Analysis of Farming Contribution to Economic Growth and Poverty Alleviation in the South African Economy: A Sustainable Development Goal Approach

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ABSTRACT

The agricultural sector is important in South Africa because it contributes approximately 2.53% to the country's Gross Domestic Product. Agriculture can contribute significantly to economic growth, by means of food production and job creation and thereby it can play an important role in reducing poverty. This study examines the impact of farming on economic growth and the possible role it plays in poverty alleviation in South Africa. The United Nation Department of Economic and Social Affairs highlights the first three sustainable development goals in line with poverty alleviation, zero hunger and good health and wellbeing for all. The article analysed the impact of farming on gross domestic product from 2002Q1-2021Q4 factoring in part of the period for COVID-19. A quantitative method approach was used with an application of the Vector Error Correction Method to check and analyse the behaviour of variables both in the short run and long run using E-views 12 software. Data was retrieved from the South African Reserve Bank, Statistics SA and Quantec. Results showed that variables where cointegrated meaning there was a long run relationship between the dependent variable GDP and the independent variables comprising of consumer price index, consumption, inflation, and unemployment used as proxies in understanding how farming affects economic growth and ultimately consumer well-being. Furthermore, it was found that without consumption there is no economic growth meaning the consumption of livestock, crops and export or trade between countries leads to growth. Employment is also needed in the farming industry, the availability of labour assists in faster production which leads to economic growth.

Keywords: Agriculture, Consumption, Commercial, Economic Growth, Subsistence
JEL Classifications: D61, P2, O1, Q22

1. INTRODUCTION

Subsistence farming is self-sufficiency farming in which the farmers focus on growing enough food to feed themselves and their families. Michael and Stephen (2015) refer to Subsistence farming on small plots of land as a way of survival for most African people living in agriculture-based economies. The great majority of farm families in Africa still plan their production primarily for their own subsistence, as one with domestic work; farm labour is habitually seen as employment of last choice, a quasi-formal segment on the border of morality.

Income dynamic in agriculture is important for various reasons: for land reform reasons it is vital to distinguish if commercial farming is feasible, at the same instance employees are thought to have benefitted from farm labour market reforms but with a little expectation (Duranton et. al., 2004; Conradie, 2007) basically do not recognize to what degree this has occurred. Due to statistics

only commercial agriculture is used to investigate the contribution of agriculture to economic growth. The subsistence farming is usually focused on local consumption and trade to reduce poverty by ensuring there is food on the table with families in rural areas.

This land reform policy intended to accomplish the target set by the ANC in 1994 to redistribute 30% of agricultural land (24.5 million hectares) to black South Africans by 1999; a target that later shifted to 2014 due to poor performance. By 2012 only 7.95 million of the planned 24.5 million hectares were transferred to black people, and the target for the completion of redistribution has again been moved to 2025. The key research problem underpinning this is South African government's failure in understanding the position that agriculture can participate in enriching the economy of the rural areas. For instance, since the country's first democratic election in 1994, the government has been working to develop small scale farming with limited success. On the issue of land reform, there has been a very slow progress in moving towards the attainment of the target to redistribute 30% of agricultural land to black people. It is said that only about 3.1% of land has been transferred to black people so far, Conradie (2007).

South Africa has a twofold agriculture economy, consisting of a well-developed commercial sector and a mainly subsistence-oriented in the rural areas. The commercial sector is conquered by white farmers, occupying 87% of the land, while the subsistence sector is owned by 2 million black households occupying 13% of the outstanding land, Kindleberger and Aliber (2005). These activities also vary from cattle ranching in the bushveld to sheep farming in the arid regions. Since staple food is the most common for most of the population, farming remains important to the economy and development of South Africa. The aim of the study is to analyse the role of a twofold agricultural economy, with both well-developed commercial farming and additional subsistence role within economic growth and an improved perceptive of the connection between agriculture and poverty alleviation and its input to economic growth. There is firm evidence reflecting that subsistence and commercial farming can contribute to economic growth of the country and this has been proven all over the country. From a perusal of the literature on the subject, it is apparent that few in-depth investigations on the information of subsistence and commercial farming have been initiated. Furthermore, recent accounts in the periodical literature suggest clearly that inadequacies exist relating to the provision of information on subsistence and commercial farming, a problem exacerbated by the paucity of relevant empirical research.

The link between agriculture and poverty alleviation can be best understood by focusing on the rural areas where many of the poor live. For economic growth, the focus should be mainly on the commercial farmers, without negating the role of subsistence farming.

