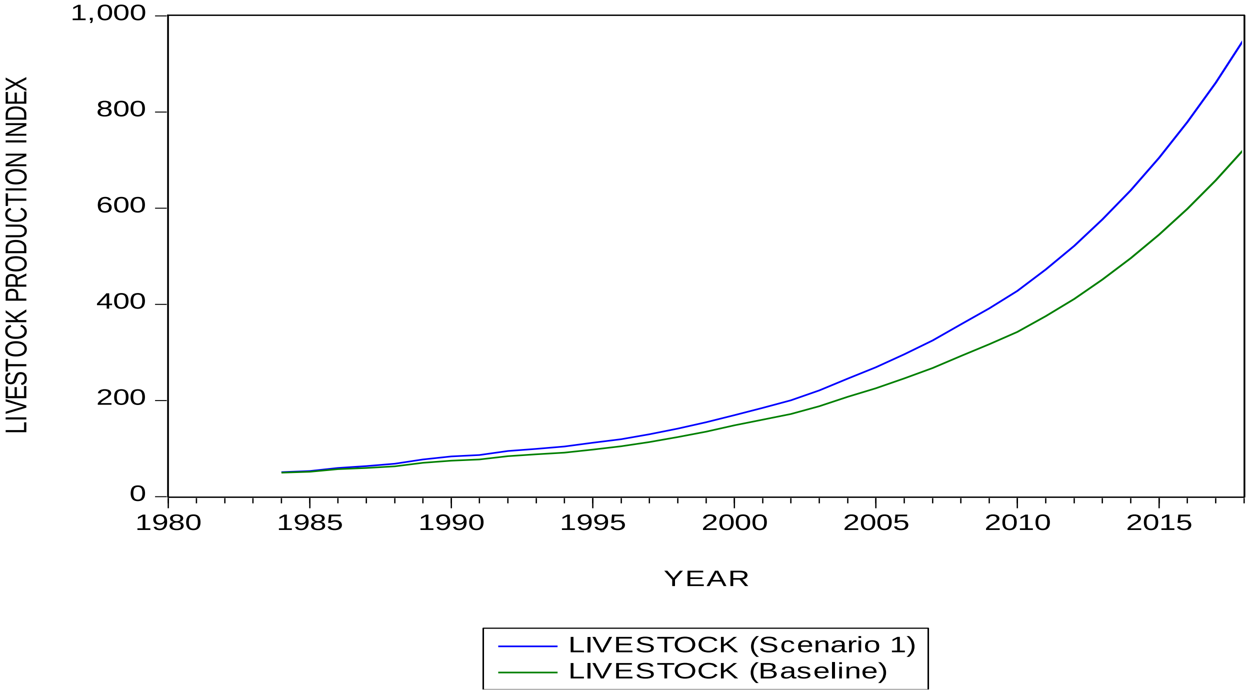


Fig 5. Effect of a 25% decrease in public agricultural spending on livestock production
Source: Eviews data analysis output, 2022.

Table 6. Effect of a 25% increase in public agricultural spending on agricultural subsectors

	Crop Subsector Production			Livestock Subsector Production		
	Baseline	Scenario 2	% Change	Baseline	Scenario 2	% Change
Mean	105.26	84.64	-21.71	233.24	178.26	-26.72
Median	86.73	65.92		159.96	135.20	
Maximum	218.42	179.97		722.76	493.84	
Minimum	55.80	48.55		49.94	49.11	
Std. Dev.	49.30	39.46		190.06	127.65	
Skewness	0.86	1.02		1.09	0.96	
Kurtosis	2.44	2.72		3.13	2.84	
Jarque-Bera	4.98	6.39		7.05	5.48	
Probability	0.08	0.04		0.02	0.06	
Sum	3789.61	3047.21		8163.52	6239.16	
Sum Sq. Dev.	85097.92	54508.23		1228233	554015.9	

Source: Eviews data analysis output, 2022.

This was higher than scenario 2, which had a range of 48.55 to 179.97 tons with an average of 84.64 tons. Further findings show a -21.71 percent increase in crop subsector production. When compared to scenario 2, which ranges between 49.11 tons and 493.84 tons with a mean of 178.26 tons for the cattle subsector, baseline ranges between 49.94 tons and 722.76 tons with a mean of 233.24 tons. This result reveals a decrease in livestock subsector production of -26.72 percent, showing that a rise in government agricultural spending severely slows the advancement of agricultural crop and livestock subsector output. This outcome could be attributed to capital expenditures, which may or may not boost agricultural production in the short term. This study backs up the findings of [10], who found that increasing government spending slowed agricultural growth in Cameroon from 1985 to 2016.

