

## Determinants of Tax Capacity in Nigeria

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### **Abstract**

*The study examined the determinants of tax capacity in Nigeria. The study covered from 2001 to 2021. The specific objectives were to examine the relationship subsisting between inflation and taxable capacity in Nigeria, to determine the extent to which level of economic development (using per capita income as the proxied variable) affects taxable capacity in Nigeria and to determine the impact of the size of economic openness (using net export as the proxied variable) on taxable capacity in Nigeria. The study adopted ex-post facto research design. The study data was sourced from Central Bank of Nigeria Statistical bulletin. The stated hypotheses were analysed with ordinary least square regression. The findings of the study revealed that inflation has negative and insignificant effect on taxable capacity in Nigeria. Economic development (per capita income) has positive and insignificant effect on taxable capacity in Nigeria and economic openness (net export) has positive and insignificant effect on taxable capacity in Nigeria. It was recommended government should regulate the issue of tax effectively such that disposable income of both the individual and corporate organization left after tax payment will breed saving so as to create more investment which will invariably generate more employment opportunity and curb inflation in the country ‘*

**Keywords:** Tax capacity, inflation, per capita income, net export and economic openness,

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## **INTRODUCTION**

### **1.1 BACKGROUND TO THE STUDY**

One of the concerns of the governments and economic systems in the world is tax system efficiency and determination of tax rates for different classes of society so that with higher taxable capacity, it can generate more income for running the economy (Nasser & Mohadese, 2014). The purpose of taxation is basically to equip governmental sources, making economic policies and help improve the process of income distribution in the society (Nasser & Mohadese, 2014). According to Chigbu, Linus and Appah (2012), taxation is seen as a compulsory levy imposed on a subject or upon his property by the government to provide security, social amenities and create conditions for the economic well-being of the society.

Taxable capacity as defined by Gupta (2007), is the highest amount of revenue that can be generated from taxes without jeopardizing the economic activities in the economy. Mohamed (2012), suggests that the taxable capacity of any country depends on the ability of the people to pay and the ability of the government to collect taxes. According to Botlhole (2010), raising domestic revenues is the most feasible way to achieve fiscal sustainability. He asserted that tax revenue which is a function of taxable capacity contributes a large chunk of every country's domestic revenue. As a result, an evaluation of the determinants of taxable capacity in Nigeria is of great importance, as it provides information on the factors affecting taxable capacity which could be manipulated to enhance the taxable capacity of the national economy and further demonstrates the maximum tax that can be paid by the society in order to finance public services without affecting economic growth and development.

Tax capacity can be interpreted as the taxpayer's ability to pay or the government's ability to raise tax revenue (Chun & Kuo, 2000). Therefore, factors affecting tax capacity can be divided into two groups: Factors related to ability of individuals to pay tax. In this case, ability of individuals to pay tax is determined by structural factors like level of income and intentional factors like individual's sense of responsibility to pay tax. The second type is related to ability of government to collect and raise tax revenue. Ability of government to collect tax depends on structural factors like easy access to the tax bases and organizational efficiency of tax collection (Karimi, Hoshidar, 2017). It should be noted that since the correct recognition of intentional factors is difficult it is better to focus on structural factors. For example, assuming other factors fixed the higher level of per capita income shows higher ability of individuals to pay taxes. Also when mineral export is the main share of national gross production, increase of tax incomes is much facilitated.

## **1.2 STATEMENT OF THE PROBLEM**

The Nigerian tax system has undergone several reforms geared at enhancing tax collection and administration with minimal enforcement cost (Usman & Bilyaminu, 2013). These reforms include the introduction of TIN (Taxpayer's Identification Number) which became effective since February 2008, automated tax system that facilitates tracking of tax positions and issues by individual tax payers, e-payment system which enables smooth payment procedures and reduces the incidence of tax touts, enforcement scheme (special purpose tax officers; special tax officers in collaboration with other security agencies to ensure strict compliance in payment of taxes). This enabling environment in addition to the consistent review of tax laws has led to improvement in tax administration in the country (Usman & Bilyaminu, 2013).

However, from the publications of the Federal Inland Revenue Service (FIRS), there has never been a time where the country's taxable capacity (using actual tax collection as the proxy variable) is equal to the actual tax revenue collected even with the aforementioned reforms in operation ([www.firs.gov.ng](http://www.firs.gov.ng)). Therefore, the motivation for this study is the identification and evaluation of the factors affecting taxable capacity in Nigeria in order to know and estimate the country's real potential to pay and collect taxes with a reasonable certainty and accuracy as well as suggesting ways of improving the country's taxable capacity.

