



## MACROECONOMIC DETERMINANTS OF TAX REVENUE IN ECONOMIC COMMUNITY OF WEST AFRICAN STATES

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### Abstract:

The determination of the effects of macroeconomic environment on tax revenue is very vital for every country and more so for an economic community aiming for harmonization of macroeconomic environment and ultimately integration. However, the extent to which aggregate output, inflation, and unemployment affect tax revenue in ECOWAS has been less studied in the literature. Therefore, this study empirically investigates how tax revenue is related to selected macroeconomic variables. Panel data analysis is employed on six ECOWAS countries' data set on tax revenue, gross domestic product, inflation, unemployment, trade openness and exchange rate over 2005-2019. The Wald's test and Hausman test indicated that the fixed effects regression was appropriate for the study. The results showed that inflation was positively related to tax revenue and statistically significant at 5 percent. A unit increase in inflation led to 0.007 increase in tax revenue measure; economic growth was also positive and statistically significant at 5 percent; a unit rise in GDP resulted in 0.78 rise in governmental tax revenue variable. Finally, Tax revenue variable decreased by 0.10 with a unit increase in unemployment. It is recommended that ECOWAS countries should carefully manage their macroeconomic environment to boost tax revenue.

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## INTRODUCTION

Tax Revenue as one of the resources needed by the government of any nation of the world, either developing or developed, is very crucial in the discharge of duties and obligations (Michael, 2012 ; Bersley & Persson, 2014 ; Andersson & Lazuka, 2019). There are various sources of the revenue available to the government and its agencies for its efficient and effective functioning. According to Afuberoh and Okoye (2014) these sources include amongst others: revenue from natural resources, rents, royalties, foreign aid, grants, interests from loans, interest from capital investments, and tax revenue, which seems to be the oldest form of revenue.



Furthermore, tariff on international trade could form additional sources of government revenue (Lashkaripour, 2020).

Tax revenue is a revenue generated through taxation. According to Michael (2012), a tax instrument is a means by which a government generates a large amount of its revenue, thus manipulating the economy. Taxation as an instrument plays a key role in the regulation of any economy, as well as its performing, as it serves as a tool of either increasing or decreasing money supply in the economy. The importance of revenue in general and tax revenue in particular cannot be underestimated or toyed with by any government if it will succeed in the discharge of its expected duties and obligations.

Given an ever-increasing population in every country especially 15 ECOWAS nations (Benin, Burkina Faso, Cape Verde, Cote d'Ivoire, The Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone, and Togo) and around the world, the role of government in these population exploding situations has become increasingly enormous. Thus, there is a need for a larger pocket of revenue, and tax revenue could be a very important and significant source. Furthermore, Terefe and Teera (2018) argued that the drive towards sustainable development, which is a base of the improved welfare and living standard, depends crucially on the availability of massive resources mobilized within the economy via tax revenue. Improvements in macroeconomic variables have been put forth as a boost to government tax revenue achievement (see Saibu & Olatunbosun, 2013; Castro & Camarillo, 2014; Andrejouska & Pulikova, 2018; Mawejje & Munyambonera, 2016; Arnold, Brys, Heady, Johansson, Schweltnus, & Vartia, L, 2011).

How does inflation and exchange rate impact on tax revenue in ECOWAS? What is the impact of trade openness and economic growth on government revenue from taxation ECOWAS? These are the questions that this present study intends to answer by providing empirical evidence which could influence policy formation.

The broad objective of this research is to examine how tax revenue is related to key selected macroeconomic variables. Specifically, it investigates:

1. The effects of inflation and exchange rate on tax revenue in selected countries in ECOWAS
2. The role of trade openness and economic growth on tax revenue in ECOWAS, and
3. The impacts of unemployment rate on government tax income in selected countries in ECOWAS

The rest of the study is as follows: section two focuses on Literature review - in this section, literature related to the subject of consideration was reviewed following a sequence of theoretical review and empirical reviews. Methodology of the study is discussed in Section three – this section underscores the research design employed, the description and sources of data used, and data analysis method as well as specification of the model employed. Empirical analysis and discussion of results are presented in section four. Finally, the summary of major findings and conclusion drawn are discussed in the concluding section.



## BRIEF LITERATURE REVIEW

First, two theories of tax collection are discussed: the Laffer curve hypothesis and Optimal tax theory. Second, a brief empirics on tax revenue and macroeconomic variables are also examined.