Diao et. al., (2003) show that spending on rural infrastructure and productivity improving investments in agricultural export crops and domestic animals have the most guarantees for growth income and food use in Africa. It is essential for the country to be aware of the returns of the agriculture investments and to be informed about the policies which will improve productivity of the agricultural sector. Furthermore, the agricultural sector is the main employer of people, in the rural areas. It can help the poor understand how they can make use of agriculture to eradicate poverty. Another important factor is that the households who are busy in farming actions, especially within the rural sector, tend to be healthier and have enhanced nutritional prominence than comparable poor households in the urban areas. The agricultural sector contributes approximately 2.53% to the country's Gross Domestic Product (Economic Review of the South African Agriculture, 2020), while it accounts almost 5% of total reported employment. Despite its comparatively undersized share of the entire GDP, crop growing remains a significant part in the South African economy, National Treasury (2006).

Reducing poverty remains a worldwide concern and agriculture is seen as one of the best strategies to achieve this goal especially in developing countries. This is because much of the poor depend on agriculture for survival. Therefore, various theories have been developed to provide a comprehensive understanding of the various concepts and explanations of poverty and economic growth. These theories form the basis of policies developed and strategies implemented to address poverty and economic growth in the agricultural sector. According to the United Nations Department of Economic and Social Affairs (2022) sustainable development goals, the first one postulates the ending of poverty in all its forms everywhere. The United Nations further highlights that more than 4 years of progress against poverty has been erased because of COVID-19. Working poverty also rose for the first time in two decades from 6.7 to 7.2 in 2019 to 2020 respectively. Unfortunately, this led to an additional 8 million workers into poverty. Sustainable development goal number two from the United Nations delves into ending hunger, achieving food security and improved nutrition as well as promoting sustainable agriculture. Obstacles such as conflict, COVID-19, climate change and growing inequality are converging to undermine food security. Globally, about 1 in 10 people are suffering from hunger, United Nations (2022). The third SDG from the United Nations which compliments what this article focused is to ensure healthy lives and promote-wellbeing of all at all ages. COVID-19 threatened decades of progress in global health by infecting more than 500 million persons worldwide, which led to 15 million deaths and disrupted essential health services in more than 92% of the countries and further halted universal health coverage.

2. LITERATURE REVIEW

This section reviews literature on the role of agriculture towards economic growth and poverty reduction. Active literature on the contribution of agriculture to economic growth has two core aims, to offer a broad chronological viewpoint on the contribution of agriculture on economic growth and to depict historical lessons from the experiences of the advanced and current day underdeveloped countries. Thus, it is generally accepted that agricultural development can promote economic growth and reduce poverty of the underdeveloped countries, Chang et. al., (2009).

The agricultural sector of South Africa in mid-2005 was an uneven mix of 45 818 commercial farms and an estimated 1.3

million subsistence farms. There were also 2.4 million subsistence farms on communal land in the former homelands[1]. Agriculture's contribution to the gross domestic product (GDP) in 2004 was 35 billion or 2.6%, down from 3.4% in 2003, Stats SA (2013).

The past growth of agriculture is analysed in terms of three stages. The stages are subsistence farming, diversified or varied family agriculture and generalized or commercial farming. The ability of the farm organization to develop its productivity is reliant upon the capability to adopt, settle in and control technology including institutions, resources, and capital from internal or external sources, Hadaka (2003).

Agriculture is still the most significant sector in Africa because most people depend on it for survival, Chang et. al., (2009). Many farmers have altered from subsistence production to providing the marketplace with ever-increasing quantities of food, Ducanes et. al., (2005). Regardless of the rising commercialisation of agriculture, the bulk of farmers in most African countries are still subsistence farmers.

Rural poverty is a consequence of lack of agricultural expertise, entrepreneurial skills, and access to financing. For a country such as South Africa, where Agriculture is one of the main sources of income for the economy, it is imperative that the agricultural sector becomes more inclusive, more efficient, and more competitive in the world market. This can only be achieved with an educated workforce that also has business skills. Development of strategies that will be able to address the problem of farmer inefficiency is imperative. Agricultural education that is responsive to the country's changing labour market, socio-economic needs and rural contexts is key. Teaching agricultural and entrepreneurial skills to young school going children in a revenue-generating agriculture school is viable alternative.

