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Research Paper

An Analysis of Critical Determinants of Economic Growth in Zambia: An Agribusiness Perspective

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Abstract— In order to safely gauge the economy of Zambia, Economists from the Central Bank of Zambia and other private institutions conduct an analysis of the performance of the economy of the country. So, this study was conducted to understand the critical determinants of economic growth of Zambia through the measurement of GDP by sector. After political independence from Britain, Zambia's economy had been growing steadily with much of its income coming from its exports of copper. Despite the efforts past governments had made in calling for more investment from the private sector in agriculture as a way to reduce dependence on copper, the agriculture sector has received little investment. To achieve this assessment, we utilized the Ordinary Least Squares method and estimated the model and came up with the final empirical model or equation to describe the impact of the agriculture sector, manufacturing sector and the service sector on Gross Domestic Product of Zambia. The findings indicated that there is a positive impact from the contributions of the agricultural sector, manufacturing sector and the service sector on Zambia's GDP as provided by the coefficients of the factors in the empirical model. It was concluded that it is because of lack of investment in ultra-modern machinery that this sector seems to be contributing almost 'nothing' to GDP in the recent years and it is a clear sign of "priority" problem on the part of policy makers and implementers.

Keywords— Agriculture Investment, Economic Sectors, Zambia Copper Exports, Gross Domestic Product

1. Introduction

Zambia is one of the developing countries in southern African. It became independent from Britain in 1964 with a small population of about 3.5 million people [1]. Much of Zambia's Gross Domestic Product (GDP) is from the contributions from the economy's sectors such as the agriculture sector, service sector and the mining sector. Copper falls under the category of the mining sector. Because copper is a diminishing resource, past governments and the existing government of the republic of Zambia have been encouraging entrepreneurs or the private sector to invest more in the agricultural and manufacturing industries. This is supported by the theories proposed by authors such as Adam Smith who emphasized so much the diversification to agriculture because he believed that when the sector grows the benefits spill over to other sectors thereby making the country commercially viable and productive [2]. However, past governments of Zambia had not invested well in the agriculture industry. For this reason, the author saw it fit and important to study the critical determinants of Zambia's economic growth and if at all the agricultural sector does contribute to this growth.

The agriculture sector has received little investment. Because of the many data bases searched but with little availability of research papers in this area, more has to be done in order to convincingly confirm whether the agricultural sector has potential to significantly contribute to GDP and whether it should continue to receive government attention in form of resource allocation. It is for this reason that this research was triggered in order to analyse and understand the critical determinants of economic growth through the measurement of GDP by sector. When this is done the government of Zambia and the private sector will make informed decisions with regard to application of scarce financial resources. Results in this study have shown that agriculture is still a determinant of Zambia's economic growth but because of lack of investment in ultra-modern agriculture infrastructure, its contribution is quite small.

Having discussed the introduction in section I above, section II provides a brief literature review by looking at what other authors have written on this subject such as economic growth and GDP, sector share to GDP, the dual sector model as well as the role of government in the economy. The author goes on to develop section III. In this section we look at the research design, which is a clear roadmap of how this research was carried out, the sources of data, the econometric model that was used to investigate the critical determinants of the growth of an economy and their impact on the economy and we also looked at the various statistical tests that were conducted to

validate the empirical model. Section IV is a presentation and analysis of the results and in the last part of section IV we discuss and present our argument on the validity of our results, then finally section V is about our conclusions, policy implication, the limitations of this research and future scope for improvement.

2. Related Work

In research carried out by [3], in which they were propounding on the causes of Zambia's GDP Per Capita, they mentioned that measuring gross domestic product depends so much on various factors, and so as a result of this, developing countries' economic suitability comes from sectors such as agriculture. This is due to the fact that economic increase can no more be sustained by the use of physical as well as human capital resources [3]. Although this is the case, in the United States of American (USA) agriculture is still one of the largest industries [4]. Research has been carried out and conclusions made which show that agriculture is actually the cornerstone of every nation's economy, an example can be drawn from research conducted by reference [5].

