

The Analysis of Tax Buoyancy and Determinant in Sierra Leone

Analyse de la Pression Fiscale et de ses Déterminants en Sierra Leone (Titre en français)

Dr. James L.S KOLLİE

Sierra Leone Üniversitesi Kamu Yönetimi ve Yönetim Enstitüsü
Institute of Public Administration and Management, University of Sierra Leone
jkaylsu@yahoo.com

Emmanuel Jam KAMARA

Sierra Leone Üniversitesi Kamu Yönetimi ve Yönetim Enstitüsü
Institute of Public Administration and Management, University of Sierra Leone
emmanuelkamarajam@gmail.com
ORCID: 0009-0004-8197-679X

Alpha KANU

Sierra Leone Üniversitesi Kamu Yönetimi ve Yönetim Enstitüsü
Institute of Public Administration and Management, University of Sierra Leone
alsteve88@gmail.com
ORCID: 0009-0004-7990-1035

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Abstract: Tax revenue in Sierra Leone has been low throughout the study period (1988 to 2018). The ARDL bound testing co-integration estimation technique was employed. A log level multiple regression model that comprises buoyancy of total tax revenue as a dependent variable and percentage share of service value added,

import, industry, money supply and agricultural sector were used as an independent variable. The result from the bound test confirms the existence of co-integration relation, which validates the estimation of long run and short run model. The long run empirical result suggests that agricultural sector, industry and service value added as a percentage share of GDP had a positive and statistically significant effect on the buoyancy of total tax revenue. Also, the results establish that import and money supply were insignificant at the conventional level in the long run. However, the short run result reveal that all the variables are statistically significant in the study period. Specifically, the short run results confirm a positive relationship between agricultural sector, money supply and the responsiveness of tax revenue. As the findings of the present study revealed, tax revenue there is a need for enhancing the efficiency of revenue administration in bring new customers in to the tax net.

Keywords: Tax revenue, Sierra Leone, multiple regression, agricultural.

Résumé: Les recettes fiscales en Sierra Leone ont été faibles tout au long de la période étudiée (1988 à 2018). La technique d'estimation de la co-intégration par test ARDL a été utilisée. Un modèle de régression multiple au niveau du logarithme qui comprend le dynamisme des recettes fiscales totales en tant que variable dépendante et la part en pourcentage de la valeur ajoutée des services, des importations, de l'industrie, de la masse monétaire et du secteur agricole ont été utilisés en tant que variables indépendantes. Le résultat du test de liaison confirme l'existence d'une relation de co-intégration, ce qui valide l'estimation des modèles à long terme et à court terme. Les résultats empiriques à long terme suggèrent que la valeur ajoutée du secteur agricole, de l'industrie et des services en pourcentage du PIB a un effet positif et statistiquement significatif sur la croissance des recettes fiscales totales. Les résultats établissent également que les importations et la masse monétaire ne sont pas significatives au niveau conventionnel à long terme. Cependant, les résultats à court terme révèlent que toutes les variables sont statistiquement significatives au cours de la période étudiée. Plus précisément, les résultats à court terme confirment une relation positive entre le secteur agricole, la masse monétaire et la réactivité des recettes fiscales. Comme le montrent les résultats de la présente étude, il est nécessaire d'améliorer l'efficacité de l'administration des recettes afin d'attirer de nouveaux clients dans le filet fiscal.

Mot-clés: Recettes fiscales, Sierra Leone, régression multiple, agriculture.

Introduction

Tax revenue of a country has become one of the critical determinant for the development of the economy due to the responsiveness of tax that changes in the economic activity. The base (Buoyancy) of a tax system change due to the % change in the tax revenue. Tax buoyancy is an indicator to measure efficiency and responsiveness of revenue mobilization in response to growth in the GDP or national income. A tax is said to be buoyant if the tax revenue increase more than proportionately in response to a rise in national income or output. It is quite important to know the tax based, if the tax buoyancy exceeding one would result in tax revenue rising by then the increase in GDP. Many development

partners and some international organization, such as World Bank, IMF, African Development Bank, strongly emphasize that the economy of Sierra Leone should focus on the generation of domestic revenue.

