



Taxation and Consumers' Spending Patterns in Nigeria: An Autoregressive Distributed Lag and Error Correction Model Approach

David James¹, Cordelia Onyinyechi Omodero^{1*}, Helen Nwobodo¹, Festus Onosakponome Odhigu², Kingsley Aderemi Adeyemo²

¹Department of Accounting, College of Management and Social Sciences, Covenant University Ota, Ogun State, Nigeria,

²Department of Management Studies, Middle East College, Oman. *Email: onyinyechi.omodero@covenantuniversity.edu.ng

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ABSTRACT

This study evaluates the effects of personal income tax and consumption tax on the spending system of consumers in Nigeria. The autoregressive distributed lag (ARDL) model has been employed for the co-integration test. The research additionally employs the Error Correction Model (ECM) to assess the pace at which any divergence from the long run equilibrium can return to normal in the current period. The findings show that Value added tax has an insignificant impact on purchasing power of consumers in both the short and long intervals. However, personal income tax and exchange rate exert substantial positive effect on consumer spending power in the long run but not in the short run. At the 1% level, the ECT coefficient is shown to be significant and unfavourable. This demonstrates a pretty slow convergence rate, with the model pushing itself towards equilibrium by 37% each year. The consequence is that any disequilibrium caused by shocks from the previous year requires 37% adjustment speed to return to long-run equilibrium in the current year. There have been several studies on how consumption tax affects households' welfare without considering the effects of income tax and ever fluctuating exchange rate alongside these whole scenarios. This study puts all of these issues into consideration and contributes meaningfully to the existing literature that personal income tax is an integral part of the factors that affect households' spending capacity. The study recommends that proper tax policy to enhance consumers' spending capacity.

Keywords: Personal Income Tax, Consumption Tax, Exchange Rate, Purchasing Power, Households

JEL Classifications: H24, H25, H31

1. INTRODUCTION

Tax as we know it has always been a major source of income or revenue for any country's economy. As a matter of fact, Mohammed et al. (2016), asserted in their study that tax is a large source of income to the government. Tax is a compulsory fee levied by the government or its agencies on income, profit, goods and services for the effective running of the nation. It is one of the major streams of revenue for the government in order to carry out its governmental projects. Taxation on the other hand

is the process of levying or collecting taxes from the citizens of a state by the government or its agencies. It is the process by which individuals, groups or communities are made to communicate a portion of their wealth or income to the government for the smooth running of the society (Obafemi et al., 2021). Tax is the fee paid by taxpayers while taxation is the process by which these fees are levied by the government. Tax is a multidimensional tool used by the government for many reasons which include: income generation, wealth redistribution, protection of domestic industries etc.

It is important to note that anytime a party is receiving, another party is giving. Tax which is an income for the government is an expense for the taxpayers. This is because it reduces the income the taxpayers have to spend on consumption. When tax is levied on individuals it affects their income since it is an expense and in return affects their spending. For example, Chile implemented taxes on Sugar Sweetened Beverages in order to reduce sugar intake and on a long run to reduce the level of obesity in the country (Nakamura et al., 2018). When such happens, it increases the prices of the goods which reduces the quantity they can purchase per time. The taxes levied were aimed at controlling the consumption of sweetened beverages by discouraging the purchases through higher taxes thereby changing consumer spending pattern towards those particular products made available in the market.

1.1. Statement of Research Problem

Baker et al. (2021) discovered that with the introduction of sales taxes in American households, the number of shopping trips made by high cost shoppers dropped which means with sales taxation being introduced, visitation to shops show a decline as households would bundle shopping trips in order to reduce visits to the stores in order to reduce the impact taxes have while shopping for items. This then results in more bulk shopping, less store visits and may even result in a fall in demand for goods or services.

Taxes as earlier said are expenses for taxpayers. That is to say that no matter the tax be it PIT, VAT or Property tax, it will always have an adverse effect on the income of tax payers and if income reduces, it changes the spending pattern of individuals. Take VAT for example, when VAT was at 5%, individuals could purchase certain goods in large quantities but since the introduction of the new rate of 7.5% in 2020, some goods became expensive because of this increment, and this has caused a reduction in the quantity of goods purchased by individuals.