Economist Arthur Laffer (and others) popularized the idea of Laffer curve hypothesis, originally proposed in a limited form by North African philosopher and social scientist Khaldun around AD 1377. Rather than implying that the relationship between tax rates and tax revenue is not a simple straight line, the theory suggests that the increasing tax rates beyond some point result in lower tax revenues (Kenneth, 2019). Laffer describes the situation as following: “At a tax rate of zero percent, the government would collect no tax revenues, no matter how large the tax base. Likewise, at a tax rate of 100 percent, the government would also collect no tax revenues because no one would be willing to work for an after-tax wage of zero (that is, there would be no tax base). Between these two extremes there are two tax rates that will collect the same amount of revenue: a high tax rate on a small tax base and a low tax rate on a large tax base” (as cited in Kenneth, 2019).

The standard theory of optimal taxation posits that a tax system should be chosen to maximize a social welfare function subject to a set of constraints (Mankiw, Weinzierl & Yagan, 2009). The literature on optimal taxation typically treats the social planner as utilitarian, i.e., the social welfare function is based on the utilities of individuals in the society. In its most general analyses, this literature uses a social welfare function that is a nonlinear function of individual utilities. Nonlinearity allows for a social planner who prefers, for example, more equal distributions of utility (Mankiw *et al*, 2009; Blundell, 2012). Other studies considered some salient aspect of optimal taxation theory, like its design in an open economy (Ogawa & Hosoe, 2020), marginal social welfare weighting (Saez & Stantcheva, 2016), accounting for the possibility of tax evasion (Brunner, Eckerstorfer & Pech, 2013; Artavanis, Morse & Tsoutsoura, 2016).

A study conducted by Ade, Rossouw, & Gwatidzo, (2018) investigates the determinants of tax revenue performance in all 15 Southern African Development Community countries during 1990-2010, using panel data. He considered variables such as foreign direct investment, tax policy harmonization measures, government expenditure, and growth rate of domestic credit, export share of GDP, inflation and VAT harmonization indicator. The empirical findings indicated the importance of foreign direct investment inflows towards tax revenue collected in the SADC and the existence of reverse causality (Ade *et al*, 2018).

Ali and Audi (2018) considered Macroeconomic environment and tax revenue in Pakistan where they examined the impact of macroeconomic situations on tax revenues in the case of Pakistan over the period from 1975 to 2016. They found out that unemployment had a positive and significant impact on tax revenue, money supply was also positive and significant on tax revenue, while inflation was negative and significant on tax revenue. It indicated that the macroeconomic environment was healthy, which further fostered the increase in tax revenue.

Shivanda and Obwogi (2018) investigated the effects of macroeconomic variables on tax revenue in Kenya. Their analysis included data set from 1995 to 2016 using ANOVA. Their findings, among other, indicated that there is no statistically significant relationship between interest rate, inflation and exchange rate and tax revenue; however, interest rate and exchange rate were important in predicting tax revenues. The general conclusion was that interest rate and exchange rate are important macroeconomic factors influencing tax revenue collection in Kenya.



Mawejje and Munyambonera (2016) study on Uganda, stressed the importance of sectoral economic performance, while the study of Saibu and Olatunbosun (2013) on Nigeria presented results that confirm the importance of macroeconomic variables.

The study conducted by Onakoya, Afintinni, & Oyeyemi (2017) utilized the periods 2005-2014 to determine the significant relationship between tax revenue performance, trade liberalization and macro-economic variables of 22 sub-Saharan African countries. Several tests were conducted, and the Vector error correction model was engaged to check for possible long or short run connection among the variables. The Granger causality test was applied to determine the shock impact of one variable on the other. The findings concluded that inflation, interest rate and trade openness had a short run relationship with tax revenue, unlike exchange rate and unemployment. All variables apart from exchange rate were positively related to the dependent variable coupled with the fact that there existed a one-way causation with the absence of serial correlation and heteroskedasticity among the variables (Onakoya, *et al.*, 2017). However, the case of outliers in the data set of some countries may have adversely affected the results obtained.

Rodríguez's (2018) contribution to this research area is the focus on developing countries. The author examined the role of governance indicators like government effectiveness, democracy, political stability and other additional variables like financial intermediation, internal trade volume, agriculture share or aggregate economy. In this panel data study, over 138 developing countries were covered for the period (1976–2015). The findings confirm the importance of governance variables and Agriculture's share in gross domestic product in determining the level of tax revenue. Botlhole, Asafu-Adjaye, & Carmignani (2012) and Mawejje (2019) extend the analysis of the determinants of tax revenue performance in sub-Saharan Africa to account for the significant role of institutions and natural resource abundance and its governance.