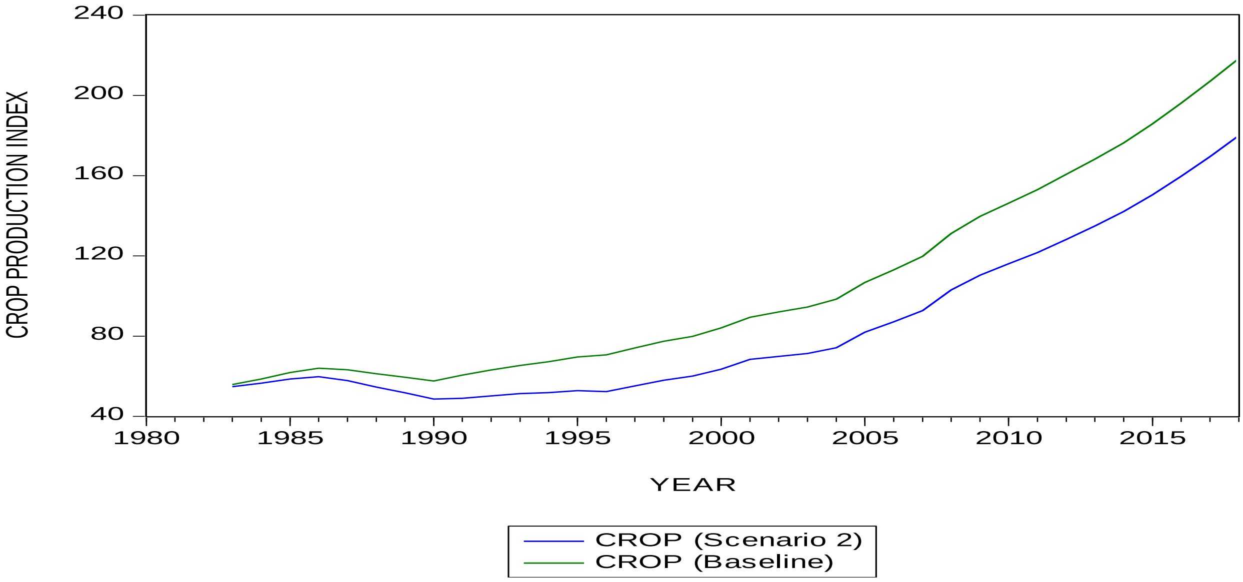


Fig. 6. Effect of a 25% increase in public agricultural spending on crop production
Source: Eviews data analysis output, 2022.

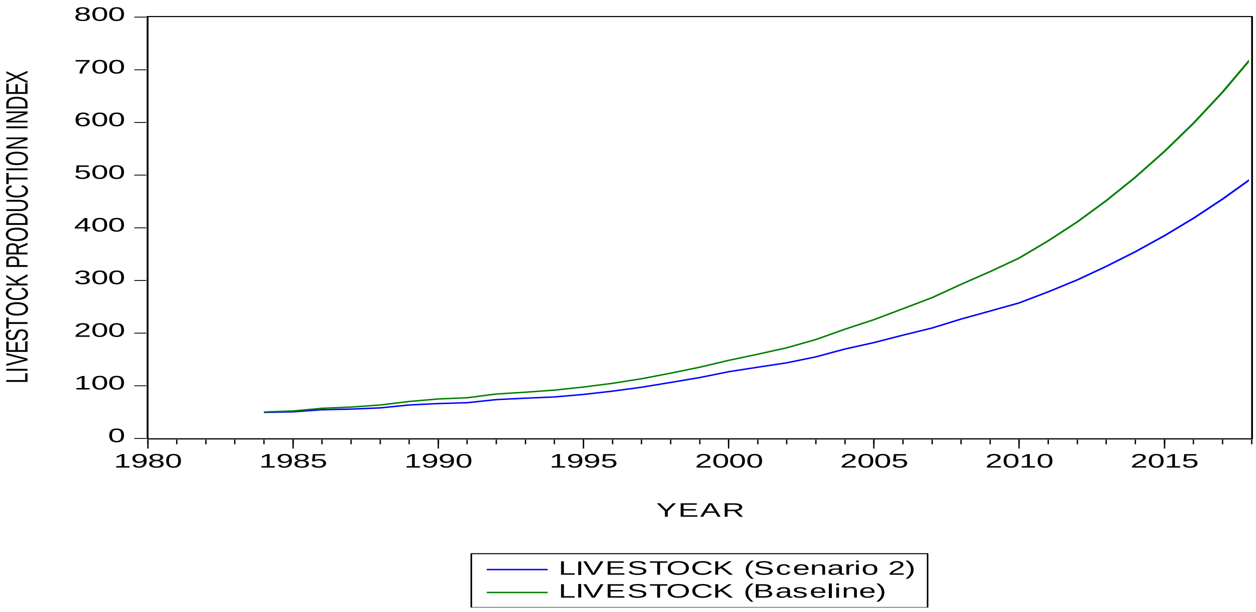


Fig. 7. Effect of a 25% increase in public agricultural spending on livestock production
Source: Eviews data analysis output, 2022.

CONCLUSIONS

Despite the vast amount of fertile land available for the agricultural industry in Cameroon, the country is wedged between west and central African countries, making it a vital location. With this geographic advantage, the country can become a big agricultural exporter if this sector of the economy is properly funded and managed. Unfortunately, due to ineffective agricultural policy, agriculture in Cameroon remains subsistence. Labor, agriculture, and livestock subsector production were all determined to be stagnant in this study. Agriculture received a lot of government funding throughout the time period under consideration. In the short run, labor had a major impact on crop subsector output. In the short run, agricultural land, labor, and public agricultural investment all have a substantial impact on livestock subsector output. Furthermore, the analysis found that a 25% reduction in public agricultural investment in the short term is the

most effective tool for sustaining crop and livestock output The following are suggested:
-In the medium term, privatization of the government's agricultural development projects will be critical for efficient use of public funds.
-Incentives such as tax reductions and infrastructure development should be set up to attract foreign direct investors (FDI), given that FDI provides direct and indirect employment, technology transfer, and a large capital inflow for the sustainability of agricultural development programs.
-Incentives like as fertilizer distribution, improved varieties, extension delivery services, and low-interest financing facilities for farmers should be encouraged in order to increase farm production and thereby minimize hunger

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