

Personal Income Tax Reform and Tax Revenue Performance in Sub Sahara Africa 2000-2022

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ABSTRACT: The study evaluated effect of Personal Income Tax reforms on tax revenue performance in Sub Sahara Africa for the period 1999 to 2022. Three countries were used in the study, Nigeria, Mali and Burkina Faso. Tax revenue performance was measured by tax GDP (TGDP) ratio. Among the three countries, the period of reform commenced from 2011 to 2022 therefore the design aimed at examining significant structural break on the relationship between Personal Income Tax (PIT) reform on Tax-GDP ratio between the post period 2011-2022 and the pre period 1999 to 2010 of reform. Ordinary Least Square (OLS) regression model was utilized in analyzing the relationship between PIT revenue and Tax GDP ratio while Chow-test was employed in ascertaining whether significant structural break exist on the relationship between PIT revenue and TGP ratio over the pre and post period of PIT reforms. Findings revealed an insignificant structural break on the relationship between Nigeria and Mali PIT reform which posit that the reforms has insignificant effect on the tax GDP ratio of the two countries. Burkina Faso PIT reform has significant effect on its TGDP ratio this is considering the fact that a significant structural break was observed in the relationship between PIT revenue and TGDP ration over the two periods of reforms. The study among others recommends that Sub Sahara African countries, Nigeria, Mali should appraise their existing tax policy and administrative framework in Personal Income Tax reform to ensure that the objectives of the reforms are realized.

KEYWORDS : Tax, Reform, Personal Income Tax, Nigeria, Mali, Burkina Faso, Tax-GDP ratio

INTRODUCTION

Personal Income Tax (PIT) reforms have gained increasing importance in Sub Sahara Africa nations, prompted by its quest for sustainable revenue generation, economic diversification and reduction of dependence on external funding. Mobilizing revenue is a complex activity especially in developing countries in Sub Sahara Africa nations, particularly Nigeria, Mali, and Burkina Faso, which needs significant improvement in tax system on. Tax revenue trend in the revenue statistics of Organization of Economic Co-operation and Development (OECD 2021) revealed that while some Sub-Sahara African countries exhibited marked increases in their tax-to-GDP ratio, others showed little or no increase over extended periods. Greater domestic resource mobilization is very critical for many countries particularly in developing countries, since mobilization of tax revenue is integral for governments to create fiscal space to fund public investment and deliver public services (Bernardin, Anja, Clay, Olamide and Salins 2019). Personal Income Taxation enables the imposition and regulation of tax on incomes of individuals, sole traders and partnerships. It is a tax imposed on income of individuals (employees), corporate or body of individuals, communities, families or trustees or executors of any settlement. It also covers taxation of sole traders, partnership assessment, and taxation of estates.

Tax reform, by definition, consists of changing the structure of one or more taxes or the tax system in order to improve their functioning for achieving their objectives. In 2011, the Nigerian Personal Income Tax rate was reformed, with a progressive rate of 7% to 24% replacing the former 5% to 25% progressive rate, under the 2011 Personal Income Tax reform. The 2025 Nigerian tax reform introduced a new progressive Personal Income Tax system with rates from 0% to 25% which exempted individuals earning below ₦800,000 annually from Personal Income Tax, it further clarified tax residency rules, integrated capital gains into Personal Income taxation and also revised reliefs and deductions and strengthened pay as you earn (PAYE) enforcement. These reforms aim to improve fairness, expand the tax base, and increase government revenue while protecting low-income earners (NES Group 2025)

In 2011, Mali implemented several tax policy and administrative reforms based on recommendations of the International Monetary Fund Fiscal Affairs Technical Assistance Mission. Tax policy reforms implemented include: improved quality of the

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service delivery to taxpayers, simplified and modernized procedures, and professionalization of tax administration personnel (Patrick, Gilles, Patrick, Gerard and Johnanne 2013). Mali has implemented notable reforms on its Personal Income Tax regulations in recent years with the objective of improving the tax system's efficiency and equity. One pivotal change include reevaluation of income tax brackets resulting in an adjustment of tax rates that seeks to alleviate the financial burden on lower and middle-income earners. As a consequence of these modifications, individuals with an annual income falling below a certain threshold may find themselves exempted from Personal Income Tax, thereby promoting increased disposable income and encouraging economic activity (Generis Global Legal Services 2024). One of the notable reforms is the implementation of the new General Tax Code, which became effective in early 2023 (Generis Global Legal Services. 2024).

In Burkina Faso, comprehensive tax policy reform was implemented in 2011 as documented in the 2019 IMF Working Paper. To consolidate Burkina Faso tax legislation, a single tax code was created in 2010 and implemented in 2011 (Bernardin, Anja, Clay, Olamide and Salins 2019). Burkina Faso extended its reform to tax administration in 2011 which focused on improving tax compliance. In order to increase tax compliance the authorities implemented a tax census in six urban communes of the country to strengthen management of the taxpayer files and to broaden the tax base. Reforms on Information Technology (IT) was implemented to improve information sharing between tax and customs administrators. Tax administration was enhanced with use of Computerized Tax Information System, the Information Technology systematically generates list Computerized Tax Information System, the Information Technology systematically generates list of large taxpayer office filers and non-filers which enabled better management of taxpayers in Burkina Faso (Bernardin, Anja, Clay, Olamide and Salins 2019). Burkina Faso implemented various tax changes, Personal Income Tax Progressives rates ranged from 12.1% to 25% this was reformed and reduced on the basis of the number of dependents, from 8% to 14% presently (Tax Rate in Burkina Faso.com)

Revenue performance as measured in this study by the tax-to-GDP ratio is a measure of a nation's tax revenue relative to the size of its economy. The ratio is used to determine how well a nation's government directs its economic resources through taxation. Researches in the context have revealed that reforms related to changes in tax legislation, policies and tax administration improve revenue performance (Ameth, (2019), Heerden, 2013). Increasing tax-to-GDP ratio requires growth in the tax base combined with reforms to improve the tax system. Weak tax administration tends to be associated with low tax revenue performance.