So therefore, as much as taxes are a huge source of income to the government and allows for provision of public social amenities, increased taxes result in a reduction in a consumer's spending capability because of a reduction in such individuals' disposable income. This is why in D'Acunto et al. (2018) research, it was established that consumers show an increase in their spending patterns before pre-announced VAT which also results in predictable increase in inflation. This shows that the lower the taxes, the higher the consumer spending patterns and the higher the tax rates, the less consumption is seen in consumers or individuals.

1.2. Research Questions

1. In what way does value added tax affect households' purchasing power?
2. What is the effect of personal income tax on households' purchasing power?

3. To what extent does exchange rate affect households' purchasing power?

1.3. Research Objectives

1. To determine the effect of value added tax on households' purchasing power.
2. To examine the effect of personal income tax on households' purchasing power.
3. To determine the impact of exchange rate on households' purchasing power.

1.4. Research Hypotheses

Hypothesis One

H_{01} : Value Added Tax has no consequence on households' purchasing power.

Hypothesis Two

H_{02} : Personal Income Tax has no influence on households' purchasing power.

Hypothesis Three

H_{03} : Exchange rate does not affect households' purchasing power.

The study was divided into five sections. The first section established the area of study, as well as the study's historical context, issues, goals, speculations, and importance. It also covered the meanings of key terms employed throughout the study. The second section focuses on the review of applicable scientific and theoretical work related to the study, as well as the identification of gaps in the literature. In addition, several concepts related to the subject have been addressed in the section. The third section focused on the research's approach or method, which was used to collect the necessary data for the purpose of the investigation. It also included the research population and sampling, sampling techniques, data sources, and data analysis methods. The fourth section focused on data presentation, analysis, and interpretation based on information gathered from various governmental organizations. Lastly, in the fifth section, there is an overview of what was discovered, an interpretation, and suggestions for improvement.

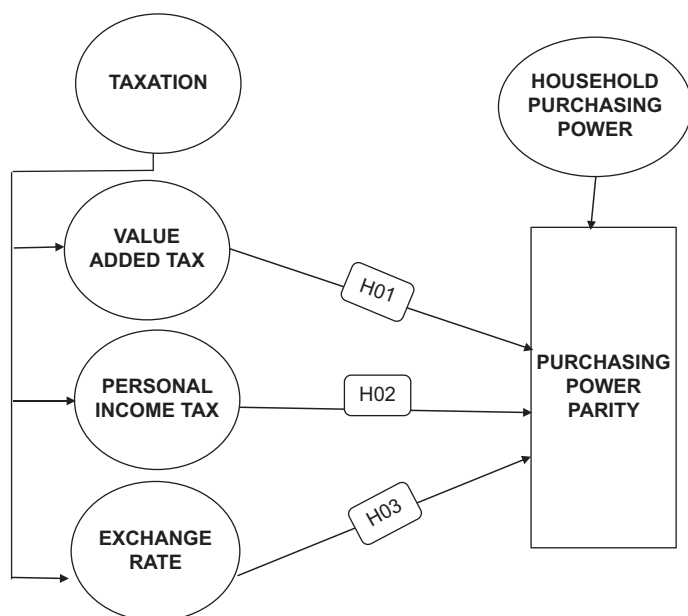
1.5. Contributions to Knowledge

1. The study contribute to the body of knowledge by proving that VAT does not significantly determine household consumption.
2. The research contributed to the effectiveness of PIT in improving consumers' expenditure.
3. The study added value to literature base in this study area.

2. LITERATURE REVIEW

This section presents facts and information from the existing theoretical and empirical literature on the issue that is relevant to the study's objective. The theoretical underpinning of the study, empirical review, and conceptual framework are some of the topics explored in this section.

2.1. Conceptual Framework



2.1.1. Consumer spending

Who is a Consumer?

A consumer is essentially an individual or a collective group of people who buy products or services for their own use. A consumer is also an individual or collection of individuals that are not actively engaged in business or commerce and who plan to purchase or uses goods, services, or other acquisitions primarily for personal, communal, residential, or family needs. In addition, the phrase refers to those who use products and services to meet their own needs, excluding buyers who do so with the intention of reselling or manufacturing, in its most basic definition. A consumer is an individual who makes purchases, consumes government services, and makes use of natural assets such as water and air.

What is Consumer Spending?