In addition to agriculture, reference [6] in their efforts to understand the causes of economic growth in Zambia gives an insight in what else can drive the economy of a country and cited technology as one key determinant. This is in line with the neoclassic economic growth which puts more emphasis on technology as the key cause of economic growth. Technology does a lot of good by way of accelerating productivity and economic growth because embracing technology helps in bringing about quality goods and services as well as processes [6]. The results of the Covid-19 pandemic saw the economy of Zambia going into a slight recession between the year 2019 and 2021. This is evidenced by the fact that in 2018 the GDP grew by about 4% but again went down by almost the same margin of 4.9% by the year 2021 [7].

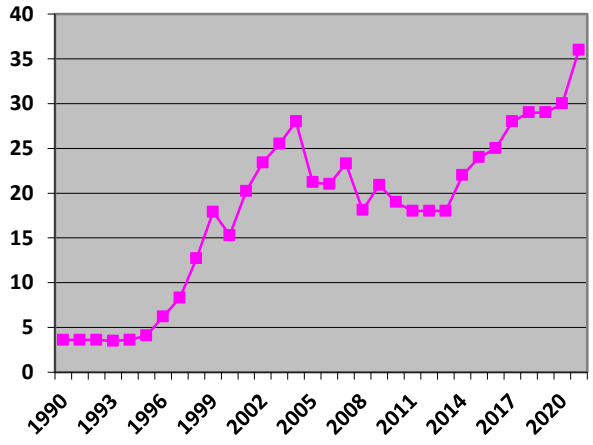

Figure 1: GDP in Zambia in billion Dollars
Note: *The vertical axis indicates the values in Billion Dollars while the horizontal axis shows the period in years.*

The Policy Monitoring and Research Centre of Zambia (PMRC) reports that manufacturing sector in Zambia was badly hit because of the distortions in the business activities upstream as well as downstream. Between 2018 and 2019 the agricultural, the manufacturing and service sectors saw a stagnant production output due to the Covid -19 effects [8]. However, the industry sector particularly the mines is slowly recovering as South America faces production challenges in their mines. The recovery in the mines is also attributed to the fact that there is an increase in demand for Zambia's copper due to the technological progress made in the manufacturing of electric cars [9].

In a related report done, reference [10] recommended that before selling anything to the outside countries the exporting country must add value to its agricultural products. This piece of recommendation was carried in a report in which Odike Abraham was examining the effects of exports of Agri products on the growth of the economy for few countries selected in west Africa [10]. This is why about 60% of the population of Zambia derives its livelihood from agriculture but despite this fact the sector has received less government support in terms of infrastructure, good extension services and good policies that seek to mitigate natural disasters such as drought and climate change [11]. Additionally, the agricultural sector contributed about 20% to GDP of Zambia and about 12% contributions to exports incomes [9] in the past. This contribution percentage is in the range with the estimation of [11] at 18% contribution to GDP but lower than what has be presented by [12]. To beef up the food security, about 60% of Zambia's land is cultivated to grow maize which is its staple food today. Way back in the 16th century Zambia's agricultural sector was dominated by the cultivation of sorghum and millet as it was a staple food at that time [11]. In Zambia the service industry gains most of its monies from services like the learning institutions (Private and Public), Telecommunications, the liberalised transport sector, the health sector, the "Zambia in The Sky" tourism (food and accommodation) and Foreign Direct Investment (FDI) [11]. But after the independence of Zambia from Britain, the economic growth of Zambia was a result of the mining activities on the Copperbelt region of Zambia. Contribution to GDP from the service sector was literally low. With the mushrooming of the private tertiary education providers, Zambia is set to gain more from this sector economically as more and more people pay to get access to tertiary education at university and college level. Today, there are more private Universities and colleges in Zambia than the government owned ones.