According to the budget information for citizens, 2014, in Sierra Leone the bulk of government source of revenue is primarily based on tax. According to the research in 2014, 80% of government revenue was generated through tax, which is referred to as domestic revenue. Relatively, the importance of foreign grants from development partners has contributed greatly to the economy budget. (Budget information for citizens, 2014). The overall economic performance of Sierra Leone, measured by growth in real GDP between 2008/2009 to 2012/2013 shows a mean growth rate of 11.5%. The structure of Sierra Leone's tax system can be emphasized on certain areas, personal income tax (PIT) and nominal GDP. Consumer income tax (CIT) to nominal GDP by showing the trend on the Sierra Leone economy.

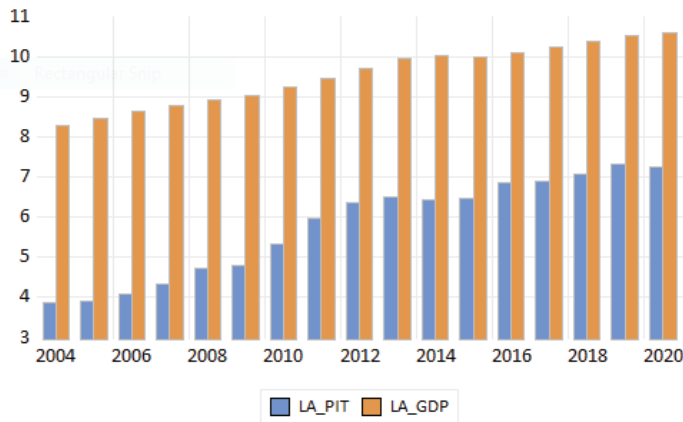


Figure 1 PIT to nominal GDP

From the chart above it can clearly be seen that the nominal GDP has been increasing due to the PIT from 2004 to 2020. It is also important to consider the CIT to the nominal GDP. The tax based on wages and salaries, the pay as you earn system (PAYE) was used to develop the PIT. When there is an increase in wages and salaries, it automatically increases the tax base, which will affect the nominal GDP positively.

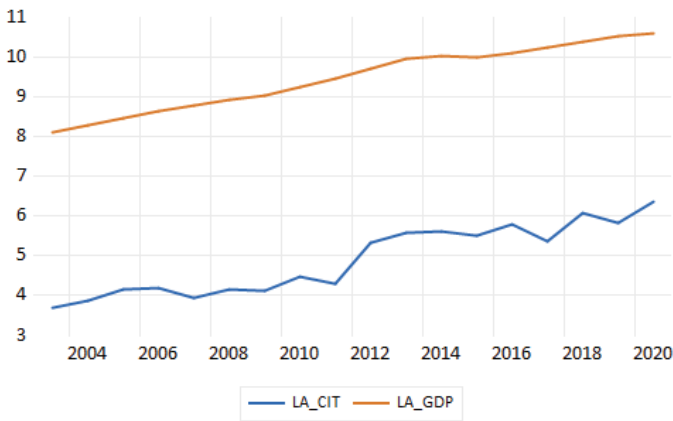


Figure 2 shows the impact of CIT to the nominal GDP.

The tax base of CIT is business profitability or operating surplus, the business profitability has a direct relationship to the investment. When there is a boom in the investment level, the business profitability would increase and these would lead to a rise in the CIT and the nominal GDP. The research also shows that the following sectors contributed greatly to the government revenue mobilization, value added of agricultural, industries and fisheries were 3.6% and 2.7% in 2010 & 2011, 15.0% and 14.1% respectively. In the implementation of various taxes in different ways by different level of government overly complicates the system and makes it more difficult to assess the competitive impact of specific taxes. For instance, there is an economic impact to the nation that has large proportion of agricultural sectors could generate higher tax revenue as compared to the industrial sectors. Sierra Leone actually faces such situation in which there is large share of agriculture in total output and employment, large informal sectors and occupations.

Therefore, understanding the nexus between this tax buoyancy and its determinant will help policy maker implement the much-needed sectors that are geared towards the attainment of buoyancy of total tax revenue in Sierra Leone.