2.1. Subsistence Farming

The reason of subsistence farming is to provide enough food to feed the family. In this stage, most products are for family utilization, even if several of them can be sold or exchanged in local markets. Staple foods like wheat, maize, sorghum, and rice are the principal sources of nourishment. Here, output is little because farmers use only traditional implements and equipment. Capital investment and property improvement are minimal also farm animals are increased through natural reproduction. Increases in production are largely reliant on the climate and on the quality and quantity of those factors of production managed by the households, (Todaro and Smith 2006).

As seen from Figure 1, land and labour are the prime factors of production involved in this type of farming. However, when it comes to the busiest part of the season such as planting and harvesting, labour is scarce. Sometimes, a lot of the labour is underemployed, because the period of planting is dependent on the commencement of the rain. This is mainly because most countries in Africa experience no more than one extended rainy season per year. The requirement for employees all through the early weeks of this rainy season regularly exceeds all existing rural labour supply (Todaro and Smith 2006).

Subsistence farming is therefore very much risky and an uncertain venture. It is caused by the fact that human being lives are at stake. In regions where farms are undersized and crop growing is reliant on the uncertainty of variable rainfall, average output will be small. During the years with reduced rainfall the worker and his family will be open to the elements of starvation. Once risks and uncertainties are high, a peasant may perhaps be unwilling to change from a traditional technology and crop pattern that he has known and understood for several years to a new one that promises a higher yield, (International Livestock Research Institute, 1995).

Subsistence farming is essential in Africa, since the bulk of rural farmers practise it. Furthermore, it is their foremost occupation, which includes both subsistence and commodity production. The family serves as their most important production and consumption unit thereby reducing the prevalence of poverty within the household and society at large. Nevertheless, rural communities are remote, disappointingly managed, and inward looking. To this end, many African countries have not been self-sufficient in food production for many decades. This could be attributed to the increase in migration of males to urban areas in search of non-agricultural jobs in mining and the private sector. This leaves women to cope with farming as well as domestic tasks (Bhorat and Kanbur 2006).
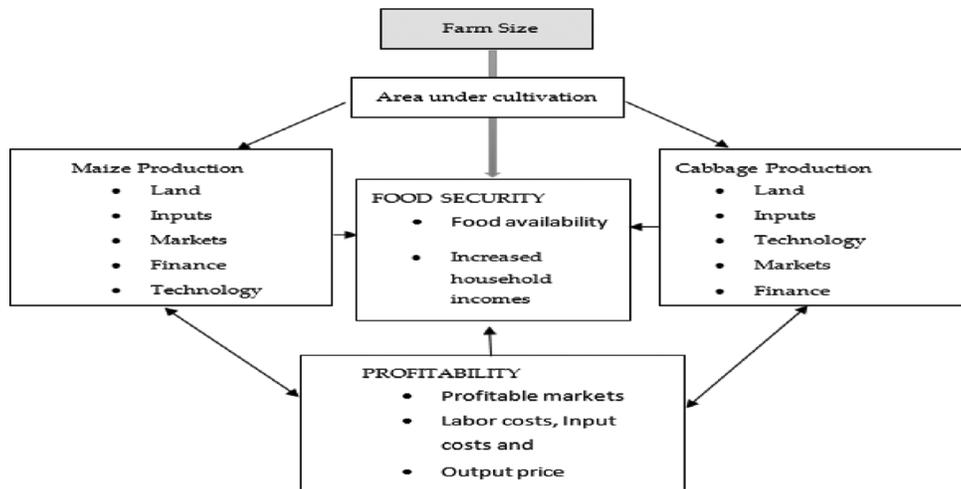
2.2. Commercial Farming

Commercial farming is farming that produces agricultural products mainly for sale, with the aim of making a profit and maximising production. It represents the last and generally complex stage of individual holding in diverse farming and is the largely general kind of farming used in industrial nations. Several of the biggest commercial farming operations in mutually developed and developing nations are owned and controlled by the huge agribusinesses. Agribusinesses are involved in producing and distributing agricultural equipment requirements to farmers. Furthermore, they participate in the marketing and processing of agricultural products (Todaro and Smith 2006).

The general characteristic of every commercial farm is the extensive crop growing of one crop and their use of capital-exhaustive production. Furthermore, they rely on the country for magnitude to reduce unit costs and maximise profits (Todaro and Smith 2006). Tea, coffee, tobacco, flora and fruits and vegetables are among the main crops that commercial farmers now produce in Africa. This system of farming also involves a few subsistence and up-and-coming small-scale farmers in the production of export crops during an agreement growing scheme. The extent of production of commercial farmers provides employment and earnings for some of the people (Arya 2007).