1.2 Statement of the Problem.

Sub Sahara Africa nations unchanging tax-GDP ratio remains an issue of discourse in literature. Many factors account for its low tax-GDP ratio trend which reveals predominant low tax revenue performance. Notably Nigerian factor predominantly non tax compliance. According to [4], out of Nigeria's 77 million labour force, only 10 million individuals are registered for tax purposes. This posit that sixty seven (67) million labor force are not captured in the tax net and therefore not currently paying Personal Income Tax. Mali's tax reforms demonstrate a commitment to creating a fair and efficient taxation system conducive to economic stability and growth. However these has not translated into significant revenue performance in the area of tax-GDP ratio. Mali still witness low tax revenue contribution to GDP Over the years. Burkina Faso is characterized with low tax collection and under a complex tax system with many exemptions (Bernardin, Anja, Clay, Olamide and Salins 2019). The present research will add to the existing researches in the context in addressing the challenges of Personal Income Tax reform in Sub Sahara Africa .

1.3 Objective of the Study

The objective of the study is to investigate effect of Personal Income Tax reforms on tax revenue performance in Sub Sahara African countries. Specifically the study will:

1. Determine whether Personal Income Tax (PIT) reforms in Nigeria introduced significant structural break on PIT revenue relationship with Tax-to-GDP ratio (TGDP) over the pre and post period of reform . .
2. Evaluate whether Personal Income Tax (PIT) reforms in Mali has led to significant structural break in PIT revenue relationship with Tax-to-GDP ratio (TGDP) over the pre and post period of reform . .
3. Determine whether reforms in Personal Income Tax (PIT) in Burkina Faso has caused significant structural break in PIT revenue relationship with the Tax-to-GDP ratio (TGDP) over the pre and post period of reform .

1.2 Research Questions

To provide a structured empirical investigation into the problem stated above, the study addresses the following research questions:

1. To what extent has Nigeria Personal Income Tax reforms lead to structural break in PIT revenue relationship with Tax-to-GDP ratio (TGDP) over the pre and post period of reform?
2. How has Mali Personal Income Tax reforms structurally affected PIT revenue relationship with Tax-to-GDP ratio (TGDP) over the pre and post period of reform?

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3. To what extent has reforms in Personal Income Tax caused structural break on PIT revenue relationship with Tax-to-GDP ratio (TGDP) in Burkina Faso over the pre and post period of reform?

1.3 Hypotheses

The following hypotheses were formulated and tested at 5% level of significance to guide the research.

H₀₁ There is no significant structural break in the relationship between Nigeria Personal Income Tax and Tax-to-GDP ratio (TGDP) over the pre and post period of Personal Income Tax reform.

H₀₂ There is no significant structural break in the relationship between Mali Personal Income Tax and Tax-to-GDP ratio (TGDP) over the pre and post period of Personal Income Tax reform.

H₀₃ There is no significant structural break in the relationship between Burkina Faso Personal Income Tax and Tax-to-GDP ratio (TGDP) over the pre and post period of Personal Income Tax reform.