The possible question that will emanate from this study will be; is there any impact of service value to the tax buoyancy in Sierra Leone? Why is the tax buoyancy not being effective in contributing to the GDP of Sierra Leone? Is there any economic correlation between the tax buoyancy and the import, money supply and the agricultural sector, both in the short run and long run? The rest of the paper is structured as follows: section 2 discusses the empirical findings

of previous researches. Section 3 focuses on the methodology including the model specification and estimation techniques. Chapter 4 presents the empirical analysis, and chapter 5 present conclusion to the research and providing possible policy recommendation to enhance tax buoyancy and it determinant in Sierra LEONE.

2. Literature Review

The empirical literature on the analysis of tax buoyancy and it determinant in Sierra Leone is abounding. Many researchers across the global have carried out empirical works with conflicting outcomes. Chris analysed the structural shift of government revenue in Sierra Leone from 1961 to 1982 that connect the economic development to that of the tax revenue directly through the use of gross domestic product as a proxy. From the sample collected by Chris (1961, 1971 and 1971 to 1982) was used to set up the two regression from the sample period. At the first test of the variables there was a positive relationship that exist between the variables from the first regression. From the finding of the second regression, it states that about 81% to 82% of the economic growth are highly financed by the external fund that serves as a fund for government revenue.

The study also found that economic development has a significant impact on direct government revenue.

The period of 1960 to 1979 was another research that was conducted by Fala, his aim was to see how the result of Chris can be proven by taking the same sample period.

The economy of Sierra Leone has been depending on the sector that is part of the mining sector, the research from the previous literature has seriously embarking on the methodology of co-integration together with ETC by looking into the economic growth effect. The period of 1987 to 2012 was used by the researcher, and they were able to identify some of the revenue that are not directly coming from the mining sector like taxes from the personal income, tax from the company income, VAT and also taxes collected from road.

The above analysis of the empirical literature fails to address some of the important tax revenue area and how the economic growth of Sierra Leone is affected. The study of these research was able to identify some of the major tax revenue source of the government within the annual period of 1987 to 2017 analysis.

Other researcher also focuses on the administrative tax system and how Sierra Leone gross domestic product are affected through the generation of revenue. Even though the generation of tax revenue was paramount, so many determinants were used to measure it.

According to Dasgupta 2005, the tax from the personal income which was collected from the annual observation period from 1966 to 2005 as their secondary data, it shows that the individual burden on tax decline is as a result of the decrease in the rate of tax, which is the primary focus for the achievement of policy implementation.

There were other research that was done in 41 countries in Africa, where the researcher directly related it to Nigeria by taking into consideration of OLS as estimation technique for testing the buoyancy of the different economy in the various countries for the period 1991 to 2000, (Oriakhi, 2005).

According to some field researcher of macroeconomic Kargbo and Egwaikhide 2012, they analysis the elasticity of tax in Sierra Leone within the period 1977 to 2009 by using the method of dummy variables. The study reveal that the country estimation of the buoyancy of the system of tax were much greater than that of elasticity of tax, and the LR tax elasticity were more than the SR. Moreover, it was proven that by increasing an additional revenue through tax would be much more effective in Sierra Leone in the measure of tax discretionary which shows an inelastic result of the same period.

Analysis the tax buoyancy has become the topic of discussion today by various researcher which Mawia and Nzomoi 2013 embark on the study in Kenya by examining the tax system for the period of 1999 to 2011, they used different estimation techniques which is method of logarithmic regression. The study shows that 2.58 value, that the total tax revenue was buoyant and it was not buoyant in the case of individual tax while the excise duties is buoyant.

Another study was undertaken in 34 OECD members' country with the observation period 1965 to 2012, using the estimation techniques PARDL. From the study it prevails that there is no significant different within those members' county in both the buoyancy in the SR the sum total of tax revenue, the LR shows that the buoyancy is greater by one and a half, (Mooij, and Norregaard 2014).

The productivity of tax system was analysis by Wolde 2016 of the reforms of post-tax system in Ethiopia of the year 1991 to 2014, by using two different estimation techniques of autoregressive distributed lag co-integration and the method of proportional adjustment approach. The rationale behind the study was to determine whether the economic growth was elastic or inelastic in nature. It shows the coefficient of buoyancy of 0.95 and 2.12 as elastic, which implies that the aggregate tax is elastic, this actually confirm the economic growth.