In South Africa, commercial agriculture is conquered by many white farmers who are well skilful and knowledgeable. They occupy approximately 70 percent of the total land. These commercial farmers operate large farms that are usually near
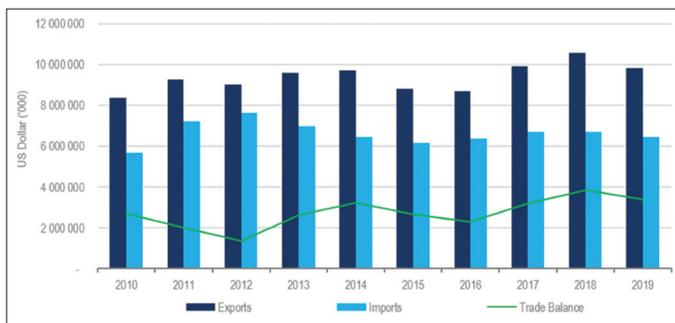
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1 Ten homelands were created to rid South Africa of its black citizens, opening the way for massed forced removals. These were the Transkei, Bophuthatswana, Ciskei, Venda, Gazankulu, KaNgwane, KwaNdebele, KwaZulu, Lebowa, and QwaQwa.
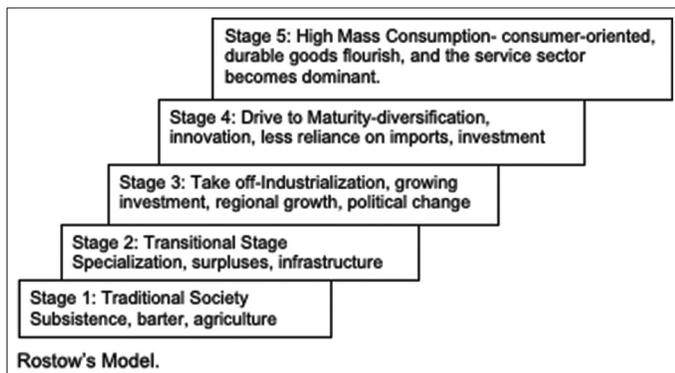
Figure 1: Agriculture framework

Source: Mujuru and Ajuruchukwu (2020)

Figure 2: South Africa's agricultural trade Pattern

Source: Trade map, agbiz research

Figure 3: Rostow's five stages to economic development

Figure 4: Inverse roots of AR

is used as intermediate products in the sector. Agriculture is therefore a crucial sector and an important engine of growth for the rest of the economy, (Economic Review of the South African Agriculture, 2022).

Economic Review of South Africa Agriculture's (2022), The estimated volume of agricultural production during 2020 was 5.48% more than in 2019. The volume of field crop production increased by 20.21% in the year 2020. This was mainly because of an increase in the production of summer grains (maize and sorghum), winter grains (wheat, barley, oats and canola) and oilseeds (sunflower seed, soya beans and groundnuts). Horticultural production increased by 0.74% for the mentioned period, which can mainly be attributed to an increase in the production of deciduous fruit. The production of animal products increased by 1.63%, mainly because of an increase in the production of poultry meat and eggs, as well as stock slaughtered (pigs and goats) during 2020.

2.4. Agriculture and Climate Change
Climate change is a long-term shift in global or regional climate patterns and often climate change refers specifically to the rise
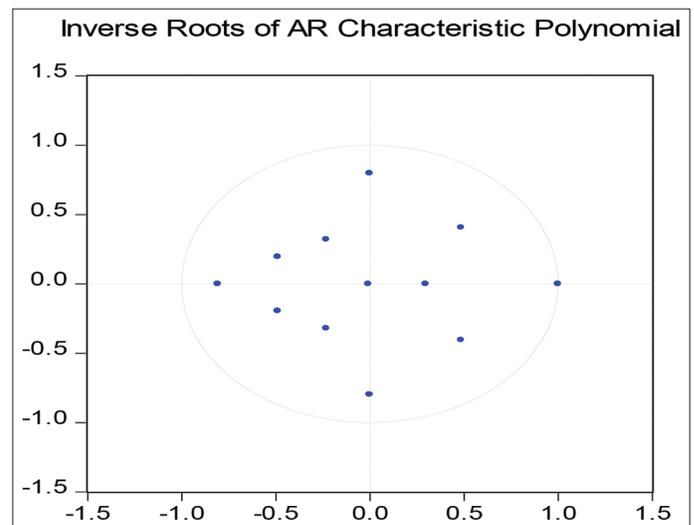
to or within big urban markets. A lot of what they produce/ manufacture is supplied to the industrial sector. Furthermore, they generate foreign exchange and provide domestic markets for non-agricultural goods and services (Arya 2007).