## **1.3 OBJECTIVES OF THE STUDY**

The main objective of the study is to evaluate the determinants of tax capacity in Nigeria. However, the specific objectives of the study were;

- 1) To examine the relationship between inflation and taxable capacity in Nigeria.

- 2) To determine the extent to which level of economic development (using per capita income as the proxy variable) affects taxable capacity in Nigeria.
- 3) To ascertain the impact of the size of economic openness (using net export as the proxy variable) on taxable capacity in Nigeria.

#### **1.4 RESEARCH QUESTIONS**

The following research questions were raised;

- 1) What is the effect of inflation on taxable capacity in Nigeria?
- 2) To what extent does the level of economic development (per capita income) affect taxable capacity in Nigeria?
- 3) To what extent does the size of economic openness (net export) affect taxable capacity in Nigeria?

#### **1.5 RESEARCH HYPOTHESES**

The following hypotheses were stated in null form;

- 1) Inflation has no significant effect on taxable capacity in Nigeria.
- 2) Economic development (per capita income) has no significant effect on taxable capacity in Nigeria
- 3) Economic openness (net export) has no significant effect on taxable capacity in Nigeria.

### **REVIEW OF RELATED LITERATURE**

#### **2.1 CONCEPTUAL FRAMEWORK**

##### **2.1.1 The Concept of Taxable Capacity**

Taxable capacity represents a very early approach in the field of public finance. Mason (2015), stressed that taxable capacity is a slippery, elusive concept. On examination, taxable capacity always turn out to be very difficult to define and to be a matter on which opinions will differ rather widely. Despite this opinion, there have been various attempts to define taxable capacity. Below are some examples of the alternative definitions of taxable capacity;

##### **2.1.2.1 Types of Taxable Capacity**

Gupta (2007) has indicated that there are two types of taxable capacity: (i) absolute taxable capacity and (ii) relative taxable capacity.

##### **(i) Absolute taxable capacity**

Gupta (2007) sees absolute taxable capacity as "the surplus of production over the minimum maintains that volume of production per head of the population, keeping the essential standard of living unchanged over a number of years". In the words of Ricardo and Carola (2013), absolute taxable capacity is "the maximum tax paying capacity of the economy or country as a whole, or a region, or an industry, or a group of individuals". This indicates that absolute taxable capacity can be determined in terms of the amount of tax which can be collected without causing any suffering to the taxpayers.

##### **2.1.2.2 The Measurement of Taxable Capacity**

Michael (2015), emphasizes the relevance and importance of relative taxable capacity; this can be estimated by comparing different countries or sub-national units in a federation. Thus, two countries or sub-national units in a country which are similar in economic circumstances should be able to generate equal amount of revenue and the differences could then be attributed to the differences in their preference patterns. Thus taxable capacity of different units in a federation can be estimated by estimating the average behaviour of the states in raising revenues after

allowing for economic factors that can cause differences in taxable capacity (Giulia, Milk & Rhiannon, 2014).

### **2.1.2.3 Determinants of taxable capacity**

Based on evidences from existing literatures around the world; Bothole, T. D (2010), Mashkooor and Yahya (2010), Chaundry and Munir (2010), Mohammed (2012), Gupta (2007), and more specifically in Nigeria; Oyetunji (2012), Olufemi and Sumbo (2013), amongst a host of others, this paper identifies several factors that determine a country's taxable capacity. Among these factors are; (i) inflation, (ii) Level of economic development, (iii) The size of economic openness.

(i) Inflation: This is a consistent rise in the general prices of goods and services over a period of time. Gupta (2007), opines that there is an inverse relationship subsisting between inflation and taxable capacity due to the fact that inflation generally reduces economic activities. As a result of the reduction in the economic activities of any nation experiencing inflation, the taxable capacity of such a nation will be low.

(ii) Level of Economic Development: Gupta (2007), opines that there is a hypothetically and logically positive relation between the degree of economic development of an economy and its taxable; the more development degree increases, the more taxable capacity increases. Mohamed (2012), suggests that the most suitable proxy variable of this factor is the level of per capita GDP/income (individual income, YP). He suggests that the higher the level of income per person is, the greater taxable surplus is, and consequently there is a larger tax base. That means, an increase in per capita income demonstrates a higher development level.

(iii) Size of Economic Openness: This is the level at which a country buys from and sells to other countries. The degree of economic openness has a direct and extensive effect on taxable capacity in developing countries (Mohamed, 2012). Thus, it is expedient to specify the proxy variables of this factor.