The research of Osoro 1993 in Tanzania, by examine the productivity of tax revenue through the Tanzania tax reforms system of the period 1969 to 1990, reveals that both the taxes of individual and total tax has low elasticity.

In similar study by Ole 1975, primarily examine the Kenya tax structure of the elasticity of income for the period 1962 to 1972 which was regressed and the unusual observation was not adjusted. It was proven that 0.81 of the index as the structure of tax was inelastic income.

3. Methodology

These chapter try to explain the research methodology. It also entails the model specification and estimation procedures and techniques as well as the data type.

The research of the methodology tries to explain the independent variables in the form of straight line equation that are express as %, such variables are; services value, import, annual growth of money supply, industry value added and annual growth of the agricultural sector contribution to the tax revenue.

The above point is a brief justification of the variables used in the below equation.

$$\begin{aligned}
 & \text{BTTR}_t = (\text{SGDP}_t, \text{IMGDP}_t, \text{MSGDP}_t, \text{INDGDP}_t, \text{AGR GDP}_t) \dots\dots\dots 1 \\
 & \text{BTTR}_t = \beta_0 + \beta_1 \text{SGDP}_t + \beta_2 \text{IMGDP}_t + \beta_3 \text{MSGDP}_t + \beta_4 \text{INDGDP}_t + \beta_5 \text{AGR GDP}_t + \epsilon_t \\
 & \dots\dots\dots 2
 \end{aligned}$$

This equation 2 will explain the significant of each independent variable to that of dependent variable both in the long run and short run.

By establishing and analysing the long-run relationship between the determinants of tax buoyancy and the buoyancy of total tax revenue (GDP).

The ARDL model for the long-run of BTTR (GDP) of Sierra Leone can thus be specified as;

$$\Delta \text{GDP}_t = \alpha_0 + \sum_{i=1}^n \alpha_1 i \Delta \text{GDP}_{t-1} + \sum_{i=1}^n \alpha_2 i \Delta \text{SGDP}_{t-1} + \sum_{i=1}^n \alpha_3 i \Delta \text{IMGDP}_{t-1} + \sum_{i=1}^n \alpha_4 i \Delta \text{MSGDP}_{t-1} + \sum_{i=1}^n \alpha_5 i \Delta \text{INDGDP}_{t-1} + \sum_{i=1}^n \alpha_6 i \Delta \text{AGR GDP}_{t-1} + \epsilon_t \dots\dots\dots 3$$

The essence of employing this estimation technique was because it deals with a small data sample size. Also, since the lag are being identify it is very easy to employ the OLS estimation techniques, whereas it is impossible for the case multivariate variables. Actually; this makes the ARDL procedure relatively easier.

The Autoregressive Distributed Lag co-integration test, which was established by Pesaran et al 2001, study the relationship within the independent variables within the model given as a series. Stationarity can be confirm if the first difference of the series is I(0) it is said to be stationary and I(1) is non stationary, this actually happen when there are more series of variables.

This research therefore applies ARDL co-integration to the system of the five variables in the buoyancy of total tax revenue function by looking into it, either

to check if there is correlation between the variables in the LR. Let us consider this hypothesis;

$$H_0 = \beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = \beta_6 = 0$$

$$H_1 \neq \beta_1 \neq \beta_2 \neq \beta_3 \neq \beta_4 \neq \beta_5 \neq \beta_6 \neq 0$$

The hypothesis can become null if the critical value is below the F-Statistics, it implies that there is no LR relationship and must be rejected and the reverse hold.

The inconclusive case of the hypothesis can be determined when the F-Statistics lies between the more significant and the lower critical value.

The 2nd reason why we conduct A.R.D.L. was to test the speed at which it runs in the S.R. The speed adjustment here refers to the error correction model (ETC).