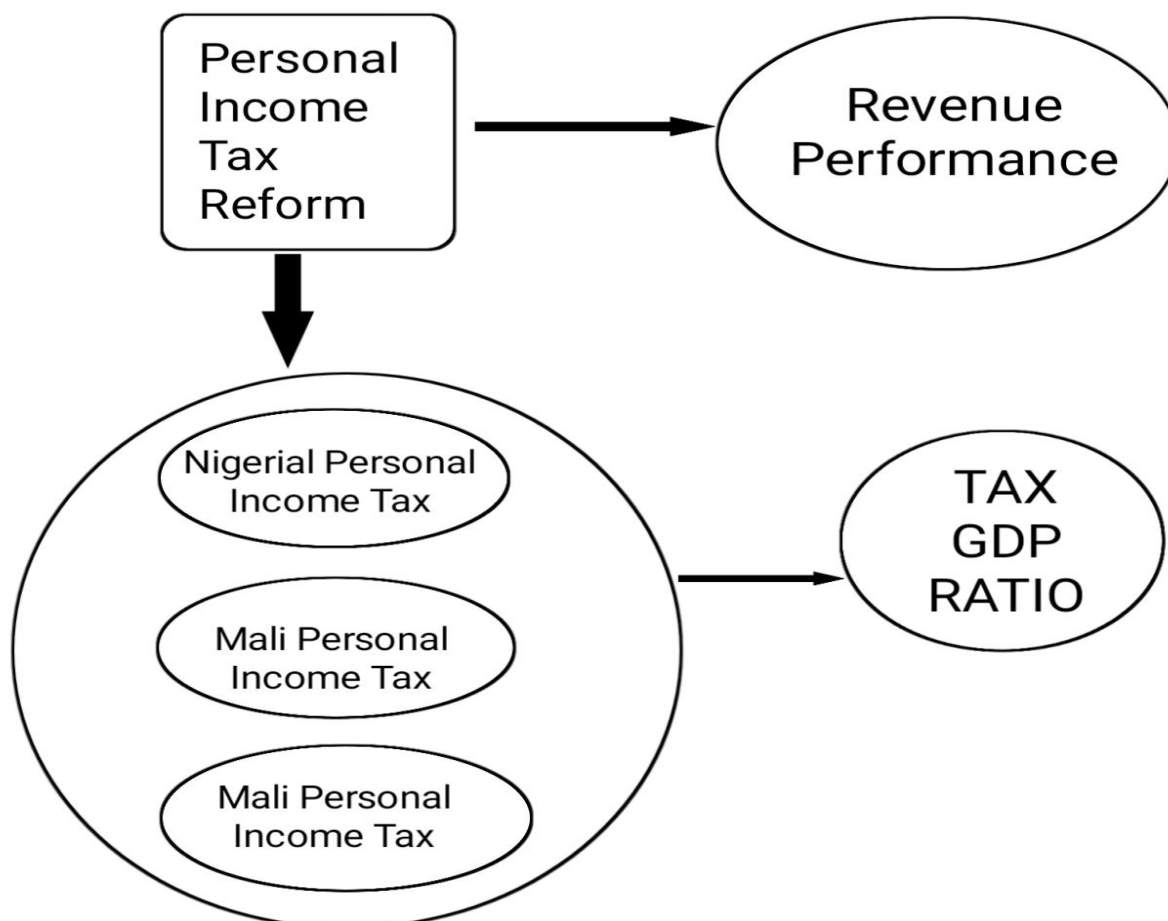
1.4 Scope

The scope of the study covered three countries in Sub-Saharan Africa, Nigeria, Burkina Faso and Mali respectively for the period scope 1999-2022. The content covered both reforms in tax policy and tax administration of Personal Income Tax and its contribution on tax to GDP.

2.0 REVIEW OF RELATED LITERATURE

Personal Income Tax reforms in Sub-Sahara Africa are shaped by economic structure. Recent reforms across these countries Nigeria, Mali and Burkina Faso emphasize reduction of tax incentives, increased enforcement for expansion of tax base for revenue performance proxied by tax GDP ratio.

The conceptual framework is presented below diagrammatically in figure 2.1



Source Authors Framework 2026

2.1.1 Reforms in Nigeria Personal Income Tax Act (PITA 2011)

Personal Income Tax Act (PITA) enables the imposition and regulation of tax on incomes of individuals, sole traders and partnerships. Under the 2011 Personal Income Tax Act (PITA) reform, the Nigerian Personal Income Tax rate was reformed with a progressive rate of 7% to 24% replacing the former 5% to 25% progressive rate.

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Administrative reform was implemented in Nigerian Personal Income Tax between the period 2012-2018. In this phase the major reforms are institutional and administrative improvement. In 2015, Nigeria adopted e-tax system, the Nigerian interbank settlement system (NIBSS) and System Specs Nigeria limited partnered with the FIRS and provided electronic tax system in Nigeria (Olatunde 2015). Nigeria introduced Tax Identification Number (TIN). The National Tax Policy stipulated that, tax authorities must ensure that all taxable persons are registered and issued with TIN and also tax authorities are to leverage on the database of the Central Bank of Nigeria (CBN) on Bank Verification Number (BVN), National Identity Card Management Commission (NIMC), Nigerian Communications Commission (NCC), Corporate Affairs Commission (CAC), Federal Road Safety Commission (FRSC), Nigeria Immigration Service (MS) and other sources to update their data bank to issue TIN (NTP 2017). These key reforms improved tax administration efficiency and increased internally generated revenue.

Finance Act reforms commenced from 2019, Nigeria introduced annual Finance Act to amend various tax laws including Personal Income Tax. The Finance Act of 2019 clarified taxation benefits and allowances, introduced provisions affecting employment income taxation and enhanced compliance measures (Finance Act (2019)). Nigerian Finance Act of 2020 implemented adjustments to tax exemptions and allowable deductions and strengthened rules on taxation of non-residence (Finance Act 2020). Finance Act of 2021 expanded tax exemptions provisions and improved clarity on taxable income sources while the 2022 Finance Act continued with harmonization of tax provisions and strengthened anti-tax avoidance rules, generally the Finance Act impacted on continuous modernization of PIT administration in alignment with global practices with improved transparency and legal clarity (Finance Act 2021).

The 2025 Nigerian tax reform introduced a new progressive Personal Income Tax system with new rates that ranged from 0% to 25% which exempted individuals earning below ₦800,000 annually from PIT, it further clarified tax residency rules, integrated capital gains into Personal Income Taxation, revised reliefs and deductions and strengthened Pay As You Earn (PAYE) enforcement. These reforms aims to improve fairness, expand the tax base to increase government revenue while protecting low-income earners (NES Group 2025). Structural reform was implemented which include repeal of Personal Income Tax Act (PITA) and replacement of PITA with a unified tax framework, and consolidation of multiple tax laws into a unified tax code (NES Group 2025).