The service sector such as the tourism sector has natural assets such the waterfalls, lakes and wildlife species. Because of the many tourist visits from abroad the tourism sector is one of Zambia's foreign exchange earners. In the year 2019, the tourism sector earned this country almost 7 percent of Gross Domestic Product (GDP) and this was equivalent to USD 1,701 and created about 469,000 jobs for the local people [13]. Even though a lot of people have been visiting Zambia in the recent past as tourists from abroad, Zambia still remains behind South Africa and Zimbabwe in terms of visit frequency [13]. All in all, the service industry seems to be on the up rising trend in terms of contributing to the gross

domestic product as can be seen from 2010 to 2020 economic data with 53.62 percent contribution [8]; [14].

2.1 Research Objectives and Questions

The above literature review gives rise to the following objectives and questions:

2.1.1 Research Objectives.

The general objective of this study is to evaluate the impact of critical determinants of economic growth of Zambia while the more specific one is to examine the effects of the agriculture industry on Zambia's economy.

2.1.2 Research Question.

Does the agriculture sector have an effect on Zambia's economy?

3. Experimental Method

In this section of the paper, we present the sources of data, the econometric model that is used to investigate the critical determinants of the growth of an economy and their impact on the economy and we also look at the various statistical tests that were conducted to validate the empirical model.

3.1 Data Sources and Definition of Variables

This research was conducted according to the time series data that was obtained from the Central Statistical Office of Zambia (Zambia Statistics Agency), the World Bank and Statista website for the period running between the year 1990 to1921. The year 1990 is the year Zambian politics and governance system changed from a one-party democracy to a multiparty democracy, with a new political party coming into power in 1991 with a message of economic recovery and good governance. The following variables have been defined and the sources of data for each of these variables have been stated.as shown below:

- Gross Domestic Product (GDP) growth can be defined as the price of all goods and services that have been made a certain country in a period of one year and can no longer be resold This was taken from the Central Statistical Office of Zambia.
- Agricultural sector can be defined as that part of the economy related to farming, keeping cattle and any farming-related subsistence and commercial activities. This was taken from the World Bank website.
- Manufacturing sector consists of companies or businesses involved in mechanical, engineering or chemical application of materials into new things. The source of data on this variable is from the World Bank website.
- The service sector is the sector of the economy that produces and offers services. The source of this data is from the Statista website.

3.2 Empirical Model/ Model Estimation

According to the research objective, to assess the impact of Zambia's critical determinants of economic growth and the literature that was reviewed on the variables that were identified, an empirical model was estimated in similar manner in which reference [6] also estimated:

GDP = 198.13 + 0.38 (AGR) + 2.30 (MAN) + 1.53 (SVC)

Where:

GDP stands for gross domestic product

AGR represents the agricultural sector

MAN represents the manufacturing industry

SVC represents the service sector

This is a dynamic type of model because the variables under study are never the same in different business cycles. They will always change or fluctuate, which is different from the static one, where the change or output is constant each time. The method of the Ordinary Least Squares (OLS) was utilised to come up with the final empirical model or equation. The equation estimation and many other diagnostic tests in this research were carried out using EViews 10.

The outcome of the regression analysis proved that there is a positive effect from the contributions of the agricultural sector, manufacturing sector and the service sector on GDP as evidenced by the coefficients of those variables. To make sure that our regression model is valid, we performed the following tests:

3.3 Unit Root Test for Stationarity

The number one statistical test that is carried out in regression analysis is the unit root test for stationarity [16]. The existence of unit root or non-stationary of times series can cause results of an analysis to be spurious, therefore, it has to be stationary to give good results [16].

After conducting a stationarity test as mentioned above and results continue to show that the series is still nonstationary, there is a need to go ahead and conduct a cointegration test to check if all the variables (dependent and independent variables) are cointegrated. However, before conducting a cointegration test, it is a requirement that we choose maximum lag length (K) for the model.