A better sign of consumption is expenditure rather than income. Expenditure is used to measure the economic well-being of a household. Major categories of expenditure include housing (which is 32.8% of total annual expenditure), transportation (which is 17.5% of total annual expenditure), food (which is 12.8% of total annual expenditure) and social security ((which is 10.9% of total annual expenditure) (US Bureau Labour Statistics, 2013). Consumer spending also known as consumer expenditure stands for private household spending on goods and services. It is essential to analyze how much money households spend on different types of products and services since doing so gives us a better understanding of the socioeconomic situation of a nation. For instance, a growth in spending in the economy may signal an increase in income or a shift in the demographics of families. Like this, a drop in consumption might indicate a drop in income or, demographically, a population that is aging. Consumption could also be defined as the financial actions done by individuals and families to fulfil their needs by purchasing goods and services with their earnings. According to this definition, "everyone is a consumer because they choose and utilise things and services that are reimbursable with money they

earn, money they save, or money they borrow." According to Slater (1991:121), the study of consumption holds an important place in the social sciences. As a result, scientists from various social sciences, including sociology, psychology, and anthropology, have committed substantial theories and research to the study of consumption. However, Ben (1985:34) believes that consuming is just the process of using different products and services to satisfy the limitless desires of humans. This point of view emphasises the significance of consumption from the standpoint of welfare since the total household expenditure on food, clothes, and durables serves as a way of meeting human needs. Because of this, the home using these commodities is happy and consistently increases the wellbeing of the entire household.

Looking at it from the Keynesian perspective, it is gross income less taxes (Oyeleke et al., 2016). According to Keynes, it is this portion of income that determines a person's and a society's spending habits. He contends that consumption spending is a better indicator of the relative current state of earnings and that it is primarily dependent on the income level of the present era. One's consumption spending is more likely to increase the more money one has in a given period. In other words, at any given time, the wealthy are likely to consume more than the less wealthy. Other perspectives of consumer spending contrast with the Keynesian perspective above as they believe that a function of present income and future expected income is what determines the consumer expenditure for a particular period. The new classical macroeconomics believe that the future economic income is inclusive of interest rates of borrowings (Oyeleke et al., 2016). This view, regardless, shows the importance of tax on consumer spending. Brondolo (2009) also emphasized the necessity of taxation on consumer spending as countries such as Japan, France, Britain, etc., placed a price cut using taxes during recession. This was done to increase consumer demand as it relates to spending and economic growth which often leads to increase in the economic activities from which tax revenue can be raised.

2.1.2. Categories of consumer spending-(durable goods, non-durable goods and services)

2.1.2.1. Durable goods

Durable goods also known as consumer durables are those goods that do not wear off easily. Durable goods do not have to be bought regularly because they have a longer lifespan than non-durable goods. Durable goods can last for a minimum of at least 3 years. Large and small appliances, consumer electronics and furnishings are all examples of durable goods.

According to Black and Cusbert (2010), Spending on durables may be delayed more readily since the services provided by current holdings of durable items typically continue even in the absence of any fresh acquisitions. For instance, a family with declining income could decide against buying a new automobile since they can still utilize their present vehicle.

In contrast to more necessary purchases like food, many durable products may be delayed and are therefore considered discretionary. These two characteristics make consumer spending on durable goods more volatile than consumer spending on non-

durable goods and services, and they also tend to make consumer spending on durable goods more closely tied to the economic cycle.

Another example of deferrable durable spending that is associated with the business cycle as established by Brondolo (2009) is business investment. When there is a slowdown in the construction industry, businesses are likely to postpone any new projects instead of finishing those that are already under way. Businesses are more likely to be able to quickly alter their investment plans in reaction to changes in economic conditions when investing in machinery and equipment (such as cars and computers).

2.1.2.2. Non-durable goods

Non-durable goods are the direct opposite of durable goods. These are commodities that cannot last for a long period of time. They are usually consumed the moment they are bought. All the economic value of a non-durable good is consumed immediately after purchase. Examples of non-durable goods include food products such as vegetables, milk, bread, fruits, etc. products made of paper such as newspapers, magazines, paperboard, etc., are also classified as non-durable goods.