2.1.2 Mali Personal Income Tax Reforms

Tax reforms which aimed at promoting voluntary tax compliance were implemented in Mali in 2011 through initiatives such as: enhancing the quality of services provided to taxpayers, simplified and modernized procedures, and professionalization of tax administration personnel (Patrick, Gilles, Patrick, Gerard and Johnanne 2013). Mali implemented notable reforms to its Personal Income Tax regulations in recent years, with the objective of improving the tax system's efficiency and equity. One pivotal change includes a reevaluation of income tax brackets resulting in an adjustment of tax rates that seeks to alleviate the financial burden on lower and middle-income earners. As a consequence of these modifications, individuals with an annual income falling below a certain threshold may find themselves exempt from Personal Income Tax, thereby promoting increased disposable income and encouraging economic activity (GGLS 2024).

Recent amendments in Mali Personal Income Tax allowed for deductions related to educational expenses and healthcare costs (GGLS 2024). This move not only resonates with Mali's drive for improved educational standards and healthcare access but also incentivizes taxpayers to invest in these sectors, aligning personal financial interests with broader national objectives. The government has opted for a more streamlined filing process which is designed to reduce the administrative burden on individual taxpayers. These includes initiatives such as the introduction of an online portal for tax filing, simplifying the process through digital means and thereby increasing compliance rates. Such initiatives are vital in fostering a culture of tax compliance and ensuring that the government has adequate resources for public services (GGLS 2024). Reforms were extended to community organizations which play a crucial role in providing assistance to taxpayers. Non profits groups which aimed at financing education frequently host workshops and seminars where individuals can learn about tax responsibilities and strategies for efficient tax management. These events often foster peer learning, allowing taxpayers to share insights and experiences related to Personal Income Tax. To further ease the burden of managing tax obligations, various tools and software solutions are available for use by taxpayers in Mali. Applications dedicated to tax preparation can assist users in maintaining accurate records of income, expenses, and deductions. Several of these tools also offer reminders for important deadlines related to tax filing, thereby reducing the risk of penalties for late submissions. Implementing such tools can significantly streamline the tax management process and enhance overall compliance effectiveness (GGLS 2024). One of the notable reforms is the implementation of the new General Tax Code, which became effective in Mali in early 2023. This legislation has introduced various amendments to existing tax laws, simplifying the taxation process for individuals and businesses alike. The revisions aim to create a more equitable tax structure, ultimately leading to increased economic growth. The Malian government has also introduced initiatives to boost tax compliance including digitalization of tax services. This program aims to simplify tax return submissions and payments, forming part of a broader effort

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to enhance tax administration and curb tax evasion. The government anticipates that technology will make tax compliance more accessible and efficient for taxpayers. The government has launched a campaign to raise public awareness about tax compliance, deploying educational programs to inform citizens of their tax obligations and the benefits of contributing to national revenue. This initiative aims to foster a sense of civic responsibility among taxpayers, highlighting the importance of effective tax systems for national development (GGLS 2024).

2.1.3 Reform in Burkina Faso Personal Income Tax

A comprehensive tax reform strategy was adopted in Burkina Faso on early 2010, the reform covered both tax policy reform and tax administrative reform. The reforms aimed at broadening the tax base and making the tax system simple and transparent. Burkina Faso tax system as assessed by the IMF Technical Assistance Missions in 2007 suffered from low tax collection. The country's tax-to-GDP ratio was 12.5% in 2007, one of the lowest among West African Economic and Monetary Union (WAEMU) member states. The tax system was observed to be complex with low tax base, a tax system that lacked coherent structure with too many exemptions and incentives designated to offset the heavy tax burden and also with many withholding and prepayments, a complex tax system that was vulnerable to noncompliance (Bernardin, Jiro, Hiroaki, Keyra, & Mouhamadou 2019). The following administrative reforms were carried out in Burkina Faso taxes 2011: a single tax code was established to consolidate and simplify the country's tax legislation, diversified and increased tax audit, implementation and communication of activities to foster a sense of civic responsibility regarding paying taxes, computerized tax information systems to systematically generate a list of large taxpayer office filers and non-filers (Jeorge 2021). Burkina Faso implemented various tax changes, Personal Income Tax Progressives rates ranged from 12.1% to 25% presently, this was reformed and reduced on the basis of the number of dependents and the new range is 8% to 14% (Tax Rate in Burkina Faso .com).

2.1.4 Tax-GDP ratio

The tax-to-GDP ratio is a measure of a country's tax revenue relative to its Gross Domestic Product (GDP), indicating the government's revenue-generating capacity. Kagan (2020) posit that a higher ratio typically signifies a stronger financial position, while a decrease in taxes can have a corresponding negative impact on income, demand and GDP. When the government decreases taxes, disposable income increases which translates to higher demand (spending) and increased production (GDP). The tax-to-GDP ratio fluctuates when tax revenue growth differs from GDP growth, decreasing when tax revenue grows slower than GDP and increasing when tax revenue outpaces GDP. Typically, this ratio remains relatively stable due to the correlation between tax collection and economic activity. As a measure of tax receipts relative to a country's output, the tax-to-GDP ratio serves as a key indicator of a country's tax system efficiency. According to statistical updates, low-income countries collect about 16% of GDP in taxes on average compared with 18% in emerging markets and 26% collected in advanced economies. In comparison in the year 2022 Nigerian collected 6.7% of GDP in taxes, Burkina Faso 18.4% and Mali 19.8% respectively (OECD 2024).