3.4 Selecting Maximum Lag Length (K) For Model

When an independent variable affects the dependent variable, the reaction in the dependent variable is not instant. There is always a passage or lapse of time for a change to be seen in the dependent variable. It is this lapse which is called a lag. These lags are included in the model to provide some kind of information feedback because it is believed that lagged values carry some information that can be used to provide current values. This is the reason why they should be included in the model but not too many of them as this can cause autocorrelation. In this study we picked on the Akaike Information Criterion (AIC) and the Schwarz Information Criterion (SC) because of their suitability for selecting the best optimal lag length for models that contain variables that have not more than sixty observations.

3.5 Cointegration Test

Cointegration implies that variables move closely together and will not move away from each other over a certain period of time and the distance between them will be stationary [15]. It is used to determine whether there is really a long-run (or

cointegrating) relationship among the variables. Once it is proved that cointegration exists then we can be sure that time series is stationary.

3.6 Autocorrelation

One of the assumptions of any type of regression is for the data to be free of autocorrelation. This is because doing a regression on data in the presence of autocorrelation might give results that are not accurate [16].

3.7 Normality Test

Normality is a property of data that is distributed according to the normal distribution [17]. The good part about using a sample that is normally distributed is that it allows one to utilise both the mean and the median when there is need to measure central tendency because it would not be skewed or biased [16]. The importance of normality is that most statistical analyses in regression provide good results when the data is normally distributed [18].

3.8 Test for Causality

Causality between two variables is determined by way of using a method called granger causality [17]. Causality is similar to cause-and-effect concept, but they are never the same. To carry out this test, data must be stationary. It helps in finding the patterns of correlation or the direction of Causality; that is either positive or negative relationship.

3.9 The Stability Test

When an equation is estimated, it is later concluded that the model parameters, β, are constant or stable over the whole period of the sample. This is the assumption of parameter constancy or stability. It is assumed that the parameters are constant throughout the time period, meaning they do not change but are stable under different conditions. Stability test is a quality assurance test, or differently put, it can be said that it is about testing the quality of something under real life situations, just to check how stable it is under different time periods and conditions.

4. Results and Discussion

4.1 Presentation of results

Before conducting regression analysis, it is important that we know what kind of sample data we have and the information that is contained in that sample data as well as what that information tells us about the sample data. The following table is a summary of the characteristics of the variables, performed using descriptive statistics. After descriptive statistics, other important tests to validate the estimated model would be performed as mentioned in the previous section.

4.1.2 Descriptive Statistics

Table 1: Descriptive Statistics of Each Variables

	GDP	AGR	MAN	SVC
Mean	12800.94	532.0875	1101.673	6458.438
Median	10545.00	292.9300	1165.000	5070.000
Maximum	28050.00	2616.930	2100.000	14900.00
Minimum	3410.000	22.05000	334.0000	702.0000
Std. Dev.	9299.753	696.5823	587.1755	5190.864
Skewness	0.307398	1.976197	-0.037296	0.316845
Kurtosis	1.428931	5.798732	1.526612	1.455297
Jarque-Bera	3.794974	31.27244	2.901915	3.716895
Probability	0.149945	0.000000	0.234346	0.155915
Sum	409630.0	17026.80	35253.53	206670.0
Sum Sq. Dev.	2.68E+09	15042033	10688028	8.35E+08
Observations	32	32	32	32

We can clearly see from Table 1 that no variable had a missing observation or value, because they all have 32 observations (equal observations). This means that data was available for all the variables. Ordinary skewness has a 0 skew value but looking at all our variables they reflect or mirror a normal skewness except for the agriculture variable which has a skew value above 0, and this is 1.96. When the skew value is above 0, it means the variable has a positive skewness or a long right tail.