This ECT try to explore the behaviour of those variables in the economy from the S.R. to L.R. Considering this equation of ETC below;

$$\Delta GDP_t = \alpha_0 + \sum_{i=1}^n \alpha_1 i \Delta GDP_{t-1} + \sum_{i=1}^n \alpha_2 i \Delta SSGDP_{t-1} + \sum_{i=1}^n \alpha_3 i \Delta IMGDP_{t-1} + \sum_{i=1}^n \alpha_4 i \Delta MSGDP_{t-1} + \sum_{i=1}^n \alpha_5 i \Delta INGDP_{t-1} + \sum_{i=1}^n \alpha_6 i \Delta AGRGDP_{t-1} + \lambda ECT_{t-1} + \epsilon_t \dots 4$$

Where ECT_{t-1} is the Error Correction Term. λ This is being referred to as the adjustment speed and is attain when there is an economic shock, and it is term as coefficient of ECT.

For the appropriate model selection of the long-run underlying equation, the study applied the Schwarz Bayesian Criterion (SBC), Akaike information criterion (AIC), Final Prediction Error (FPE) and Hannah Quinn information criterion (HQIC) to choose the optimal lag length of each of the underlying variables in the model, with the standard with the lowest value of information been selected.

The estimators of model with lagged dependent variables are sensitive to the auto correlation of the error terms. To determine the lag length which implies the elimination of auto correlation of the error terms, the lags are added until the error term of white noise, the Durbin Watson test was used to test for auto correlation.

For the diagnostic checking, the research will test the presence of serial correlation and heteroscedasticity in error and normality of error as well. Finally, by also using the CUSUM and CUSUMSQ tests, this paper will also be able to check the stability of the parameter of the model. The study further presents the results of both adjusted and R-Square test by knowing the rate at which dependent variable can be explain by the differences of independent variables.

4.1 Unit Root Test Results

In the case of the unit root it is NOT necessary for any pretesting of variables

and therefore it essential for us to test the variables, by actually confirming if those variables not integrated by an order greater unity. By freeing our result from the outcome spurious regression it is important for us to abstained of the occurrence of I(2) variables, this is the reason why conducting the unit root test for the purpose of Stationarity. By establishing the Stationarity of the various, the study conducts a unit root test in order to ascertain whether the variables are stationary in level or non-stationary, there is all tendency to employ the ARDL. By establishing the order of integration the rules of Philips Perron and Augmented Dickey Fuller test must be considered.

Table 1: Unit-Root Test Results

VARIABLE	Augmented Dickey-Fuller		Philips-Peron		Order of integration
	Level	First difference	Level	First difference	
BTRR	-2.550869	-4.701409	-2.963972	-4.724295	I(1)
AGR GDP	-1.982421	-3.568088	-1.626640	-3.937701	I(1)
IMGDP	-2.345050	-6.727108	-2.345050	-6.854438	I(1)
INGDP	-1.384517	-4.738147	-1.384517	-4.709312	I(1)
MSGDP	-0.953302	-3.522037	-1.034592	-4.992521	I(1)
SGDP	-1.935324	-4.849748	-2.024725	-4.846074	I(1)

Critical values at 5% = 2.963972

Source: EViews 11 output

From the unit root test result in Table 3, it is clearly shown that all the results are I (1) variables, it implies that they are stationary at first difference. Both the Augmented Dickey Fuller (ADF) and the Philips Perron test (PP) unit root test results are in line with each other. The study has shown that there is no I(2) variables, and therefore the estimation techniques of ARDL must be applied.

4.2 Bound Test Co-integration Result

Given that the primary aim was to determine tax buoyancy of the total tax revenue, therefore the relationship in the LR of these variables must be test for co-integration.

As result of the table 2 given a result of lag length (1) it is necessary for us to use time series analysis of data.

The dependent variable is BTRRGDP is regressed on the other variables to ascertain the co-integration relationship between the dependent variable and independent variables. For us to actually know if it is indeed there is a long-run relationship within the various variables it is necessary for us to employ F-Test.

Table 2: ARDL F-Bounds Test Results

Test statistic	Value	Signif.	I(0)	I(1)
Asymptotic: n=1000				
f-statistic	5.606409	10%	2.26	3.35
k	5	5%		2.62
3.79		2.5%		2.96
4.18		1%		3.41
4.68				

From the result in Table 2 above, it is clearly shown that the calculated F-Statistic when Buoyancy of total tax revenue of the GDP (BTTRGDP) is 5.606409, these is greater than 5% significant value as a upper critical value (3.79). The result shows that we should reject the null hypothesis at the 5% level and therefore no need for co-integration relationship within the tax buoyancy of GDP and its determinants.