2.2 Theoretical Framework

2.2.1 Theory of Laffer Curve

The theory was propounded by Professor Arthur Laffer. The theory examines tax revenue generated at the extreme tax rates of 0% and 100%. The Laffer Curve theory advocates that a 100% tax rate raises no revenue in the way that a 0% rate raises revenue stating that at 100% rate there is no longer incentive for a rational taxpayer to get more income, thus the revenue raised will be 100% of nothing while at the extreme end of 0% no tax revenue is generated to the government. It follows that there must be at least one rate in between where a tax revenue would be at maximum. The theory postulates that increasing tax rate beyond a certain point will become counter-productive for raising further tax revenue. At a certain rate of tax, productive sectors of the economy will not be motivated to continue to increase their productive capacity because of the cost-benefit effect through a high taxation rate, which in turn may cause the GDP to decrease. This theory is intended to guide the revenue authorities in reforms in tax laws and policies especially in changing tax rate of any tax revenue source. Tax should be based on economic power not legal form.

2.2.2 Expediency Theory

This theory asserts that every tax proposal must pass the test of practicability and that, must be the only consideration while choosing a tax proposal. The practicability of a tax system is an essential consideration in every tax reform, it is ridiculous to impose a tax system that cannot be easily practiced.

2.2.3 Benefit Theory:

The theory states that taxes should match services received, people should contribute to government according to the benefits they receive. The justification for the theory is, because governments provide all the things necessary to make market transactions possible by building the state with roads security and infrastructures, it posit that a people's success in the market are equal.

2.3 Empirical Literature

Ekwueme and Chikezie (2016) carried out a study on assessment of impact of tax reforms on the economic growth of Nigeria for the period 1985 to 2011. The Ordinary Least Squares regression was adopted to analyze the data. The study revealed that Petroleum Profit Tax and Company Income Tax has positive significant impact on economic growth.

Onyekwelu and Ugwuanyi (2014) carried out a study on the impact of the 2011 Personal Income Tax Amendment Act on revenue generation in Nigeria. Primary data were employed and analyzed with Chi Square. The study revealed that increase in tax rate affected the tax payers' revenue generation and the retroactive nature of the tax laws constitute a major problem, thus resulting in double taxation during assessment and collection of taxes.

Jelilov, Abdulrahman, and Isik (2016) investigated the effects of tax reforms on Nigeria's economic growth from 1986 to 2012. The study employed secondary data sourced from the relevant secondary data and were analyzed with the Ordinary Least Square regression. Results of the analysis showed that tax reforms are positively and significantly related to economic growth.

Amaefule and Onyekpere (2017) carried out a study on the impact of the 2011 Personal Income Tax reform on the federal government's non-oil revenue generation in Nigeria. The study used Ordinary Least Square (OLS) regression model to analyze PIT revenue data from 2006-2015 and employed Chow-test to test the hypotheses. Results showed that PIT revenue had no significant impact on federally collected non-oil revenue in Nigeria after 2011 PIT reform.

Maiga (2015) carried out a research work on impact of tax collection in achieving revenue targets using a case study of the Directorate General of Taxes of Mali using case study. Changes in tax collection and revenue targets generated by each of the Financial Services at the Directorate was examined. Findings revealed that revenues generated by the Directorate General of Taxes contributed a big chunk of funds to the Malian Treasury, about 40% on the year 2012. After economic modeling and estimation, the research revealed that there is a positive correlation between changes in tax collection and the revenues generated.

2.4 Research Gap:

The dearth or non-existence of empirical research on the scope covered, Personal Income Tax reform and tax revenue performance in three developing countries of Sub-Sahara Africa, Nigeria, Mali and Burkina Faso, is a gap identified in the literature. Previous studies have been conducted in South Africa (Heerden 2013), and Nigeria and Ghana (Barley & Ezeka, 2014)). This research expands the scope to include Nigeria, Mali, and Burkina Faso, addressing the identified gap.

3.0 RESEARCH DESIGN / METHODOLOGY

3.1 Research Design

The design aimed at examining the difference on effect of Personal Income Tax (PIT) reform on tax revenue performance between the post period, 2011 -2022 and the pre period 1999 - 2010 of tax reform in Nigeria, Mali and Burkina Faso. The rationale for this design is because the study compares the difference in effect of revenue generated from Personal Income Tax on tax revenue performance over two periods, the pre and post period so as to determine the effect of Personal Income Tax reforms on Tax-GDP ratio.

3.2 Sources of Data.

The main sources of data for this study was secondary sources obtained from online data publication of FIRS (2024) OECD (2024), UNDP (2023)

3.3 Measurement of the Variables.

Personal Income Tax reform was measured by revenue generated from Personal Income Tax and tax revenue performance was measured with contribution of tax to Gross Domestic Product (Tax-GDP) from the three countries of the study, Nigeria, Mali and Burkina Faso.