### **2.1.3 The concept of tax effort**

Luky (2003), indicates that tax effort is defined as the exertion a country puts into collecting its tax revenue, given the tax handles available to the country. This means that tax effort is the extent to which a country utilizes its taxable capacity (Tuan, Blanca and Nihal, 2012). Hoek and Peter cited in Mohamed (2012), define tax effort as a measure of how well a country is using its taxable capacity. That is tax effort is the ratio of actual tax revenues to taxable capacity. Hence, the purpose of this section is to look at the extent to which Nigeria has used its taxable capacity within the selected period. However, budgeted or targeted tax is used as a proxy of taxable capacity.

### **2.1.4 Concept of inflation**

Murali (2014), states that the word inflation owes its origin to the Latin word *inflare*, which literally means "to blow into", from *flare*, "to blow". This is an accurate description of the current understanding of inflation. Inflation can also be define as an unsubstantiated increase in prices, i.e. not reflecting changes in relative scarcity. Over many centuries unsubstantiated increases in prices occurred, with the related problems of containing such increases. Balami, (2019), defines inflation as a rising in the general price level of broad spectrum of goods and services over a long period of time. It is measured as the rate of increase in the general price level over a specific period of time.

### **2.1.5. Concept of per capita income**

[Per capita](#) income can be defined as a measure of the amount of money earned per person in a nation or geographic region. Per capita income can be used to determine the average per-person income for an area and to evaluate the standard of living and [quality of life](#) of the population. Per capita income for a nation is calculated by dividing the country's national income by its population. Per capita income (PCI) or average income measures the average income earned per person in a given area (city, region, country, etc.) in a specified year. It is calculated by dividing the area's total income by its total population (Akinifesi, 2018).

### **2.1.6 Economic openness**

The history of economic openness can be traced to the pioneering work of Adam Smith (1776). His submission was that economic openness promotes the efficient allocation of resources through comparative advantage. Economic openness otherwise known as trade liberalization is the process of reducing or removing restrictions on international trade. Economic openness refers to the degrees to which a country or economy permits or have trade with other countries or economies. Economic Openness also indicates the dependence of the country on the foreign trade (Michael, 2012).

### **2.1.7. Economic development**

Economic development is defined as a sustained improvement in material well being of society. Economic development is a wider concept than economic growth. Apart from growth of national income, it includes changes – social, cultural, political as well as economic which contribute to material progress. It contains changes in resource supplies, in the rate of capital formation, in size and composition of population, in technology, skills and efficiency, in institutional and organizational set-up. These changes fulfill the wider objectives of ensuring more equitable income distribution, greater employment and poverty alleviation. In short, economic development is a process consisting of a long chain of interrelated changes in fundamental factors of supply and in the structure of demand, leading to a rise in the net national product of a country in the long run (Obadan, 2014)..

## **2.2 THEORETICAL FRAMEWORK**

### **2.2.1 Ability-to-pay theory**

The ability-to-pay principle was presented by Arthur and Jean-Jacques Rousseau (1712 - 1778), Jean-Baptiste Say (1767 - 1832) and John Stuart Mill (1806 - 1873). The most popular and commonly accepted principle of equity or justice in taxation is that citizens of a country shall pay taxes to the government in accordance with their ability to pay. It therefore appears very reasonable and just that taxes should be levied on the basis of the taxable capacity of an individual (Joseph & James, 2013). According to Michael (2012), the ability-to-pay theory treats government revenue and expenditures separately. Under this approach, taxes are based on taxpayers' ability to pay; there is no quid pro quo (something for something). Taxes paid are seen as a sacrifice by taxpayers which raises the issues of what the sacrifice of each taxpayer should be and how it should be measured. In an attempt to resolve the issues of what sacrifice and how to measure the sacrifice of each taxpayer, Basir, Liudmila, Khaibat, Magomed & Madina (2015) suggest the following approaches;

- (i) Equal Sacrifice: According to them, the total loss of utility as a result of taxation should be equal for all taxpayers (the rich will be taxed more heavily than the poor).

(ii) Equal Proportional Sacrifice: Under this approach, they suggest that the proportional loss of utility as a result of taxation should be equal for all taxpayers.