Ideally, the study concludes that the co-integration within the various variables in buoyancy of total tax revenue equation shows that it exists, hence we proceed with the estimation of the long – run model.

4.3 Long Run Model Result

Since it has been found out that there is an existence of co-integration from the bound test result, wherein LBTRGDP is the dependent variable, it is good for us now to estimate the long-run model for the long-run coefficient. Below is the long-run result in Table 3.

Table 3: Long Run ARDL Estimates

Variable	Coefficient	Std. Error	t-statistic	Prob
AGRDP	1.073503	0.840869	1.276659	0.02163
IMGDP	0.047191	0.147660	0.319594	0.75261
INDGDP	1.247582	1.016935	1.226805	0.02341
MSGDP	-0.072740	0.544939	-0.133482	0.89511
SGDP	1.225136	0.967407	1.266412	0.01199

Source: EViews 11 output

From the result in Table 3 above it shows that the Agricultural sector as the percentage of the GDP (AGR GDP) and the Industry value added as a percentage of GDP (INGDP) and the Service value added as a percentage of GDP (SGDP) are the most significant variables that affect the buoyancy of total tax revenue of the GDP in the long-run. Ideally, the result establishes a favourable relationship between Agricultural sector and the responsiveness of tax revenue, and the variable is statistically significant at the 5 percent level. Thus, a percentage increase in the Agricultural sector will increase the buoyancy of total tax revenue by 1.073503 percentage point at the conventional level of significance. Therefore, the finding is consistent with the priori expectation. Theory also affirms that there is a positive relationship between the Agricultural sector and the buoyancy of total tax revenue.

Similarly, both the industry and service value added as a percentage of the GDP are positively related to the degree of responsiveness of tax revenue and its variables are statistically significant at the 5 percent level. Thus, a percentage increase in each of the sectors would automatically lead to an increase in the buoyancy of total tax revenue by 1.247582 and 1.225136 percentage point at a conventional level of significance respectively.

Basically, the coefficient of import value and Money supply (Broad money) have the expected a priori signs, the variables are however insignificant at the conventional level in the long-run.

Short Run Ardl Estimates

Table 4: Error Correction Model Representation For Selected ARDL Model-ARDL (1, 2, 1, 0, 2, 2, 2, 1)

Variable	Coefficient	Std.error	t-Statistic	Prob.
C	-33.31522	9.683776	-3.440313	0.0026
D(AGR GDP)	0.182272	0.132397	1.376711	0.1838
D(INGDP)	-0.044529	0.034736	-1.281947	0.2145
D(MSGDP)	0.450491	0.182316	2.470935	0.0226
ECT(-1)*	-0.343105	0.098848	-3.471033	0.0024
R-squared	0.428109	Mean dependent var	0.236929	
Adjusted R-squared	0.336607	S.D. dependent var	1.893220	
S.E. of regression	1.542009	Akaike info criterion	3.855060	
Sum squared resid	59.44476	Schwarz criterion	4.088593	
Log likelihood	-52.82591	Hannan-Quinn criter.	3.929770	
F-statistic	4.678658	Durbin-Watson stat	1.475482	
Prob(F-statistic)	0.005879			

Source: EViews 11 output

Estimation results in Table 4 reveals that there is a positive relationship between the responsiveness of tax revenue and the Agricultural sector in the short-run, there is 5% significant level. The coefficient of the Agricultural sector reveals that there is a positive relationship in the short-run. Hence, an improvement in the Agricultural sector will lead to an increase in the buoyancy of total tax revenue.

From the Table 4 above you can also notice that Import has a negative relationship with the responsiveness gross tax revenue in the short-run. Hence, it is significance at 5 percent level.

The coefficient of Money supply shows a positive relationship that exist between the money supply and the buoyancy of total tax revenue. This actually remains to be significance at 5 percent level but only in the short-run.