Kurtosis is all about checking whether there is a "peak" and flatness in the distribution of the time series, and here our normal distribution kurtosis has a value of 3 (which is called Mesokurtic). Any data with a kurtosis less than 3 has a flat curve (Platykurtic). Conversely, any data with a kurtosis above 3 has a peaked curve (Leptokurtic). Looking at the kurtosis row in Table 1, it shows that all the valuables have the kurtosis less than 3, except for the agriculture variable which has 5.67, meaning it has a peaked curve (leptokurtic).

Meanwhile, the null hypothesis for this test is that the data of the variables is normally distributed. At 5% (0.05) significance level, we discover that all our variables are above 0.05 significance level except for the agriculture variable which is 0.00, meaning that the distribution is not normal. However, the absence of normality in the agriculture variable has no effect on the estimation of the model [19] although it would be difficult to predict future values of this valuable when it is not normally distributed because it would be biased or one sided.

4.1.3 Unit Root Test for Stationarity

To test for unit root, we subject our variables to the Augmented Dickey Fuller test (ADF) and then confirm the results by running a Phillips Perron test. Table 2 and Table 3 show the results of the unit root test.

Table 2: ADF Unit Root Test Results

	At Level				
		GDP	AGR	MAN	SVC
With Constant	t-Statistic	-0,7847	-2,3437	-0,5915	-0,9099
	Prob.	0,8095	0,1654	0,8585	0,7715
		n0	n0	n0	n0
With Constant & Trend	t-Statistic	-1,5999	-2,2767	-2,2999	-3,7516
	Prob.	0,7698	0,4334	0,4216	0,038

		n0	n0	n0	**
Without Constant & Trend	t-Statistic	0,4824	-1,8023	0,3158	0,4584
	Prob.	0,8136	0,0684	0,7706	0,8077
		n0	*	n0	n0
	At First Difference				
		d(GDP)	d(AGR)	d(MAN)	d(SVC)
With Constant	t-Statistic	-4,5437	-5,6236	-4,8221	-4,2417
	Prob.	0,0011	0,0001	0,0005	0,0024
		***	***	***	***
With Constant & Trend	t-Statistic	-4,4648	-5,546	-4,9332	-4,2007
	Prob.	0,0067	0,0005	0,0022	0,0125
		***	***	***	**
Without Constant & Trend	t-Statistic	-4,4181	-5,7235	-4,8502	-4,1126
	Prob.	0,0001	0	0	0,0002
		***	***	***	***

Table 1: The PP Unit Root Test Results

	At Level				
		GDP	AGR	MAN	SVC
With Constant	t-Statistic	-0,8034	-2,3385	-0,6155	-0,95
	Prob.	0,8041	0,1669	0,853	0,7582
		n0	n0	n0	n0
With Constant & Trend	t-Statistic	-1,729	-2,286	-2,2693	-1,472
	Prob.	0,7139	0,4287	0,4372	0,8177
		n0	n0	n0	n0
Without Constant & Trend	t-Statistic	0,4436	-1,78	0,3683	0,3157
	Prob.	0,8041	0,0716	0,7847	0,7706
		n0	*	n0	n0
	At First Difference				
		d(GDP)	d(AGR)	d(MAN)	d(SVC)
With Constant	t-Statistic	-4,4668	-8,7309	-4,8066	-4,185
	Prob.	0,0013	0	0,0006	0,0028
		***	***	***	***
With Constant & Trend	t-Statistic	-4,3786	-9,5426	-4,8935	-4,145
	Prob.	0,0083	0	0,0024	0,0142
		***	***	***	**
Without Constant & Trend	t-Statistic	-4,464	-9,0707	-4,853	-4,197
	Prob.	0,0001	0	0	0,0001
		***	***	***	***

** Indicates significance at 5%.

Taking the p-value at 5% confidence level, there is enough evidence to declare that all the variables became stationary at first difference as indicated in Table 2 and Table 3. This implies that they are integrated of order 1.