2.3. Agriculture and Sustainable Development Goals
Agriculture's prominent, indirect role in the economy is a function of backward and forward linkages to other sectors. Purchases of goods such as fertilisers, chemicals and implements form backward linkages with the manufacturing sector, while forward linkages are established through the supply of raw materials to the manufacturing industry. About 70% of agricultural output

in global temperatures from the mid-20th century to present, Agribusiness (2006).

A distinction must be made between climate and weather. But climate is different from weather because it is measured over a long period of time, whereas weather can change from day to day, or from year to year. The climate of an area includes seasonal temperature and rainfall averages, and wind patterns. Different places have different climates which means that even for the case of South Africa, some parts are conducive for agriculture while others may not. This leads to irrigation especially on the commercial scale as international trade might be involved which adds pressure for delivery at the right time on the farmers. The ongoing climate change also makes it difficult for famers to predict when the rainfall might fall and for how long. The United Nations goal 13 brings out the urgent action to combat climate change and its impacts, Economic Review of the South African Agriculture (2020). In 2021, energy related CO_2 emissions increased to 6% which reached the highest level. Temperature increase must be attended to otherwise it will lead to more extreme temperatures, making it difficult for farming.

2.5. Revenue Generation through Agriculture in South Africa
Figure 2 shows how South African trade has been fluctuating with reference to imports and exports.

According to Sihlobo (2020), after reaching a record level of $10.6-billion in 2018, South Africa's agricultural exports fell by 8% year-on-year (y/y) in 2019 to $9.8-billion. This, however, was unsurprising as agricultural production data for 2019 showed a notable decline in a number of exportable commodities because of the drought.

2.6. Rostow's Model on Agriculture
The American economic historian, Rostow, published a hypothesis on the stages of economic growth in 1960. This hypothesis is based on empirical observations of increases in per capita income in diverse countries which is followed by a fall in the secondary and tertiary activities (Todaro and Smith 2006). Rostow proposed a sequence of stages through which every country, including South Africa must advance before they can grow their economies. A country can be placed in one of five categories depending on where it is in its stage of growth. These categories include the traditional society, the pre-conditions for take-off into self-sustaining growth, the take-off, the drive to maturity and the age of high mass consumption, (Khakbazan et al., 2009).

According to Figure 3, the traditional society is the primary stage of growth, through which farming, and handicrafts are the central forms of activity. This stage is characterised by subsistence activities where most of the economy's productivity is consumed by producers rather than ex changed. Any exchange is conceded out by exchange, whereby goods are traded openly for other goods. Agriculture is the largely essential industry and output is labour-intensive using simply partial quantities of capital, (Cypher and Dietz 2004).

3. METHODOLOGY AND RESULTS

The dependent variable in this study was GDP representing economic growth while the consumer price index, inflation, consumption, and unemployment represents the independent variables. The independent variables chosen where in line with the first three United Nations Sustainable development goals in reducing poverty and hunger to uplift households with good health while GDP is a measure of economic growth, The article assumes that good economic growth translates to economic development which enables good household welfare.

Regression will be:

$$GDP_t = \beta_0 + \beta_1 CPI_t + \beta_2 INF_t + \beta_3 CONS_t + \beta_4 UNEM_t + U_t$$

The inverse roots are within the model therefore the model is stable.

Table 1 shows the descriptive statistics of the variables under consideration. There were 57 observations recorded with GDP showing a mean of 666521.4 and a maximum of 111703.3. Consumption showed a mean of 401541.1 and maximum of 697880.0 respectively.

Table 2 shows that GDP, CPI, CONS, INF, UNEM are non-stationary and insignificant at level using the trend and intercept method at 5% level of significance with the ADF test.

Furthermore, Table 2, shows that the GDP, CPI, CONS, INF, UNEMP are stationary and significant at 1st difference using the trend and intercept method at 5% level of significance using the ADF test.

Table 3 shows that GDP, CPI, CONS, INFLA, UNEMPLO, are non- stationary and insignificant at level using the trend and intercept method at 5% level of significance using the PP test.