More so, based on this theory, another trouble arises with the definition of ability to pay. The main viewpoints advanced in this connection as opined by some scholars (cited in Joseph and James, 2013) are as follows;

### **2.3 REVIEW OF EMPIRICAL STUDIES**

The basic aim of this section is to examine previous studies on taxable capacity. There is a body of literature in public finance regarding taxable capacity at the International level; included in this body are works by researchers such as; Eltony (2002); Luky (2003); Hamid and David (2007); Gupta (2007); Tony and Jorgen (2010); Bothole (2010); Joweria (2011); Tuan, Blanca and Nihal (2012); Mohamed (2012); Ricardo and Carola (2013); Galimardanova, Khafizoval and Salmina (2014), Nasser and Mohadese (2014) and Ben and Tim (2015). These studies attempted to evaluate the determinants of taxable capacity in the countries under investigation. Some influential studies in this area are outlined as follows; Williamson (cited in Mohamed, 2012), conducted one of the oldest studies to measure a methodical relation between the development growth and government revenue in 1961. He used two independent variables in his sample of thirty three developed and developing countries. His outcome illustrated a positive and significant relation between tax ratio and per capita income, which functioned as a proxy variable for the degree of development. Such a result is consistent with the view that the higher development level is, the higher the taxable capacity. Nevertheless, Williamson's outcome is opposite that of many other studies which were conducted only with developing countries, and that indicated unimportant relation between per capita income and tax ratio. This could be explained by the reality that both developed and developing countries were involved in Williamson's sample, and it is generally perceived that income from taxes represents a large portion in the total revenue of developed countries. Plasschaert's endeavor in 1962 followed this study. His sample was limited to twenty less-developed countries and his focus was on per capita income and import ratio as the determinants of tax ratio to GNP. He, through the use of ordinary least square (OLS) method of regression analysis, referred to a result contradictory with Williamson's outcome. That means Plasschaert emphasized that import ratio arose as an important and positive determinant of tax ratio while per capita income lacked statistical significance (cited in Gupta, 2017).

Study by Eltony (2012), which evaluated the determinants of tax effort and taxable capacity in seventeen oil-producing Arab countries during the period of 1994-2000, which tried to find the relationship between the ratio of public revenues to GDP and two independent variables; mining share and per capita income. The study through the use of multiple correlation technique indicated that the mining share was negatively and significantly related to tax ratio while per capita income was positively and also significantly related to tax ratio.

In a study by Hamid and David in 2007 entitled "Tax Potential Vs Tax Effort: A Cross-country analysis of twelve developing countries" which covered the period of 1998-2004, an attempt was made to measure the tax potential and tax effort of the selected countries. They made an important contribution to identifying the determinants of tax ratio (T/Y) by including institutional quality, inflation and per capita income in their explanatory variables. Hamid and David employed a cross-country panel regression in carrying out their analysis and their findings indicated that the impact of institutional quality as well as that of per capita income

on tax ratio was positive and significant while the relationship between inflation and tax ratio was found to be negative and statistically insignificant.

#### **2.4. GAP OF LITERATURE REVIEW**

A lot of related studies have been carried out by other scholars that are related to the study and came out with conflicting findings and recommendations on the subject under reviews. For instance, these include Bassey and Eme (2018), also carried out a study to examine the determinants of taxable capacity in Nigeria. The findings revealed that the relationship between inflation and taxable capacity in Nigeria was negative and statistically insignificant. Also, the results showed that both the degree of economic openness and the level of economic development positively and significantly affected taxable capacity in Nigeria. Osasu and Akhor (1999), examined the role of taxation as a tool for addressing the challenges of inflation in Nigeria. The finding of the study revealed that all the variables (companies income tax, value added tax and custom and excise duties) had a positive and a non-significant relationship with inflation. In addition, the researcher also discovered that most of the related works done on the subjective matter by past scholars ended in 2020. Also, there is a gap in terms of time specified for the study, the study covered from 2002 to 2021. This study intends to fill in the gap in literature

### **METHODOLOGY**

#### **3.1 RESEARCH DESIGN**

The study adopted *ex-post facto* design.

#### **3.2 SAMPLING PROCEDURES AND SAMPLING TECHNIQUES**

Judgmental and purposive sampling was adopted in this study. The data was obtained from secondary sources for the period ranging from 2001 - 2021, which effectively makes the data set a longitudinal one.

#### **3.3 METHOD OF DATA COLLECTION AND DATA SOURCES**

Data sourced for this research study were basically from secondary sources. Such as the National Bureau of Statistics (NBS) annual statistical bulletins. The covered the period of 20 years from 2001 to 2021.

#### **3.4 DATA ANALYSIS TECHNIQUE**

The analysis of data used for this study was carried out using the Ordinary Least Square method of regression. The Ordinary Least Square equation is stated thus;

#### **3.5. MODEL SPECIFICATION**

As a result of Taxable Capacity being a function of several factors, the researcher will adopt the simple model for the research:  $TAXCAP=f(INF, DEV, OPENNESS, e_t)$

Where: TAC = Taxable Capacity (Actual tax collected)

INF = Inflation,

PC1 = Level of economic development (per capita GDP),

NEX = Degree of economic openness (net export),

$e_t$  = Statistical error or stochastic error term.