The consumer behaviour or buyer behaviour is influenced by several factors or forces. They are;

1. Internal/psychological factors
2. Social factors
3. Economic factors
4. Personal factors
5. Cultural factors

2.1.2.3. Importance of consumer spending

The amount of household and individual consumer spending on a range of products and services during a specific time period serves as the basis for the economy's ability to produce goods and services. Consumer spending by households is a critical indicator of their confidence in the economy, according to Marchetti and Secondi, (2017). A rise in consumer confidence is anticipated to encourage investment, which will lead to the creation of jobs and an increase in tax revenue for the government. As consumption is viewed by neoclassical economists as the starting point and cornerstone of all economic activity, Johannes et al. (2021) claims that the primary criterion for determining the quantity of productive capacity is the economy's capability to generate the required goods and per-person services. The function of consumption in the economy is discussed in the paragraphs that follow.

2.1.3. Tax and taxation

Many academics have described tax in the past in a variety of ways, but they all imply the same thing. In general, tax is seen as a requirement that must be met by each and every citizen of a community, society, or nation. A tax is, by definition, a mandatory charge imposed by the government or one of its agencies on a person's earnings, assets, purchases, or services. Every member of society has a duty to uphold both civic and patriotic ideals. Taxes are enforced by the government through established laws and are not optional (National Tax Policy, 2012). Additionally, they are mandated payments that taxpayers must provide to the government in order for it to pay for public expenses (Gurama et al., 2015).

Tax is a requirement that all parties pay to the government of the nation from which vital services are provided, but without necessarily explaining how the funds were used or matching the provided services to the funds raised (Ofogbe et al., 2016). It is one of the ways the government raises enough money or makes enough money to pay for its operations and projects. No matter how tiny, all projects need money to operate, and taxes are one way that the government produces enough money to finance all of its many programs.

Despite being frequently used interchangeably, the terms tax and taxing do not always indicate the same thing. Taxation is the method through which people are taxed or imposed by the government or its agencies, whereas tax is the amount that individuals are charged by the government. In order to solve, develop, and manage public issues, societies, communities, or groups of individuals contribute a predetermined amount of money through the process or technique of taxation (Gurama et al., 2015). The government obtains the funds necessary to fulfil its duties through the taxing procedure. Tax is a multifaceted or multifunctional instrument that may be applied to several tasks. To stabilize the nation's resource and revenue distribution between the affluent and the disadvantaged sections of society, taxes are primarily imposed by the government.

2.1.4. Tax and households purchasing power

As was previously said, taxation is a mandatory contribution that the government imposes on people in order to raise money that will be utilised to produce goods and services that will boost the welfare of the population and the economy as a whole (Ajibola and Olowolaju, 2017). To be able to provide the necessary products and services for the economy, the government must be able to generate enough income. Any economy that wants to grow has to raise a lot of money in order to sustain the goods and services it offers to its population as well as to develop. This is why taxes are levied. As a result, one of the most potent tools at the disposal of every government to promote and direct its economic and social growth is the tax system. However, as taxes represent sources of revenue to the government, they in turn represent expenditures for the taxpayers who remit their taxes to the government. So the effect of tax is negative on the income of the taxpayers, and this reduces the purchasing power of their money. It is worthy to note that income is relatively stable even as the government charges more and more taxes. So expenses increase, income remains stable and this reduces the amount of goods they can purchase. It therefore means that tax affects the income of taxpayers negatively which in turn affects the spending pattern of the consumers (since they won't have as much as they used to have to purchase goods and services). Since tax is an expenditure for the taxpayers, it therefore means that tax and consumer income are inversely related. However, to fully understand it, we can look at the effect that various types of taxes have on household purchasing power.

2.1.5. Effect of VAT on household purchasing power

Value-added tax, sometimes known as VAT, is a consumption tax on products and services that is imposed when value is added, starting at the moment of early production and ending at the point where they are sold. The value of the items less any fees for

previously taxed components determines the total amount of VAT that the customer must pay. Adereti et al., (2011) define VAT as a consumption tax that is levied at every stage of the consumption process and is paid for by the final user of the commodity or service. The VAT is a tax on value added, as its name suggests. What further advantages exist? The disparity between a company's sales and its expenditures on supplies from other companies is known as value added. In other words, it describes the value that a company contributes to a product or service by leveraging its own resources available, such as land, labor, cash, and financial acumen (Nasiru et al., 2016).