4.1.4 Determining the Maximum Lag Length (K) For Model

Since our series is nonstationary as can be seen from the unit root tests conducted above before differencing, we need to find out if the variables moved together in a long run or had a long run relationship; this is called cointegration. Out of this cointegration, we would be able to know also the number of equations that are cointegrated. However, before we carry out cointegration we need to select the maximum lag length to be included in the model or equations.

The results in Table 4 show that the selected maximum lag is 1, according to the (FPE), (AIC), (SC) and the (HQ) which were utilized to choose the lag.

Table 4: Lag Length Selection Results

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-955.1831	NA	6.94e+22	63.94554	64.13237	64.00531
1	-885.0906	116.8208*	1.91e+21*	60.33938*	61.27351*	60.63821*
2	-870.6303	20.24447	2.25e+21	60.44202	62.12346	60.97993

4.1.5 Cointegration Test

As mentioned above, we need to find out if the variables moved together in a long run or had a long run relationship, which is cointegration and upon seeing the outcome of the test, we shall decide whether to use VECM or VAR model.

Table 5: Johansen Cointegration Test Results

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.588965	46.58460	40.17493	0.0100
At most 1	0.371340	19.91231	24.27596	0.1611
At most 2	0.177859	5.987360	12.32090	0.4375
At most 3	0.003729	0.112077	4.129906	0.7829

As indicated by the trace statistic, we can confidently say that there was cointegration in the variables since there is at least 1 cointegrating equation. Therefore, the null hypothesis is rejected at 5% level, more so because the p-value is less than 5%. The right model to use in this case is (VECM) since there is a long run relationship (cointegration).

4.1.6 Autocorrelation

Table 6: Autocorrelation Test Results

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.859761	Prob. F(2,26)	0.4349
Obs*R-squared	1.985052	Prob. Chi-Square(2)	0.3706

Evidence from the Breusch-Godfrey LM test, from table 6 show that the p-value was 0.3706, a statistic bigger than the 0.05 significance level. This implies that the null hypothesis cannot be rejected but instead be concluded that there is no serial correlation, therefore the model was fit and consistent.

4.1.7 Normality Test

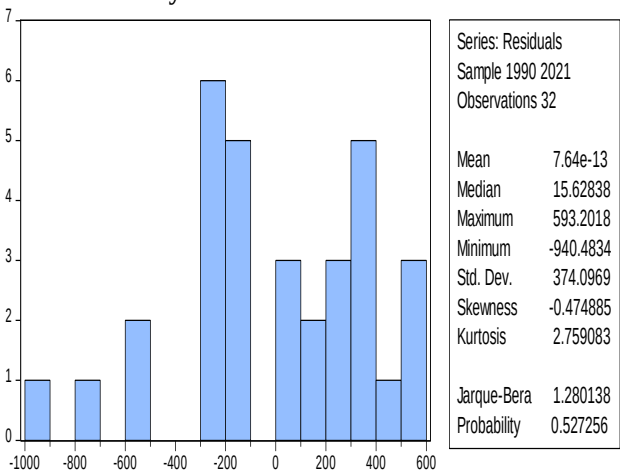

Figure 2: Normality Test Results

According to the findings in the table of normality test, the Jarque-Bera probability is more than the 0.05 significance, meaning that the null hypothesis cannot be rejected. Therefore, we declare that the residuals are distributed normally.

4.1.8 Test for Causality

Table 7: Pairwise Granger Causality Test Results

Null Hypothesis:	Obs	F-Statistic	Prob.
AGR does not Granger Cause GDP	26	2.00144	0.1386
GDP does not Granger Cause AGR		7.27036	0.0014
MAN does not Granger Cause GDP	26	2.39540	0.0880
GDP does not Granger Cause MAN		2.69302	0.0634
SVC does not Granger Cause GDP	26	0.25127	0.9501
GDP does not Granger Cause SVC		0.22809	0.9601
MAN does not Granger Cause AGR	26	4.50297	0.0111
AGR does not Granger Cause MAN		0.45426	0.8296
SVC does not Granger Cause AGR	26	6.49066	0.0024
AGR does not Granger Cause SVC		2.22224	0.1072
SVC does not Granger Cause MAN	26	1.70993	0.1962
MAN does not Granger Cause SVC		1.71505	0.1950