3.4 Model Specification

A linear relationship was established between, Personal Income Tax and Tax - GDP ratio of Nigerian, Mali and Burkina Faso in three models. Further, in the period of investigation 1999-2022, the variables were affected by reforms in 2011, hence the 2011 became the year of structural change, the Chow Test was applied to determine relative differences in coefficients of the variables between the pre (1999-2010) and post period (2011-2022) of tax reforms so as to determine the effect of the reforms of the tax variables on Tax-GDP ratio over the period of investigation therefor three models are developed and were thus specified:

$$NTGDP = f(NPIT)$$

$$TGDPT = \beta_0 + \beta_1 NPIT_t + \mu_t \text{ (Pre Period 1999-2010)}$$

$$TGDPT = \beta_0 + \beta_1 NPIT_t + \mu_t \text{ (Post Period 2011-2022)}$$

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$$MTGDP = f(MPIT)$$

$$MGDP_t = \beta_0 + \beta_1 MPIT_t + \mu_t \text{ (Pre Period 1999-2010)}$$

$$MGDP_t = \beta_0 + \beta_1 MPIT_t + \mu_t \text{ (Post Period 2011-2022)}$$

$$BTGDP = f(BPIT)$$

$$BTGDP_t = \beta_0 + \beta_1 BPIT_t + \mu_t \text{ (Pre Period 1999-2010)}$$

$$BTGDP_t = \beta_0 + \beta_1 BPIT_t + \mu_t \text{ (Post Period 2011-2022)}$$

Where:

NTGDP_t = Nigeria Tax GDP Ratio at time

NPIT_t = Nigerian Personal Income Tax at time

MTGDP_t = Mali Tax GDP Ratio at time

MPIT_t = Mali Personal Income Tax at time

BTGDP_t = Burkina Faso Tax GDP Ratio at time

BPIT_t = Burkina Faso Personal Income Tax at time

B₀ = Constant term, β₁ = Coefficient of the explanatory variable

μ_t = Error term

t = Time period (where : t₁ period 1999-2010, t₂ period 2011-2022)

3.5 Methods of Data Analysis

Ordinary Least Square Regression Model: The Ordinary Least Square Regression Model was used to express relationship between the dependent variable Tax-GDP ratio and Personal Income Tax in Nigerian, Mali and Burkina Faso respectively. This was done to evaluate the effect of the independent variables on the dependent variable Tax-GDP ratio.

Chow Test: Chow: The Chow Test Forecast test is often used to test for a single break at a known time period. The test assesses whether the coefficients in a regression model are the same for periods or differed. The Chow Test was applied to determine relative differences in coefficients of the variables between the pre (1999-2010) and post period (2011-2022) of tax reforms so as to determine significance of their relative differences on the dependent variable Tax-GDP ratio. **Decision Rule:** Reject null hypothesis if the probability of the reported F-statistics is less than 0.05.

3.6 Analytical Tool

In data analysis, the analytical tool employed is E-view 10

4.0 EMPIRICAL RESULTS AND DISCUSSION OF FINDINGS

Table 4.1 Tax Reforms Coefficients, NPIT, MPIT and BPIT Presented in Three Models over the Period and Estimated with Ordinary Least Square Regression Model

Dependent Variables of the three models: NTGDP, MTGDP, BTGDP

Regression models	Model 1	Model 2	Model 3
Explanatory Variable	NPIT	MPIT	BPIT
Constant (C)	1.901114	1.054031	1.970784
Coefficient	1.40E-05	0.147511	0.063242
t-Statistic	0.000333	4.509710	2.911393
p-value	0.9997	0.0002	0.0090

Source: Extracted from E-view 13

Model 1 presents the model relationship of Nigerian Personal Income Tax with Tax-GDP ratio over period of investigation using the Ordinary Least square regression presented in table 6.1. Results revealed that over the period the coefficient of Nigerian Personal Income Tax is positive with a value of 1.40E-05 which denotes positive relationship with the Tax to GDP ratio. Mali Personal Income Tax relationship model with the tax-GDP ratio is presented in Model 2. The regression shows that the coefficient of is positive with a value of 0.147511 which revealed that it has positive relationship with the Tax to GDP . Model 3 presents the model relationship of Burkina Faso Personal Income Tax with Tax-GDP ratio over the period of investigation. Analysis revealed that the coefficient maintained a positive value of 0.147511 which denotes a positive relationship with the tax-GDP ratio over the period of investigation.

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4.2 Forecasting the Parameters of the Two Periods in three models with the Break Date 2011, using Chow Test.

Over the period 1999 to 2022, Nigeria, Mali and Burkina Faso tax to GDP experienced structural break in 2011 as a result of reforms in Personal Income Tax. Chow forecast test is therefor used to assess whether the significance of the coefficients in the regression model are same for the two periods (1999-2010 and 2011-2022) with respects to their reported F-statistics, the estimate of the break periods is necessitated for evaluation of the dimension and magnitude of effect of the explanatory variable (PIT) on the dependent variable TGDP ratio of the three countries.

Table 4.2 Chow Test

Chow Test Results of Nigeria, Mali and Burkina Faso Personal Income Tax (PIT) Reform

Intercept	NPIT Model 1	MPIT Model 2	BPIT Model 3
F-statistics	2.141173	2.940116	3.532230
Probability Value	0.1430	0.0669	0.0420
Remark	P value 0.1430 > 0.05 : insignificant	P value 0.0669 > 0.05 : insignificant	P value, 0.0420 ≤ 0.05: significant

Source: Authors Estimation from E-view 10

Analysis of significance of the differences observed on the regression coefficient of the three models over the pre and post periods of Personal Income Tax reforms were carried out with respect to the F-statistics and the probability value from Chow test results of table 4.2. Decision were taken at 5% level of significance. The null hypotheses were rejected if the probability value is less than 5%.