Additionally, Table 3 shows that GDP, CPI, CONS, INFLA, UNEMPLO, are stationary and significant at 1st difference using trend and intercept method at 5% level of significance using the PP test.

In Table 4, all the variables are cointegrated in the trace statistic at 0.05 % level of significance. The null hypothesis of no cointegration is rejected and the alternative hypothesis of cointegration is accepted at 5% level.

In Table 5, all the variables are cointegrated in the Max-Eigen statistic at 0.05 % level of significance. The null hypothesis of no cointegration is rejected and the alternative hypothesis of cointegration is accepted at 5% level.

The R-squared in Table 6 is more than 50% which means the model is good. The Short run model contains ECT. The cointegrating equation is negative and significant.

The Error Correction Term in Table 7 has a positive value, and it is insignificant. The R-squared is above 50% which means the model is good. Prob (F-statistic) is less than 5 % which means the model is significant overall.

Table 1: Descriptive statistics results

Variable	GDP	CPI	CONS	INF	UNEM
Mean	666521.4	4.596552	401541.1	6.267241	24.70862
Median	642234.5	5.050000	385516.0	6.100000	24.65000
Maximum	111703.3	12.30000	697880.0	8.600000	29.30000
Minimum	313140.0	−11.20000	186076.0	4.600000	21.00000
SD	245389.5	3.535731	145360.6	0.959786	1.838028
Skewness	0.187033	−1.590798	0.213675	0.806233	0.381755
Kurtosis	1.793800	8.990865	1.846935	3.046843	3.209812
Jarque-Bera	3.854205	111.1981	3.654449	6.288747	1.515172
Probability	0.145569	0.000000	0.160859	0.043094	0.468797
Sum	38658241	266.6000	23289384	363.5000	1433.100
Sum square deviation	3.43E+12	712.5793	1.20E+12	52.50776	192.5657
Observations	57	57	57	57	57

GDP: Gross domestic product, CPI: Consumer price index, CONS: Consumption, INF: Inflation, UNEM: Unemployment, SD: Standard deviation

Table 2: Unit root results

Variable	Trend and intercept (Probability)	Order of integration	Conclusion
LogGDP	0.3622	Level	Non-stationary and insignificant
LogCPI	0.0126	Level	Non-Stationary and significant
LogCONS	0.5409	Level	Non-stationary and insignificant
LogINFLA	0.0739	Level	Non-stationary and insignificant
LogUNEMPLO	0.8713	Level	Non-stationary and insignificant
LogGDP	0.0000	1st difference	Stationary and significant
LogCPI	0.0000	1st difference	Stationary and significant
LogCONS	0.0001	1st difference	Stationary and significant
LogINFLA	0.0001	1st difference	Stationary and significant
LogUNEMPLO	0.0000	1st difference	Stationary and significant

GDP, CPI, CONS, INF, UNEM are nonstationary and insignificant at level using the trend and intercept method at 5% level of significance with the ADF test. GDP, CPI, CONS, INF, UNEMP are stationary and significant at 1st difference using the trend and intercept method at 5% level of significance using the ADF test. GDP: Gross domestic product, CPI: Consumer price index, CONS: Consumption, INFLA: Inflation, UNEMPLO: Unemployment

Table 3: Unit root test

Variable	Trend and intercept (probability)	Order of integration	Conclusion
LogGDP	0.6551	Level	Nonstationary and insignificant
LogCPI	0.0529	Level	Nonstationary and insignificant
LogCONS	0.7134	Level	Nonstationary and insignificant
LogINFLA	0.5243	Level	Nonstationary and insignificant
LogUNEMPLO	0.4647	Level	Nonstationary and insignificant
LogGDP	0.0000	1st difference	Stationary and significant
LogCPI	0.0000	1st difference	Stationary and significant
LogCONS	0.0001	1st difference	Stationary and significant
LogINFLA	0.0001	1st difference	Stationary and significant
LogUNEMPLO	0.0000	1st difference	Stationary and significant

GDP, CPI, CONS, INFLA, UNEMPLO, are nonstationary and insignificant at level using the trend and intercept method at 5% level of significance using the PP test. GDP, CPI, CONS, INFLA, UNEMPLO, are stationary and significant at 1st difference using trend and intercept method at 5% level of significance using the PP test. GDP: Gross domestic product, CPI: Consumer price index, CONS: Consumption, INFLA: Inflation, UNEMPLO: Unemployment