From Table 8 above, we can clearly see that the agricultural sector (AGR) does not granger cause GDP, therefore the null hypothesis cannot be rejected since the p-value is bigger than the 0.05 significance, but GDP granger causes the agricultural sector. This implies that granger causality goes one-way from GDP to AGR, this is called uni-directional granger causality. We also note that the manufacturing (MAN) sector weakly granger causes the agricultural sector, but the agricultural sector does not granger cause the manufacturing sector. The last uni-directional granger causality observed is where the service (SVC) sector strongly granger causes the agricultural sector.

4.1.9 Stability Test

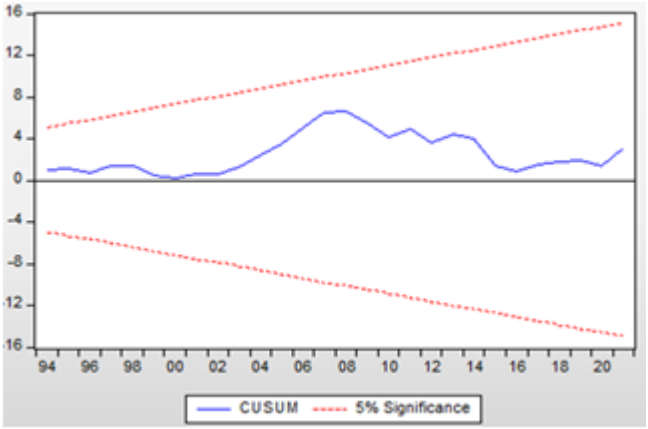

Figure 3: Stability Test Results

CUSUM test was utilized to know the stability of the model and according to Table 9 above, we did not have enough evidence to allow us to reject the null hypothesis. The model is stable because the blue line is between the red line boundaries. Having analyzed the results, we now go ahead and discuss the main findings of this research in the following section.

4.2 Discussion of Results

Major global economic analyses today are made in light of the neoclassical growth theory which emphasizes the adoption of technology as a critical determinant of economic growth. The aim of this study was to examine and understand

the critical determinants of economic growth through the measurement of GDP by sector and whether agriculture is one of those critical determinants of Zambia's economic growth.

An ordinary skewness of a variable is supposed to have a 0 skew value but looking at all our variables they reflect or mirror a normal skewness except for the agriculture variable which has a skew value above 0, and this is 1.96. And when the skew value is above 0, it means the variable has a positive skewness or a long right tail. Variables that are skewed are also not normally distributed, this is confirmed by the Jarque-Bera probability. The non-normality of the agriculture variable has no effect on the estimation of the model [19]. However, when a variable is not normally distributed it is very difficult to predict or forecast any future value for that variable because it falls outside the confidence level [17] or that it is one sided or biased. Therefore, there tend to be a lot of fluctuations in the agricultural sector in the recent years hence difficult to predict.

Despite the efforts the governments have made in calling for more investment from the private sector in agriculture as a way to reduce dependence on copper and the fact that sixty percent of the population of Zambia survives on agricultural related activities, the agriculture sector has received little investment both from the private and public sector in terms of infrastructure, good extension services and good policies that seek to mitigate natural disasters such as drought and climate change [3]. Agriculture plays a very important role in the economy of Zambia but lacks investment in new or modern technology. This is further evidenced by the granger causality results of this paper where agriculture apparently doesn't granger cause GDP, but GDP seems to granger cause agriculture. This means that in the recent past agriculture alone could not contribute significantly to the economic growth of Zambia. This is because Between 2018 and 2019 the agricultural, the industry and service sectors saw a stagnant production output due to the Covid -19 effects [8]. However, economic growth (GDP) can support the agriculture sector. Another observation is that the agriculture variable is skewed and not normally distributed. When a variable is skewed it means it is one sided either to the right or to the left, and generally a skewed variable is biased and when it is biased it implies that it is one sided. A mean from one sided data if used to predict future values can be very biased too. Therefore, as for agriculture which is skewed and biased it is difficult to say it will progressively contribute to GDP based on current policies of the government.