4.2 Evaluation of the Hypotheses.

H₀₁ There is no significant structural break in the relationship between Nigeria Personal Income Tax and Tax-to-GDP ratio (TGDP) over the pre and post period of Personal Income Tax reform

Analysis of results of table 4.2 reveals that the F_Statistics value of Nigerian Personal Income Tax is 2.141173 and probability is 0.1430. Since the P-value is higher than 0.05, findings of the model 1 led to acceptance of the null hypothesis. It was therefore concluded that between the pre and post period of tax reform, Personal Income Tax reforms in Nigeria has not introduced significant structural break in PIT revenue effect on Tax-to-GDP ratio (TGDP). Therefor Nigerian Personal Income Tax reform did not significantly affect its TGDP ratio for the period in view..

H₀₂ There is no significant structural break in the relationship between Mali Personal Income Tax and Tax-to-GDP ratio (TGDP) over the pre and post period of Personal Income Tax reform.

Analysis of results of table 4.2 showed that Mali Personal Income Tax coefficient had an insignificant F-statistics value of 2.940116 over the pre and post periods of tax reforms since it's probability value of 0.0669 is greater than 0.05 at 5% level of significance. Therefor null hypothesis two, was accepted with conclusion Personal Income Tax reforms in Mali has not introduced significant structural break in PIT revenue effect on Tax-to-GDP ratio (TGDP) over the pre and post period of Personal Income Tax reform. Therefore Mali Personal Income Tax Reform did not significantly affect its TGDP ratio for the period in view.

H₀₃ There is no significant structural break in the relationship between Burkina Faso Personal Income Tax and Tax-to-GDP ratio (TGDP) over the pre and post period of Personal Income Tax reform.

Findings from table 4.2 showed that Burkina Faso Personal Income Tax coefficient had an F-statistics value of 3.532230 also the P-value was 0.0420 over the pre and post periods of tax reforms. The results denotes significance since the probability value is lower than 0.05. Findings therefor led to rejection of the stated null hypothesis at 5% level of significance. Therefore there is significant structural break in the relationship between Personal Income Tax and Tax-to-GDP ratio (TGDP) in Burkina Faso over the pre and post period of Personal Income Tax reform. Results therefor led to the conclusion that Burkina Faso Personal Income Tax reform significantly affected the TGDP ratio for the period in view.

4.4 Discussion of Findings

The findings from the above analysis are discussed in context of the three models. The model relationship of the Nigerian (NPIT) and tax to GDP ratio (NTGDP) was represented in table 4.1 using the Ordinary Least Square regression model. Analysis showed that Nigerian Personal Income Tax coefficient had positive coefficient over the tax reform period. However the effect did not significantly affect the TGDP ratio. Findings from the Chow Test results of table 4.2 led to the conclusion that Personal Income Tax reforms in Nigeria has not introduced significant structural break in PIT revenue effect on Tax-to-GDP ratio (TGDP). This

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posit that between the pre and post period of tax reform, NPIT effect on NTGDP did not significantly differ and therefor NPIT revenue did not significantly affect NTGDP after its reform, thus the null hypothesis one was accepted. The findings is in consonance with (Amaefule, Onyekpere & Onyekperem 2017) who empirically found that NPIT revenue has no significant impact on the federally collected non-oil revenue in Nigeria since after the 2011 NPIT reform. The finding also agrees with the finding of (Jones, and Ekwueme 2016). who empirically found that Customs and Excise Duties, Value Added Tax, Personal Income Tax and Education Tax had insignificant effect on Nigerian GDP after reforms. Jegede (2020) Stated that from the latest data provided by the Federal Inland Revenue Service, as of 2018, over 62 per cent of the 120,000 registered businesses do not pay any form of tax at all. Many factors account for very low effect of Personal Income Tax on Nigerian tax-GDP ratio after reforms, these ranged from low tax compliance to low tax revenue base.

The second model presented a model relationship of Mali Personal Income Tax (MPIT) and MTGDP ratio as presented in table 4.1 using the Ordinary Least Square regression model. Analysis showed that Mali Personal Income Tax coefficient was positive which explains that it maintained positive relationship with the Tax to GDP ratio over the period of investigation. However this has not translated into significant revenue performance as measured by the TGDP ratio. Findings from the chow test results of table 4.2 affirm the finding. The Chow Test results showed that between the pre and post period of tax reform Personal Income Tax reforms in Mali has not introduced significant structural break in PIT revenue effect on Tax-to-GDP ratio (TGDP) over the pre and post period of Personal Income Tax reform, results therefor affirms that MPIT effect on NTGDP did not significantly differ over the pre and post period of tax reform, therefor Mali Personal Income Tax Reform has insignificant effect on the TGDP ratio. Over the years, various reforms have been implemented in response to both domestic and global economic challenges. These adaptations have focused on broadening the tax base, simplifying tax procedures, and enhancing efficiency in tax collection (GGLS 2024). Internationally, there are some examples of countries that despite repeated well planned attempts to increase their tax revenues in relation to GDP would seem to have been stuck in a relatively "constant" tax-to-GDP ratio, which shows the inherent difficulties of tax reform especially reforms that are focused on substantially raising tax revenues. Low levels of tax revenue generation remain a problem in many countries around the world (George 2021).