Table 4: Cointegration

Hypothesized number of CE (s)	Trace statistic	0.05 critical value	Probability**
None*	126.4171	69.81889	0.0000
At most 1*	75.94268	47.85613	0.0000
At most 2*	37.56861	29.79707	0.0052
At most 3*	14.44967	15.49471	0.0714
At most 4*	6.193267	3.841466	0.0128

Trace test indicates 5 cointegrating eqn (s) at the 0.05 level. *Rejection of the hypothesis at the 0.05 level, **Rejection of the hypothesis at the 0.05 level, **MacKinnon-Haug-Michelis (1999) *P* values. All the variables are cointegrated in the trace statistic at 0.05% level of significance. The null hypothesis of no cointegration is rejected and the alternative hypothesis cointegration is accepted at 5% level

Table 5: Unrestricted cointegration rank test (maximum Eigenvalue)

Hypothesized number of CE(s)	Maximum-Eigen statistic	0.05 critical value	Probability**
None*	50.47443	33.87687	0.0002
At most 1*	38.37407	27.58434	0.0014
At most 2*	23.11894	21.13162	0.0259
At most 3*	8.256402	14.26460	0.3532
At most 4*	6.193267	3.841466	0.0128

Maximum-eigenvalue test indicates 5 cointegrating eqn (s) at the 0.05 level. *Rejection of the hypothesis at the 0.05 level, **MacKinnon-Haug-Michelis (1999) P values

According to Table 8 results, the study rejects the null hypothesis since p-value is less than 5% and conclude that residuals are homoscedastic.

H_0; CPI does not Granger Cause GDP, above 5%, the study accept and conclude that CPI doesn't cause GDP. H_1; GDP does not Granger Cause CPI above 5%, the

Table 6: Vector error correction

Error correction	D (GDP)	D (CPI)	D (CONS)	D (INFLA)	D (UNEMPLO)
CointEq1	−0.001771	−3.02E-06	0.001643	−1.76E-07	−2.09E-09
D (GDP(-1))	0.070510	1.54E-05	1.228429	5.19E-06	−1.74E-05
D (CPI(-1))	1023.329	0.139512	−357.7347	0.055078	−0.000996
D (CONS(-1))	−0.503324	−2.59E-05	−1.361387	−5.36E-07	3.43E-05
D (INFLA(-1))	2049.551	0.698410	−5018.274	0.288572	0.113934
D (UNEMPLO(-1))	1984.454	0.693191	−3.443.247	0.097852	−0.0645570
R-squared	0.581195	0.636417	0.677890	0.348265	0.234732
Adj R-squared	0.474059	0.543408	0.595490	0.181542	0.038966

The R-squared in [Table 6] is >50% which means the model is good. The Short run model contains ECT. The cointegrating equation is negative and significant. ECT: Error correction term, GDP: Gross domestic product, CPI: Consumer price index, CONS: Consumption, INFLA: Inflation, UNEMPLO: Unemployment

Table 7: Error correction estimates

Variable	Coefficient	Probability
C	14744.49	0.0000
D (GDP(-1))	−0.016596	0.9332
D (CPI(-1))	383.1183	0.4621
D (CONS(-1))	−0.171716	0.2297
D (INFLA(-1))	646.6947	0.8555
D (UNEMPLO(-1))	1154.608	0.4375
ECT(-1)	0.068259	0.6420
R-squared	0.577680	
Adjusted R-squared	0.483832	
Probability (F-statistic)	0.000008	

The ECT has a positive value, and it is insignificant. The R-squared is above 50% which means the model is good. Probability (F-statistic) is <5% which means the model is significant overall. ECT: Error correction term, GDP: Gross domestic product, CPI: Consumer price index, CONS: Consumption, INFLA: Inflation, UNEMPLO: Unemployment

Table 8: Heteroscedasticity

Joint test		
Chi-square	df	Probability
386.1292	330	0.0180

H_0: There is no heteroscedasticity, H_1: There is heteroscedasticity. The study rejects the null hypothesis since P-value is<5% and conclude that residuals are homoscedastic

Table 9: Granger causality results

Null hypothesis	Obs.	F-statistic	Probability
CPI does not granger cause GDP	57	0.32302	0.7254
GDP does not granger cause CPI	57	1.96348	0.1506
CONS does not granger cause GDP	57	21.0999	2.E-07
GDP does not granger cause CONS	57	32.9117	5.E-10
INFLA does not granger cause GDP	57	1.58383	0.2151
GDP does not granger cause INFLA	57	0.57382	0.5670
UNEMPLO does not granger cause GDP	57	3.28294	0.0453
GDP does not granger cause UNEMPLO	57	1.64899	0.2020