When the variables are distributed normally, one can easily utilize both the mean and the median as a measure of central tendency to predict future effects because it would not be skewed or biased. The results of this research indicate that the service sector strongly granger caused the agriculture sector. This implies that the service sector has a lot of influence on agriculture and this being the case we can confidently say that the service sector can be used to predict the growth rate of the agriculture sector. After independence, Zambia used to depend so much on copper for its revenue, so contribution to GDP from the service sector was literally low. However, with the mushrooming of the private tertiary education providers, Zambia is set to gain more from this sector economically as more and more people pay to access tertiary education at university and college level. The covid 19 pandemic has also been put under control, an indication that the chances of Zambia being one of the best tourist destinations are high. Before that the pandemic was a major hinderance to gains from the service sector. More investment in the sector would definitely boost the economic growth. All in all, the service industry seems to be on the upswing trend in terms of contributing to the gross domestic product as can be seen from 2010 to 2020 economic data with 53.62 percent contribution [8]; [13].

From the year 1990 the people of Zambia have been changing governments as per their constitution, to exercise their democratic rights, in an effort to usher in one that would formulate policies that will bring about economic growth thereby improving the livelihood of citizens. Many times, such changes in policies affect the economic growth negatively [15]. And trying to check the impact of change of government's policies a stability test is carried out. In this research the results show that the model was stable, an indication that the policies were good enough in the period running from the year 1990 to the year 2021 and so it had no negative impact, this is consistent with the conclusions that reference [20] made concerning the effect of policy changes on the stability of the economy. The efforts the government is making in giving out grants to cooperatives and SMEs through ZATP, to boost their financial resources is also bearing fruits.

5. Conclusion and Future Scope

Indeed, Zambia can be a model of excellence in agriculture in Africa, create many jobs for the citizens of Zambia and feed the people of Zambia if the private and public sectors begin to work together by heavily investing in new technology in the agriculture sector, for example investing in irrigation machinery. It is because of lack of investment in ultra-modern machinery that this sector seems to be contributing 'peanuts' to GDP in the recent years and priority problems on the part of policy makers. Staying abreast with latest technology would certainly change the story of Zambia in terms of economic development as technology reduces the cost of production. Another reason why the agriculture share to GDP is small is because of shoddy works done on the agricultural infrastructure in rural and peri urban areas. The agricultural sector continues to be the largest employer in the country. When more people are employed, it creates another source of income for the government as there would be more money in people's pockets and more agriculture exports for the governments. More exports for the government entail more revenue sources for the government, when the government has more revenue sources, it will not depend entirely on taxing the citizens for its income, again what this means is that there would be lower taxes for the Zambians. As a result, the sector has a multiplier effect.

For a long time, the agriculture sector has not received the anticipated investment that can turn around the economy of Zambia despite sound government pronouncements. All in all, Zambia stands a better chance to lower taxes for its citizens because of the agriculture sector. Therefore, the author suggests that further studies be conducted in order to continue investigating why this sector continues to receive less attention from policy makers. It is further suggested that research be carried out using other economic sectors as this might help policy makers to learn from USA and China who have performed so well in the agriculture sector. The limitations of the study were unavailability of data, this led to the exclusion of some variables which could have been used in estimating the empirical model. Because of this it is suspected that it could have led to bias, thereby exaggerating the true interaction between the agricultural sector and GDP as shown in the results from the causality test.

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