Studies on OECD countries like the work of Castro and Camarillo (2014) showed that key macro-economic variables, including but not limited to GDP per capita, exert significant positive influence on tax revenue generation. Arachi, Bucci, & Casarico (2015) study on a panel of OECD countries corroborates this. The study by Terefe & Teera (2018) focused on East African countries for the period 1992-2015. Their main findings were that key macroeconomic variables, such as GDP per capita, exert positive impact on tax revenue while inflation and exchange rates impact on tax revenue negatively. Neog & Gaur (2020) investigated the determinants of tax performance in the BRICS (Brazil, Russia, India, China and South Africa) countries for the period 1996-2017, with the focus on economic and political variables. Results obtained showed that economic development, trade openness and control of corruption are revenue-enhancing factors for BRICS, whereas the agriculture sector discourages the tax revenue performance.

Having looked at the existing literature, it is evident that there is a gap in the literature, as the number of studies that examine the aggregate impact of macroeconomic variables on the ability of various economies to generate revenue from tax, either indirect or direct tax, with specific reference to ECOWAS is limited. This study thus aims to fill the existing gap in literature by carrying out an empirical analysis of the impact of the selected macroeconomic variables on tax revenue in Economic Community of West Africa States.



## METHODOLOGY

### Theoretical framework

Analysts investigating the role of macroeconomic variables on tax revenue performance frequently adopt the Laffer Curve Hypothesis or the optimal tax theory as theoretical framework. These were expounded upon in section 2.1 of this paper. The standard optimal tax theory is adopted in this study as the theoretical basis for the empirical investigation following the framework drawn from the works of Ade *et al* (2018), Shivanda and Obwogi (2018), Terefe and Teera (2018).

### Model Specification

The general model indicating the relationship between tax revenue and selected macroeconomics variables is as specified in equation 1.

$$TR = f(INF, GDP, EXC, TO, UNM) \quad (1)$$

Where: TR = Tax revenue as a percentage of GDP, INF = Inflation Rate, GDP = Gross Domestic Product, EXC = Exchange Rate, TO = Trade Openness, UNM = Unemployment Rate

To determine the responsiveness of dependent variable to the independent variables, the general panel econometric model is as specified in equation 2:

$$TR_{it} = a_0 + a_1 INF_{it} + a_2 GDP_{it} + a_3 EXC_{it} + a_4 TO_{it} + a_5 UNM_{it} + \mu_{it} \quad (2)$$

The variables are as defined earlier, while  $\mu$  represents the error term. Following the panel method technique, three models were considered and estimated as follows: the Pooled Regression Model (PRM), Fixed Effect Model (FEM) and Random Effect Model (REM). The Hausman test was conducted in order to choose between Fixed Effect Model (FEM) and Random Effect Model.

### Data

The data were sourced from World Bank Indicators, 2020 and relevant statistical bulletins of selected countries in ECOWAS. The variables were analyzed and their measurements included: tax revenue as a percentage of GDP (%), inflation rate in percentage (%), unemployment rate in percentage (%), exchange rate in percentage (%), gross domestic product in billion USD (\$), trade openness as calculated by the world bank.

Inflation rates are calculated by the annual percentage change in the CPI; GDP is measured as the real GDP in billion USD (\$) generated within the year, unemployment rate is measured as the ratio of unemployed individuals and total work force; tax revenue is measured as the percentage of total GDP; exchange rate is measured as the ratio of home currencies to a unit of foreign currency; and, trade openness is measured by the ratio between the sum of exports and imports and gross domestic product as calculated by the world bank.



## RESULTS AND DISCUSSION

### Results

#### Descriptive statistics

Descriptive statistics of the variables used in the model are presented in Table 1.