The functional form of the model is therefore given as follows;

$$TAXCAP = a + b_1INF + b_2DEV + b_3OPENNESS + e_t$$

Where TAXCAP, INF, DEV, OPENNESS and  $e_t$  are as earlier defined and;

a = universal constant,

$b_1 - b_3$  = the regression coefficient of the associated independent variable

## PRESENTATION OF DATA, ANALYSIS AND RESULT DISCUSSIONS

### 4.1 PRESENTATION OF DATA

**Table 4.1: Aggregate data used for the analysis (2001 – 2021)**

Years	Inflation Rate (INF) (%)	Net Export (NEX) (₦' Billion)	Actual Tax Corrected (ATC) (₦' Billion)	Per Capita Income (PCI) \$
2001	16.5	34.53	44.91	1,499
2002	12.2	26.71	52.63	1,685
2003	23.8	34.47	65.89	1,764
2004	10.0	31.35	96.20	1,878
2005	11.6	26.43	87.45	1,948
2006	8.50	52.69	110.57	2,013
2007	6.60	66.55	144.37	2,090
2008	15.1	75.19	198.07	2,173
2009	12.0	45.87	229.32	2,286
2010	11.8	44.81	275.57	2,404
2011	10.3	36.18	318.00	2,464
2012	12.0	65.61	347.69	2,501
2013	8.0	3.930	389.53	2,597
2014	8.0	1,045.19	388.85	2,688
2015	9.6	985.69	381.27	2,687
2016	18.6	984.90	397.06	2,575
2017	15.4	1,023.78	473.77	2,529
2018	11.4	1,076.72	533.74	2,512
2019	11.98	1,247.37	564.45	2,503
2020	15.8	1,343.59	699.37	2,396
2021	15.63	1,708.38	969.41	2,420.6

Source: Central Bank of Nigeria Statistical Bulletin, 2021

#### 4.1.1 Descriptive analysis

The descriptive analysis displayed the basic features of the time series data presented in table 4.1 above. The outcome of the descriptive analysis was presented in Table 4.3 below

	ATC	INF	NEX	PCI
Mean	322.291	12.6100	474.2829	2267.266



Median	318.000	11.9800	65.61283	2404.000
Maximum	969.4089	23.8000	1708.377	2688.000
Minimum	44.9129	6.60000	3.934881	1499.000
Std. Dev.	237.7326	4.066222	584.156	348.8563
Skewness	0.96366	0.935951	0.714275	0.729994
Kurtosis	2.71691	2.866861	1.881416	2.361639
Jarque-Bera	3.699956	3.723533	2.880489	2.221685
Probability	0.157241	0.155398	0.23687	0.329281
Sum	6768.11	264.8100	9959.941	47612.59
Sum Sq. Dev.	1130336	330.6832	6824764	2434014
Observations	21.0000	21.00000	21.00000	21.00000

#### Source: E-View 10 Computation

From the descriptive analysis in table 4.2 above the mean value of actual tax corrected (ATC) for the period was ₦322.291 billion. The year with maximum actual tax corrected (ATC) was 2021 when actual tax corrected (ATC) was ₦969.4089 billion while the year with the minimum actual tax corrected (ATC) was 1990 when the figure dropped to ₦494.64 billion. The standard deviation of actual tax corrected (ATC) for the period of this study was 237.7326 which is indicative of the fact that the changes in actual tax corrected (ATC) over the period was much. As revealed by the skewness, there was a positive skewness (0.96366) indicating that the degree of departure from the mean of the distribution is positive revealing that overall there was a consistent, but slow increase actual tax corrected (ATC) from 1990 to 2020. As indicated by the Kurtosis which was  $2.71691 < 3$  which is the normal value, this indicates that the degree of peakedness within the period of this study was normally distributed as most of the values hover around the mean.

Also, inflation (NF) with a mean value of 12.61% over the period, while its maximum and minimum values were 23.8% and 6.6% which were reflected in 2001 and 2021 respectively. The standard deviation (4.06) shows that there was in, inflation (NF) as confirmed by the positive value of the skewness (0.93). As indicated by the Kurtosis which was  $2.86 < 3$  the degree of peakedness within the period of this study was not normally distributed