H_0: CPI does not Granger Cause GDP, above 5%, the study accept and conclude that CPI doesn't cause GDP. H_1: GDP does not Granger Cause CPI above 5%, the study accept and conclude that GDP doesn't cause CPI. H0: CONS does not Granger Cause GDP because it is Less than 5%, the study reject and conclude that CONS causes GDP. H_1: GDP does not Granger Cause CONS – Equal to 5%, the study reject and conclude that GDP causes CONS. H_0: INF does not Granger Cause GDP because the values above 5%, the study accept and conclude that INF doesn't cause GDP. H_1: GDP does no Granger Cause INF the value is above 5%, the study accept and conclude that GDP doesn't cause INF. H_0: UNEM does not Granger Cause GDP as it is Less than 5%, the study rejects and concludes that UNEM causes GDP. H_1: GDP does not Granger Cause UNEM – Above 5%, the study accept and conclude that GDP doesn't cause UNEM. GDP: Gross domestic product, CPI: Consumer price index, CONS: Consumption, INFLA: Inflation, UNEMPLO: Unemployment

study accept and conclude that GDP doesn't cause CPI (Table 9).

H_0; CONS does not Granger Cause GDP because it is Less than 5%, the study reject and conclude that CONS causes GDP. H_0; GDP does not Granger Cause CONS – Equal to 5%, the study reject and conclude that GDP causes CONS.

H_0; INF does not Granger Cause GDP because the values above 5%, the study accept and conclude that INF doesn't cause GDP. H_1; GDP does no Granger Cause INF the value is above 5%, the study accept and conclude that GDP doesn't cause INF.

H_0; UNEM does not Granger Cause GDP as it is Less than 5%, the study rejects and concludes that UNEM causes GDP H_1; GDP does not Granger Cause UNEM – Above 5%, the study accept and conclude that GDP doesn't cause UNEM.

4. CONCLUSION AND RECOMMENDATIONS

In both developed and developing countries, agriculture has played an important role in stimulating economic growth. The commercialisation of agricultural produce means that it contributes to a nation's GDP. Agriculture helps to address social problems such as unemployment and poverty. The agricultural landscape of South Africa is not different from that of other countries, although in comparison, agriculture has contributed relatively more to economic growth in developed countries than in developing countries. However, the research has shown that agriculture has been one of South Africa's major economic activities. Since the pre-apartheid era, South Africa has participated in different forms of agriculture, ranging from large-scale industrialised farming to small scale subsistence farming. These different forms of agricultural activities have arguably helped to drive economic growth in South Africa and have provided jobs to millions of South Africans. The COVID-19 pandemic however did bring with it a setback in most sectors of the economy and the agriculture sector was not spared. Some countries opted for lockdowns; South Africa included which led to reduced revenue generation thereby leading to most services being disrupted. Agriculture is seen as a model for stimulating economic growth and the implications for reducing poverty in South Africa. The main constraint in the agricultural sectors is the unavailability of adequate information, especially to informal and subsistence farmers.

Adequate and appropriate systems of inspection for subsistence farming should be provided with adequate means of inspection.

The difference is that subsistence farmers do not produce for the market, and they very seldom buy inputs, whereas commercial farmers produce for the market, and they are capital intensive. Data on subsistence agriculture and ongoing collection of reliable statistics to monitor the success of this initiative are also needed.

After the 1994 election, the government introduced agricultural policies to bridge the inherent dualism and to maximise the contribution of the sector to economic growth and alleviating poverty. Moreover, many of the policies are not available to the rural poor who are faced by the challenges. The language barrier should also be looked at because most of the subsistence farmers do not have adequate education. As a result, reading and writing may be a challenge. The United Nations Sustainable Development Goals must be taken seriously, and countries should try to achieve them for poverty alleviation through improved economic growth via agriculture expansion with trade exports. Therefore, policy makers should consider their level of education and differences in language and culture language is important in that it is a manifestation of culture, and it carries empowering and domesticating words and meanings. The SDGs which where mostly highlighted in this article are 1, 2, 3 and 13. All the SDGs are very important and vital, this article picked on those which where closely linked to the topic and aim of the study such as poverty alleviation.

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