The short-run estimates also show that the Error Correction Term (ECT (-1)^{*)} is negative and statistically significant at 1 percent level. The implication of this is that, the convergence process to long-run equilibrium is at an adjustment speed of 34.3%. That is, the error in the current year will be corrected in the coming years at a speed of 34.3%, which simple means that, in a very slow speed of adjustment to long-run equilibrium.

In a nutshell, the value of the R-Squared is 0.428109, implying that approximately 43% of the variation in the buoyancy of total tax revenue (BTTR) model is explained by the independent variables which is an indication of a good fit. The overall model is statistically significant as shown by the probability value of the F-Statistic (0.005879).

4.4 Stability Test

The stability of the regression coefficients is evaluated using the Cumulative Sum of (CUSUM) and the Cumulative Sum of Squares (CUSUMSQ) test for structural stability (Brown et al, 1975). The test results on both the CUSUM and CUSUMSQ test reveal that the regression equation appears to be stable, as the test statistic lies within the 5 percent critical bound as shown in figure 1 and in figure 2 below.

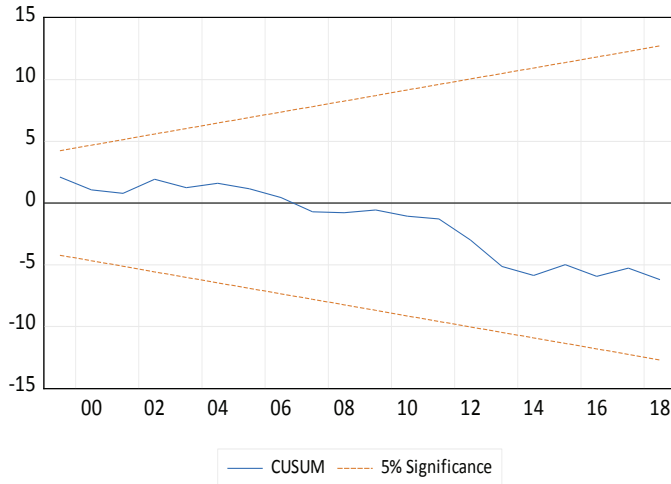


Figure 1: Plot Of Cusum Test Result

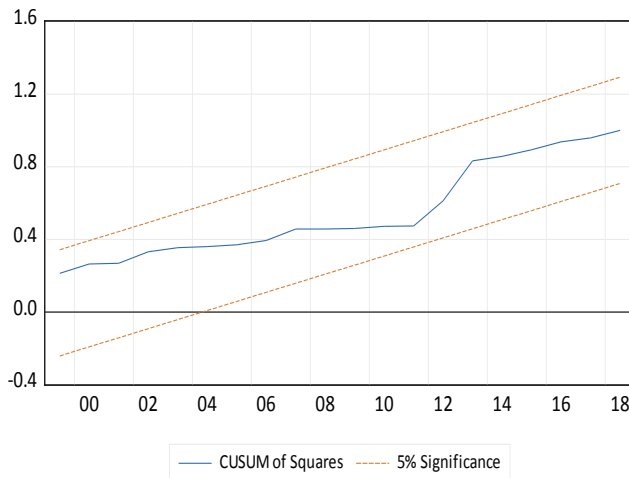


Figure 2: Plot Of Cusumq Test Result

5. Conclusion and Recommendations

The general objectives of this research are to investigate the analysis of tax buoyancy and its determinant in Sierra Leone. The study also seeks to identify some of the determinants of tax buoyancy in Sierra Leone. For the achievement of these objectives, the study uses time series Data from World Development

Indicators (WDI), International Financial Statistics (IFS) and World Economic Outlook (WEO), for the period 1988 to 2018 within the framework of the ARDL estimations techniques. In analysing the tax buoyancy my specific focus was actually based on the determinant of tax buoyancy and how it has relationship with the buoyancy of total tax revenue. Services and Industry value added, Import, Broad money (M2) and Agricultural sector value added as a percentage of the nominal GDP.

The unit root test was carried out by employing Philips Perron and Augmented Dickey Fuller test. The test results reveal that all the results are I (1) variables, which implies that they are not stationary at level but become stationary at first difference.