The mean value of net export (NEX) in Nigeria for the period was ₦1474.2829 billion. The year with maximum ₦1708.377 billion was 2021 while the year with the minimum net export (NEX) was 2013 when net export (NEX) was ₦0.000 billion. The standard deviation in net export (NEX) for the period of this study was 584.156. As revealed by the skewness, there was a positive skewness (0.714275) indicating that the degree of departure from the mean of the distribution is positive revealing that overall there was a consistent increase in net export (NEX) from 2001 to 2021. As indicated by the Kurtosis which was  $1.881416 < 3$  indicates that the degree of peakedness within the period of this study was not normally distributed as most of the values did not move around the mean value. The mean of per capita Income (PCI) in Nigeria for the period was ₦2267.266 billion. The year with maximum per capita Income (PCI) was 2014 when per capita Income (PCI) reached ₦2688.000 billion while the year with the minimum per capita Income (PCI) was 2001 when per capita Income (PCI) was ₦1499 billion. The standard deviation in per capita Income (PCI) for the period of this study was 348.8563. As revealed by the skewness, there was a positive skewness (0.729994) indicating that the degree of departure from the mean of the distribution is positive revealing that overall there was a positive change in per capita Income (PCI) from 2001 to 2021. As indicated by

the Kurtosis which was  $2.361639 < 3$  which is the normal value, this indicates that the degree of peakedness within the period of this study was normally distributed as most of the values hover around the mean.

#### 4.2 TEST FOR STATIONARITY

The test for stationarity of the data was carried out based on the Augmented Dickey Fuller (ADF) unit root technique to ensure that none of series is integrated beyond order one i.e. I(1). The results obtained from the unit root is as follows:

**Table 4.3: Summary of ADF test results**

Variable	ADF @ Level: I(0)		ADF @ First difference: I(1)		Order of integration
	t-Statistic	P-value	t-Statistic	P-value	
ATC	-1.196437	0.6547	-3.492352	0.0201***	I(1)
INF	-1.632192	0.4145	-5.877574	0.0002***	I(1)
NEX	-1.615733	0.4565	-6.880664	0.0000***	I(1)
PCI	-1.922048	0.3139	-3.130050	0.0412***	I(1)

**Source: E-Views computations, (2023).**

The results of the ADF test revealed that all the series were integration of order one i.e. I(1). For instance, the ADF test results showed that the series were not stationarity at level, but all the variables become stationary at first difference value i.e. I(1). This is because, in absolute term, their actual values (t-Statistic) are greater than their respective critical values, which indicates that; null hypothesis which stipulates that, the series are not stationary is rejected. Consequently, with the integration of order one, the Johansen co-integration and vector error correction mechanism can be applied to the study.

#### 4.3. JOHANSEN CO-INTEGRATION ANALYSIS

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.770386	64.85995	47.85613	0.0006
At most 1 *	0.699134	36.90417	29.79707	0.0064
At most 2	0.518098	14.08345	15.49471	0.0807
At most 3	0.011156	0.213162	3.841466	0.6443

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.770386	27.95577	27.58434	0.0448

At most 1 *	0.699134	22.82072	21.13162	0.0287
At most 2	0.518098	13.87029	14.26460	0.0576
At most 3	0.011156	0.213162	3.841466	0.6443

Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level

\* denotes rejection of the hypothesis at the 0.05 level

**Source: EViews 9 computations, (2023).**

Table 4.4 captures the trace and the maxi-Eigenvalue statistics for the model. The null hypothesis of the absence of a co-integrating relationship among the variables was rejected at the 5% level for both statistics. The trace and maxi-eigen statistics indicated that there was at least two co-integrating equation in the model. The existence of co-integration is indicative of a long run relationship between actual tax corrected (ATC), net export (NEX), inflation (INF) and per capita income (PCI).

The normalized co-integrating equation that reflects the long-run coefficient estimates of the independent variables was captured in equation one (1) below:

ATC	NEX	PCI	INF
1.000000	1.274307	1.24540	-1.805646
	(0.66713)	(0.13053)	(0.51281)
	{0.1263}	{0.2435}	{0.2632}

Note: Figures in bold are long-run coefficient

Figures in ( ) and { } are standard errors and t-Statistics respectively

Based on the figures obtained for the long-run coefficient estimates, it was found that a unit increase in net export (NEX) caused actual tax corrected (ATC) to increase by 1.274307 units, a unit change in per capita income (PCI) cause actual tax corrected (ATC) to increase by 1.24540 units and a unit change in inflation (INF) cause actual tax corrected (ATC) to decrease by 1.805646 units. To test for the significance of the long-run coefficients, based on 5% significant level was applied. Hence, since the t-Statistics of net export (NEX) (0.66713), per capita income (PCI) (0.13053) and inflation (INF) (0.51281) are greater than 0.05, their respective impact on actual tax corrected (ATC) were all adjudged insignificant at 5% significant level in the long-run .