**Table 1.** Descriptive statistics

	TR	GDP	INF	UNM	TO	EXC
Mean	20.32	22.31	117.43	5.28	85.42	234.29
Median	20.55	22.46	107.50	4.27	80.75	127.23
Maximum	24.18	26.78	268.36	12.25	311.35	612.00
Minimum	13.87	15.83	52.93	1.98	20.72	0.91
Std. Dev.	2.71	3.17	45.98	3.12	49.51	214.83
Skewness	-0.83	-0.59	1.67	0.98	2.18	0.53
Kurtosis	3.03	2.55	5.51	2.78	10.19	1.59
Jarque-Bera	10.48	6.09	65.85	14.61	265.93	11.76
Probability	0.005	0.04				
Sum	0.00	0.0006	0.00	0.00		
Sum Sq. Dev.	1829.04	2008.61	10568.87	475.37	7688.58	21086.70
Observations	655.63	898.45	188201.2	870.79	218173.5	4107589.
	90	90	90	90	90	90

*Source: Authors' Computation, 2020*

Table 1 showed that exchange rate and trade openness recorded the highest variation, while tax revenue and unemployment have relatively lower variability. Some variables recorded a positive skewness, which means that the distributions are tailed to the right, while tax revenue and GDP have a negative skewness.



### Stationarity (unit root) Test

The results of Augmented Dickey–Fuller (ADF) and Philips–Perron (PP) Tests, showing the order of integration I (d) of the series as presented in Table 2. It shows that the series are integrated of order zero; I (0) or integrated of order one; I (1).

**Table 2.** Results of Unit Root Test

Variables	Augmented Dickey Fuller test				Phillip Peron Test			
	Levels	1 <sup>st</sup> diff.	2 <sup>nd</sup> diff.	Stationarity	Levels	1 <sup>st</sup> diff.	2 <sup>nd</sup> diff.	Stationarity
TR	0.10	0.00	0.00	I(1)	0.00	0.00	0.00	I(0)
GDP	0.23	0.00	0.00	I(1)	0.03	0.00	0.00	I(0)
INF	0.00	0.01	0.00	I(0)	0.00	0.00	0.00	I(0)
EXR	0.99	0.00	0.00	I(1)	0.99	0.00	0.00	I(1)
TO	0.05	0.00	0.00	I(1)	0.16	0.00	0.00	I(1)
UNMP	0.18	0.00	0.00	I(1)	0.63	0.00	0.00	I(1)

Source: Authors' Computation, 2020

Under the Augmented Dickey Fuller test, inflation was stationary at levels, while LGDP, LTAX, unemployment, trade openness and exchange rate were stationary at first differencing.

### Variance inflation factor (multicollinearity)

**Table 3.** Multicollinearity results

Variable	Coefficient	Un-centered	Centered
	Variance	VIF	VIF
C	35.69	15727.78	NA
GDP	0.06	15227.89	1.52
INF	2.77E-06	19.05	2.23
UMP	0.003	42.14	1.62
TO	3.21E-06	11.47	1.14
EXC	2.48E-06	61.81	1.89

Source: Authors' Computation, 2020

Multicollinearity test is a test to confirm which variables have multicollinearity. When the centered VIF is 1, it is said that no multicollinearity exists. When the centered VIF is between 1 and 5, there is multicollinearity but at a negligible level. When the centered VIF is between 5 and 10, there is multicollinearity at a reasonable level and corrections may be necessary.



Finally, when the centered VIF is above 10, it indicates a high correlation and is cause for concern. From Table 3 multicollinearity results, multicollinearity exists but at a negligible level, hence no correction is required.

### Model Selection

The model selection is between the Pooled OLS Regression Model, Random Effects Model and Fixed Model Effects. Table 4 presents the results for each of the models, without any prior adjustment.

Table 4. Analysis results

	POOLED			FIXED			RANDOM		
	Coef.	St-error	Prob.	Coef.	St-error	Prob.	Coef.	St-error	Prob.
C	1.88	0.37	0.00	2.59	2.71	0.34	1.88	0.86	<b>0.00</b>
GDP	0.79	0.01	0.00	0.78	0.11	0.00	0.79	0.02	<b>0.00</b>
INF	0.005670	0.00	0.00	0.007	0.0009	0.00	0.00	0.00	<b>0.00</b>
UMP	0.028884	0.00	0.00	-0.10	0.017	0.0000	0.02	0.019	<b>0.73</b>
TO	-0.0019	0.00	0.02	-0.0019	0.0012	0.12	-0.0019	0.002	<b>0.34</b>
EXC	0.00045	0.0001	0.00	0.00025	0.0004	0.57	0.000456	0.00	<b>0.13</b>
A-RSQ	0.95			0.96			<b>0.95</b>		
F-STAT	2404.26			221.41			<b>378.19</b>		
Durbin	0.82			1.45			<b>0.58</b>		

Source: Authors' Computation, 2020

### Correlated Random Effects - Hausman Test

The Hausman test is employed to determine the appropriate model. The Hausman test is used to check which type of regression analysis model between random effect and fixed effect is appropriate for interpretation.