In model three, analysis of Burkina Faso Personal Income Tax (BPIT) reforms and Tax to GDP ratio before and after tax reforms was carried out. The relationship model revealed that Burkina Faso Personal Income Tax coefficient sustained positive coefficient which revealed direct relationship between BPIT and BTGDP ratio. The relationship is significant as revealed from Chow Test result of table 4.2. From the findings of the model 3 it was concluded that BPIT revenue significantly affected BTGDP after its reforms. This therefor led to conclusion that there is significant structural break in the relationship between Personal Income Tax and Tax-to-GDP ratio (TGDP) in Burkina Faso over the pre and post period of Personal Income Tax reform. The findings of the model is in consonance with George (2021) who on his research on recent successful tax reforms around the world found that out of 28 developing countries of the world Burkina Faso reform period 2010 to 2011 is one of the successful tax reforms in Recent Years around the World. As a result of these reforms the tax to GDP ratio increased significantly George (2021).

5.1 Summary

The study was carried out in three countries of Sub Sahara Africa, Mali, Nigeria and Burkina Faso specifically to examine the relationship between Personal Income Tax reforms and TGDP ratio. Chapter one covers background of the study, objective, research questions and statement of the problems. Conceptual framework is carried out in chapter two covering the concepts of Personal Income Tax reforms and contribution of tax to GDP. The theoretical framework covers the theory of Laffer Curve, Expediency theory, and Benefit theory while empirical work related to the content were reviewed in chapter four along with formulation of three hypotheses that guided the research. The methodological approach were discussed in chapter five. In chapter six analysis of data and discussion of findings were carried out. Findings revealed that Nigeria and Mali Personal Income Tax reform has no significant effect on the Tax GDP ratio over the period of investigation while Burkina Faso Personal Income Tax reform has significant effect on the Tax GDP ratio.

5.2 Conclusion

Based on the findings of the present research work, the study concludes that reforms in the Nigerian Personal Income Tax did not significantly affect the Nigerian tax to GDP ratio, hence the Personal Income Tax though directly related to Tax to GDP ratio has insignificant effect and has not translated into significant revenue performance. The Nigerian tax to GDP ratio therefor remain one of the lowest among the peer countries currently at 6% despite the reforms. Reforms in Personal Income tax in Mali has direct relationship with the Tax-GDP ratio over the period but did not significantly affected the tax GDP ratio over the period in view. Burkina Faso Personal Income Tax has direct relationship with the TGDP ratio and also significantly affected the tax to GDP ratio after reforms. The empirical literature posit that tax reforms are very essential tools for achieving revenue target in developing countries.

5.3 Recommendations

Based on the findings, the following recommendations were made.

1. Revenue authorities in Sub Sahara African countries should articulate creative strategies to effect tax compliance in PIT across Nigeria, Mali and Burkina Faso.
2. There should be a developed federal fiscal system that should guarantee full potential of Personal Income Tax Reforms in achieving tax revenue targets in Sub Saharan African.
3. The Government of Mali, Nigeria and Burkina Faso should appraise their existing Personal Income Tax reforms implementation to ensure that the tax reform framework will enhance revenue performance.
4. The tax authorities in the three countries should properly review and evaluate the assessment and collection procedures of Personal Income Tax so as to encourage compliance.

5.4 Contribution to Knowledge

This study provides a comparative analysis of Personal Income Tax reforms in Sub- Sahara Africa, highlighting differences and policy implications. This will enlighten the academic community to constantly update accounting and taxations scholars with current trend in taxation reforms who will in turn educate the masses in tax policies and administrations.

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Appendix

Personal Income Tax Revenue in Nigeria, Mali and Burkina Faso and Tax- GDP ratio before Tax Reforms

YEAR	NPIT (Millions of Naira)	BPIT (in Millions of XOF)	MPIT (Millions of XOF)	Nigeria Tax-GDP ratio	Mali Tax GDP ratio	Burkina Fas Tax GDP ratio
1999				5.0	11.1	10.1
2000			16 061	5.0	11.4	10.2
2001	159300	18812	18219	5.2	10.5	10.3
2002	183100	15 371	22340	5.3	11.3	10.7
2003	193010	17788.25	25933.37	6.6	12.8	11.4
2004	253010	17617.63	27884	7.9	14.9	12.4
2005	221800	27 639	33 283	6.4	14.5	11.7
2006	320010	20531.78	34814	6.3	14.1	12.1
2007	334410	40649	37851	6.2	14.3	12.6
2008	450000	414.56	38975	8.6	13.3	11.9
2009	630100	26787.28	44495	6.4	14.4	12.6
2010	320770.6	56 429	50 375	7.3	14.1	14
2011	381541.4	40930	113332	9.7	14	13.4
2012	470374.6	64207	135246	9.4	14.2	14.9
2013	513021.3	7293.16	135246	8.3	14.5	15.9
2014	520233.4	7407.129	196451	7.8	14.2	14.3
2015	543561.4	75 300	88 233	6.1	15.6	14.6
2016	604758.8	8762.412	199055	5.3	16.9	15.3
2017	711066.6	102 422	111 698	5.7	17.3	16.1
2018	798630.3	125 405	90 875	6.3	13.8	16.8
2019	927297	149 467	125 158	6	18.1	17.1
2020	982158	172 403	133 257	5.5	18.6	16.1

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2021	1246387	178 426	137 752	6.7	19.3	15.6
<u>2022</u>	<u>17172185</u>	<u>207072</u>	<u>147879</u>	<u>6.7</u>	<u>19.8</u>	<u>18.4</u>

OECD tax revenue statistics 2005-2024

Where NPIT = Nigeria Personal Income Tax

BPIT =Burkina Faso Personal Income Tax

MPIT = Mali Personal Income T ax



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