#### 4.3.1 Vector error correction mechanism (VECM)

Based on the co-integration test result above which shows that there is long-run relationship exist in model, hence, the vector error correction was carried out. The result obtained from the VECM analysis was presented in Table 4.5 as shown below:

**Table 4.5: Vector error correction mechanism (VECM) results**

	Coefficient	Std. Error	t-Statistic	Prob.
ECM(1)	-0.092943	0.036080	2.57586	0.4001
D(NEX(-1)))	0.032745	0.171140	0.19134	0.1411
D(PCI (-1)))	1.012040	1.696600	0.59651	0.0617
D(INF(-1)))	-0.384540	1.174170	-0.32749	0.0797
ATC	0.012938	0.101800	0.12709	0.1010
C	1.11839	1.5771	0.64184	0.2011
R-squared	0.554213			

Adjusted R-squared	0.534935
F-statistic	0.495930
Prob(F-statistic)	0.111103

**Source: EViews computations, (2023).**

Table 4.5 above shows that the error correction mechanism (ECM) is negatively ( $-0.092943$ ) signed with a probability value (p-value) of 0.4001 which suggested significance at 1% level. The significance of error correction mechanism (ECM) indicated the velocity of adjustment to the long-run equilibrium after a short-run shock. The coefficient ( $-0.092943$ ) of the ECM shows that about 0.9% of the discrepancies in actual tax corrected (ATC) are corrected in each period. This speed of adjustment is very low, meaning that the adjustment process to restore equilibrium after disturbance is slow, thus takes a long period. To find how long it takes for equilibrium to be restored, one (1) is divided by the ECM, i.e.  $1/-0.092943 = 10.7592$ . Hence, it will take 10 years and 7 months to correct the discrepancies in actual tax corrected (ATC). The goodness of fit of the model as indicated by the R-squared (0.554213) showed that the model fits the data well, the total variation in the observed behaviour of actual tax corrected (ATC) was jointly explained by the variation in the components of net export (NEX), per capita income (PCI) and inflation (INF) up to 55%. The overall significance of the model was also tested using the F-statistic. Here, the significance of the F-statistic value of did not occur by chance, it actually confirmed that the model fitted the data well such that the collective effect of net export (NEX), per capita income (PCI) and inflation (INF) were all confirmed insignificant. The one period lag of net export (NEX) showed that last periods increase in net export (NEX) caused current actual tax corrected (ATC) to increase by 0.032745 units. The differenced and lagged values of the VECM coefficients denote the short-run coefficients of the regression model. The short-run coefficients reveals that the effect of per capita income (PCI) on actual tax corrected (ATC) was not strong following the small size of the coefficients and low probability values ( $p > 0.05$ ). For instance, 1% increase in inflation (INF) only accounted for 1.012040 decrease actual tax corrected (ATC).

**4.3.2 Diagnostic tests for the VECM model**

The residuals of the VECM model was diagnosed for serial correlation, heteroskedasticity and normality. The results were summarized as presented in Table 4.6:

**Table 4.6: Diagnostic test results for VECM model**

Test	Result	Prob.
Normality test	0.513669	0.7734
Breusch-Godfrey Serial Correlation LM Test:	2.761640	0.0952
Heteroskedasticity Test: Breusch-Pagan-Godfrey	2.552497	0.0898

**Source: Computed using EViews 10.0 econometric software**

As observed from Table 4.7, the VECM model passed all the diagnostic tests for serial correlation (Breusch-Godfrey test), heteroskedasticity, and normality test. The absence of serial correlation, heteroskedasticity and abnormal distribution of the residuals was confirmed by the p-values of the tests which were greater than 0.05. Hence, the null hypothesis of no serial correlation, no heteroskedasticity and no abnormality of distribution was accepted.

**4.3. TEST OF HYPOTHESES**

**H0<sub>1</sub>:** Inflation has no significant effect on taxable capacity in Nigeria.

**Table: 4.3.1: Test of hypothesis one**

Variable	Coefficient	t-statistic	Prob.
INF	-0.384540	-0.32749	0.0797

**Source: Extracted from regression result table**

The table above indicates that the coefficient value of the inflation is -0.384540 while the probability value (p-value) is 0.0797 and the t-statistic value is -0.32749 all at 5% level of significance. Since the coefficient value is negative while the p-value is greater than 0.05 at 5% level of significance and the t-statistic value is less than the T-tabulated value of 1.76, the null hypothesis is therefore accepted. This implies that inflation has negative and insignificant impact on taxable capacity in Nigeria

**Table: 4.3.2: Test of hypothesis two**

**H0<sub>2</sub>:** Economic development (per capita income) has no significant effect on taxable capacity in Nigeria.

Variable	Coefficient	t-statistic	Prob.
PCI	1.012040	0.59651	0.0617

**Source: Extracted from regression result table**

The table above indicates that the coefficient value of the economic development (per capita income) is 1.012040 while the probability value (p-value) is 0.0617 and the t-statistic value is 0.59651 all at 5% level of significance. Since the coefficient value is positive while the p-value is greater than 0.05 at 5% level of significance and the t-statistic value is less than the T-tabulated value of 1.76, the null hypothesis is therefore accepted. This implies that economic development (per capita income) has positive and insignificant effect on taxable capacity in Nigeria.