Table 5. Correlated Random Effects - Hausman Test

Equation: Hausman Test			
Test cross-section random effects			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	18.53	5	0.0023

Source: Authors' Computation, 2020

This formed the basis of our decision to use the fixed effect method.

The probability value from Table 5: Correlated Random Effects - Hausman Test is 0.023, which is less than 5%, thereby we reject the null hypothesis and state that the fixed effects model is appropriate.





## Wald's Test

Wald's test is further employed to determine the best model to employ between fixed effect model, and pooled regression analysis.

**Table 6.** Wald's test result

Wald Test: Equation: Eq01			
Test Statistic	Value	Df	Probability
F-statistic	1060.618	(5, 79)	0.0000
Chi-square	5303.091	5	0.0000

*Source: Authors' Computation, 2020*

From Table 6: Wald's test result, we deduce that the coefficients are neither equal to each other, or equal to zero (0), hence we reject Null hypothesis and conclude that the fixed effect model is the appropriate model as the probability value (0.0000) is less than 5%. This is reasonable, given that different countries are involved. Thus, between the pooled regression and the fixed effect regression, the fixed effect regression is the best model for the interpretation.

## Fixed Effects regression Results

**Table 7.** Fixed Panel EGLS (Cross-section SUR)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.59	2.71	0.95	0.34
GDP	0.78	0.11	6.62	0.00
INF	0.007	0.00098	7.55	0.00
UNF	-0.10	0.017	-5.77	0.00
TRO	-0.0019	0.0012	-1.53	0.12
EXC	0.00025	0.00044	0.56	0.57
R-squared	0.96	Durbin-Watson stat		1.45
Adjusted R-squared	0.94			
F-statistic	161.91			
Prob. (F-statistic)	0.00			

*Source: Authors' Computation, 2020*

Findings as shown in table 7 reveal that Inflation is positively related to tax revenue, and also significant. This implies that as inflation increases by 1 unit, tax revenue as percentage of GDP will increase by 0.0074 unit. Exchange rate is positively related to tax revenue, but insignificant, implying that as exchange rate increases by 1 unit, tax revenue as percentage of GDP will increase by 0.00025.



Gross domestic product is positively related to tax revenue, and also significant. This implies that as gross domestic product increases by 1 unit, tax revenue as percentage of GDP will increase by 0.784216 unit. Trade openness is negatively related to tax revenue, but insignificant, implying that a unit increase in trade openness, leads to a fall in tax revenue as percentage of GDP by 0.001916 unit.

Further, unemployment is negatively related to tax revenue, and also significant, implying that as unemployment increases by 1 unit, tax revenue will decrease by 0.102872 units. The Adjusted R2 indicates that the independent variables in consideration account for 95% of the changes in the dependent variable.

### Residual Cross-Section Dependence Test

The Residual Cross-Section Dependence Test is used to check for correlation between the errors of different cross sections. If there is correlation, then the appropriate GLS weights will be used to correct for the correlation.

Table 8. Residual Cross-Section Dependence Test

Test	Statistic	df.	Prob.
Breusch-Pagan LM	30.76064	15	0.0095
Pesaran scaled LM	2.877486		0.0040
Bias-corrected scaled LM	2.663200		0.0077
Pesaran CD	2.087956		0.0368

Source: Authors' Computation, 2020

Due to the span of the period (15), the study employed the Pesaran CD test to determine cross-section dependence in residuals. From the Table 8: Residual Cross-Section Dependence Test, we reject the null hypothesis, because the calculated t-statistics (2.087) is greater than the critical value (1.8) and state that there exists correlation between the cross-sectional residuals. We corrected for this using the Generalized Least Square Method (cross section sur).

### Discussion

Inflation is positively related to tax revenue, significantly implying that as inflation increases by 1 unit, tax revenue as percentage of GDP will increase by 0.007414 US. This can be a result of an increase in income of workers by employers, to account for the inflation, and hence an increase in purchase of goods and services leading to a greater tax revenue from value added tax. This coheres with the results of Onakoya, *et al.*, 2017; Saibu & Olatunbosun, 2013; Andersson & Lazuka, 2019).

Exchange rate is positively related to tax revenue, but insignificant, implying that a unit increase in exchange rate leads to 0.000251 increase in tax revenue as percentage of GDP. This could be a result of the dynamics of exchange rate theories. Even though trade import would be expected to fall, which may invariably reduce tax collected, a close look suggests that inelastic products, such as essential



goods which are not locally available or raw materials, may not reduce import demand. Thus, a rise in exchange rate could lead to increase in tax revenue from import duties or trade. This result is consistent with the results of Caroline and Joseph (2017), where they found out that the real exchange rate tends to rise by the full amount of any consumption tax increase as well as levies.