The study employed the lag length criteria in selecting the optimal number of lags and each of the five (5) criteria selected an optimal lag length of one.

The ARDL co-integration test actually revealed that included, there exist6s a long-run equilibrium. The conclusion was reached as a result of the F – Statistics, which is greater than I (0) and I (1) bound at the conventional level of significance. The long-run results reveal that Agricultural sector, industry value added and the service value added as the percentage share of the GDP are the most significant variables that shows the buoyancy of total tax revenue of the GDP during the period of the study.

Specifically, there is a positive relationship between those variables and the buoyancy of total tax revenue. Both variables were significant at the conventional level. Although, the other variables had the expected a priori signs, they were found to be statistically significant at the 5% level of significance.

The short-run results show that all the variables were found to be statistically significance at the 5% level, with the expected a priori sign. Specifically, Agricultural sector and Money supply (M2) had a positive effect on the responsiveness of tax revenue. The Error Correction Term (ECT) had the expected negative sign with a slow speed of adjustment to long-run equilibrium. Thus, 34.3% of any previous disequilibrium in buoyancy of total tax revenue (GDP) is corrected in the current year. The result further shows that about 43% differences in BTRRGDP was shown by the independent variables.

The study shows that both the CUSUM and CUSUMSQ have a perfect stability.

Based on the findings from the study, I would like to give a recommendation to that. The import value shows a negative relationship to the economic growth, therefore implementing a stable fiscal policy that would encourage a balance of trade to be positive. Also, by expanding the base of tax and creating employment opportunities by imposing the income tax on them since they are within the tax bracket. (that is the sectors that should pay tax), eliminating tax exemption, this

would actually lead to a favourable economic environment and rises the entire revenue generation and decline the total budget deficit which are used for fiscal policy implementation.

As I earlier stated that corona various (COVID-19) would hinder my research, but this doesn't affect me alone but if the economy at large. Due to the hit of the world pandemic (COVID-19) which actually affect the economic activity, in that note the government should use a policy of automatic stabilizer in maintaining the tax system in the different sector like industry, agriculture and import of goods and services.

Bibliography

- Bhalla, S. S. (2004). Tax rate, Tax compliance and tax revenue: India (1988 to 2004).
- Dasgupta A. (2005). Recent individual tax reforms: Economic & Political weekly (1966 to 2005).
- Dudine P & Jalles, J. T. (2017). How buoyant is the tax system. New evidence from a large Heterogeneous panel. IMF working paper (PP. 1-33)
- Eugene & Chineze (2015). Examine the productivity of Nigeria tax system from 1994 to 2013
- Heritage foundation, taxation and revenue mobilization for economic development, 2012.
- Kargbo & Festus (2012). The Elasticity of tax system in Sierra Leone. (1977 to 2009)
- Mawaia & Nzomoi (2013). An empirical investigation on the tax buoyancy in Kenya tax system.
- Ndedzu et, al. (2013). Impact of revenue productivity of Zimbabwe tax system (1975 to 2008).
- Ojonayo Daniel, Musa Andeyang tsd Bulus, Christopher Chukwudi Nwokolo and Denis Nfor Yuni (2016) Tax buoyancy and elasticity in Nigeria.
- Ole (1975). Income elasticity of tax structure of Kenya (1962 to 1972).
- Osoro m(1993). Productivity of the tax system in Tanzania for the period 1969 to 1990.
- Pesaran M. H and Pesaran B. (1997). Working with Mocrfit4:0 interactive econometric
- Rao M. G (2005). Tax system reforms in India.
- S. Tancher, I. Todorov. (2019). Tax buoyancy and economic growth: Empirical evidence of Bulgaria.
- Samuel & Isaac (2012). Evaluate the elasticity and buoyancy of tax components and tax system in Kenya, using time series data (1985 to 2009) Statistics Sierra Leone fiscal public debt Bulletin, 2013 vol. 1
- Tadele B. (2015). The analysis of tax buoyancy and it determinant in Ethiopia, 6(3).
- Timsina (2008). Tax elasticity and buoyancy in Nepal (1975 to 2005).
- Upende M, (2008). Degree of tax buoyancy in India: an empirical study. International Journal of Applied Economics and Quantitative studies.