**Table: 4.3.3: Test of hypothesis three**

**H0<sub>3</sub>:** Economic openness (net export) has no significant effect on taxable capacity in Nigeria

Variable	Coefficient	t-statistic	Prob.
NEX	0.032745	0.19134	0.1411

**Source: Extracted from regression result table**

The table above indicates that the coefficient value of the economic openness (net export) is 0.032745 while the probability value (p-value) is 0.1411 and the t-statistic value is 0.19134 all at 5% level of significance. Since the coefficient value is positive while the p-value is greater than 0.05 at 5% level of significance and the t-statistic value is less than the T-tabulated value of 1.76, the null hypothesis is therefore accepted. This implies that Economic openness (net export) has positive but insignificant effect on taxable capacity in Nigeria

#### **4.4. DISCUSSION OF RESULTS**

The study evaluate the determinants of tax capacity in Nigeria. The study were analysed under three stated hypotheses. The findings of the first hypothesis revealed that inflation has negative and insignificant impact on taxable capacity in Nigeria. The result holds on the ground that inflation is persistent increase in price of good and service. The holds on the ground that during inflation the purchasing power of consumers will drop and this will also affect payment of tax either on good or services like value added tax in the country., The study is inline with the finding of Anabtawi (2016) who stated that in his own studies that inflationary trends are inversely related to tax revenue performance. As inflation in Nigeria has been rising over the years the taxes collected have also been negatively affected at different segments. It is imperative that the government should check through the Central Bank to ensure our inflation should be at recommended levels.

The result of the second hypothesis revealed that economic development (per capita income) has positive and insignificant effect on taxable capacity in Nigeria. The result holds on the grounds that over the years there is no much increase in the per capita income of Nigerian in the country and this has had positive but insignificant impact on the taxable capacity in Nigeria. Also, couple with the present economic condition, Nigeria per capita income has not really income to be in line with the present economic reality in the country and when the inflation is on high. The finding of the study is in line with the finding of (Mason, 2015)..

Finally, economic openness (net export) has positive but insignificant effect on taxable capacity in Nigeria. The result holds of the holds on the ground that Nigeria export over the years has been on increased but with little improvement on taxable capacity in Nigeria. This may be due to issue of tax avoidance and tax evasion experienced in the country over the years for now. This has constitute a setback to the increase of the taxable capacity in the country. The result of the study is in line with the finding of (Galimardanova, Khafizova, and Salmina,, 2014).

### **SUMMARY, CONCLUSION AND RECOMMENDATIONS**

#### **5.1 SUMMARY OF THE FINDINGS**

The study evaluate the determinants of tax capacity in Nigeria. The study were analysed under three stated hypotheses. The finding of the result revealed that;

1. Inflation has negative and insignificant impact on taxable capacity in Nigeria
2. Economic development (per capita income) has positive and insignificant effect on taxable capacity in Nigeria
3. Economic openness (net export) has positive but insignificant effect on taxable capacity in Nigeria

#### **5.2. CONCLUSION**

The Nigerian tax system has undergone several reforms geared at enhancing tax collection and administration with minimal enforcement cost (Usman & Bilyaminu, 2013). These reforms include the introduction of TIN (Taxpayer's Identification Number) which became effective since February 2008, automated tax system that facilitates tracking of tax positions and issues by individual tax payers, e-payment system which enables smooth payment procedures and reduces the incidence of tax touts, enforcement scheme (special purpose tax officers; special tax officers in collaboration with other security agencies to ensure strict compliance in payment

of taxes). This enabling environment in addition to the consistent review of tax laws has led to an improvement in tax administration in the country. In conclusion, effective management of tax system in the country will enhance economic growth in the country.

### **5.3. RECOMMENDATIONS**

The following recommendations were made by the researcher,

1. Government should regulate the issue of tax effectively, such that disposable income of both the individual and corporate organization left after tax payment will breed saving so as to create more investments which will invariably generate more employment opportunities and curb inflation in the country.
2. Government should look into their policy implement that will help to enhance the per capita income of Nigeria in the country since this will have serious effect on taxable capacity in Nigeria
3. Government should also implement policy that will stop business men and companies that are involved in exporting business to be prompt in payment of their taxes to the country,

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