Gross domestic product is positively related to tax revenue, and also significant. When gross domestic product increases by 1 unit, tax revenue as percentage of GDP increases by 0.784. Theoretically speaking, it is expected for tax revenue to increase in response to a corresponding increase in GDP, due to the fact that the tax base has increased.

Trade openness is negatively related to tax revenue, but insignificant, implying that as trade openness increases by 1 unit, tax revenue as percentage of GDP will reduce by 0.001916 units. A reason for this result, which did not follow theoretical foundation, could be the presence of gross mismanagement or porous trade routes, borders, the presence of high corruption and lots of smuggling. In contrast, Micah, Bbaale, & Hisali (2017) established a theoretically correct result that the average tariff rate used as a measure for trade openness positively influences total tax, indirect tax and trade tax while the average tariff rate squared is negative, illustrating the “Laffer effect”.

Unemployment rate is negatively related to tax revenue, and also significant. This suggests that as unemployment increases by 1 unit, tax revenue as percentage of GDP will decrease by 0.102 US dollars. This is because, the higher the unemployment rate, the lower the tax base and the lower the tax revenue from wages and salaries, which is a major source of the governmental tax revenue.

## CONCLUSION

This paper contributes to a growing strand of literature on the macroeconomic determinants of tax revenue performance in Sub-Saharan African countries, particularly in Economic Community of West African States, where there is a dearth of accessible studies. The main contribution of this research is to provide estimates of the quantitative impact on tax revenues of changes in key macroeconomic variables like Inflation, GDP, Trade openness, Unemployment and Exchange rate in recent times. The paper focused on some selected countries that are part of the Economic Community of West African States (ECOWAS) including; Nigeria, Ghana, Liberia, Burkina Faso, Togo, and Cape Verde. Robust panel data analytical approach was adopted for data set of these countries using the standard optimal tax theory as theoretical foundation. The results showed that the key drivers of tax revenue performance in the countries studied and the period covered are economic expansion measured via GDP, Inflation rates and unemployment. GDP and inflation exert a positive effect while increasing unemployment rate indicates underutilization of limited resources and thus depresses tax revenue attainment of government. Furthermore, the study provided evidential basis for the attainment of robust tax revenue by careful management of the macroeconomic environment.



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## MAKROEKONOMSKE DETERMINANTE POREZNIH PRIHODA U EKONOMSKOJ ZAJEDNICI ZAPADNO-AFRIČKIH DRŽAVA

### Rezime:

Određivanje efekata makroekonomskog okruženja na poreske prihode je od vitalnog značaja za svaku zemlju, a posebno za ekonomsku zajednicu koja teži harmonizaciji makroekonomskog okruženja i na kraju integraciji. Međutim, stepen u kojem agregatna proizvodnja, inflacija i nezaposlenost utiču na poreske prihode u ECOWAS -u je manje proučavan u literaturi. Stoga ova studija empirijski istražuje kako su poreski prihodi povezani sa odabranim makroekonomskim varijablama. Panel analiza podataka koristi se na setu podataka šest zemalja ECOWAS-a o poreskim prihodima, bruto domaćem proizvodu, inflaciji, nezaposlenosti, otvorenosti trgovine i kursu tokom 2005-2019. Wald i Hausman test pokazali su da je regresija fiksnih efekata odgovarajuća za studiju. Rezultati su pokazali da je inflacija pozitivno povezana s poreskim prihodima i statistički značajna na 5 posto. Jedinično povećanje inflacije dovelo je do 0,007 povećanja mere poreskih prihoda; ekonomski rast je takođe bio pozitivan i statistički značajan sa 5 odsto; jedinični rast BDP -a rezultirao je povećanjem varijable državnih poreskih prihoda za 0,78. Konačno, varijabla poreskih prihoda smanjena je za 0,10 sa jedinstvenim povećanjem nezaposlenosti. Preporučuje se da zemlje ECOWAS -a pažljivo upravljaju svojim makroekonomskim okruženjem kako bi povećale poreske prihode.

### Ključne reči:

Makroekonomske varijable,  
Poreski prihod,  
ECOWAS,  
Hausmanov test,  
Optimalna poreska teorija.