A Study Group was established in 1991 by the Federal Government of Nigeria to examine the nation's current tax structure. The Group's report served as the foundation for the implementation of VAT in Nigeria. A committee was formed to conduct a feasibility study on the implementation of the proposed VAT. The Federal Government agreed in January 1993 to adopt VAT by the middle of the year, however the actual implementation date was January 1st, 1994. In order to comply with the tax's requirements, registered firms had until the last quarter of 1993 to make adjustments to their accounts, notably the insertion of VAT information into their general ledgers. Value Added Tax is a spending tax that is widely accepted around the world and is relatively easy to manage and difficult to evade (FIRS, 1993). Value Added Tax appears to be a significant source of revenue for the Nigerian government thus far. For instance, according to Business Day research, nearly N4.273 trillion in Value Added Tax (VAT) receipts have increased states' and the federal government's ability to spend over the previous 19 years (The Economist Ng, 2012).

VAT being a consumption tax is also an indirect tax. Indirect taxation is a strategy that is frequently employed to increase tax revenue. It is known as an indirect tax because the end consumer of products and services pays it when they make a purchase or get a service. It is widely based since it applies to everyone in society, regardless of wealth. Indirect taxation is a proportionate tax as the tax's cost is unrelated to income. However, because all taxpayers pay the same amount, indirect taxation can be seen as having the impact of a regressive tax because it places a heavier burden on the poor than the affluent. The burden of tax is transferred to the final consumers rather than the taxpayer who pays the tax. As a result, indirect tax has an impact on general public consumption and living standards. This implies that VAT cuts across all groups of individuals in the society (Ajibola and Olowolaju, 2017). Since VAT is levied on the consumption of goods and services, it therefore implies that it has the ability to affect the consumption of consumers. Consumption in this case refers to the total goods and services that a consumer or household consumes at any given time or point. This refers to the last purchase made by a household's occupants to satisfy their basic needs, such as food, clothing, housing, services, transportation, health care, and recreation (Ajibola and Olowolaju, 2017).

So if VAT increases, it therefore means that it makes it difficult for individuals to purchase goods to meet their everyday needs. This in turn reduces the standard of living. A good example will be the current VAT rate of 7.5% which was previously 5%. This

has already affected certain consumers in certain ways. One of which is the increase in price of goods and services. The impact of this increase in tax is that though it will generate more income for the government, it will increase the cost of goods and services made available to the final consumers. The producers of goods and services will have to increase the prices of their goods and services so as to cater for the VAT expense and also make a profit. This move made by both the government and the producers will inherently be felt and borne by the final consumers as they are the one purchasing the goods and services. When VAT increases, it increases the cost or prices of goods and reduces the purchasing power of the consumers. They have a relatively stable income, but high expenditure due to the increased tax which reduces the quantity of goods they can purchase now compared to what they could purchase previously.

2.1.6. Effect of PIT on household purchasing power

On an individual's earnings, salaries, and other sources of income, a tax known as the Personal Income Tax (PIT) is assessed. State governments often levy this tax. The majority of people do not pay taxes on their whole income because of exemptions, deductions, and credits. The PIT is usually deducted from source by the employer before the employee is being paid his/her salary for the period. The income that is left after tax has been deducted is called disposable income. Just as VAT affects consumers, PIT also affects the consumers as well. Personal income tax decreases the disposable income available to the taxpayers. Unlike VAT that affects the prices of goods and services, PIT affects the income of the employees. Usually, when the tax is being deducted, the remainder is what the employee has left to spend as this may not be enough to cater for the needs of his household. So, the taxpayer doesn't have enough to buy the products or services he needs to survive which have also been affected by the VAT rate which has caused the prices to increase. So, in other words, PIT affects how much a consumer can spend to acquire the goods or services needed at a particular time.

2.1.7. Effect of property tax on household purchasing power

Property taxation is the oldest type of taxes applied to land value and landed property, and it is often based on the value of hereditaments located within the purview of the rating authority. The grounds of property tax liability are the dynamic factors impacting the taxpayer's decisions regarding whether or not to pay property tax (Adeogun et al., 2020). Property taxes are a significant municipal revenue stream that are frequently underutilised to pay for local expenses. Except in poor nations, where the property tax may only provide a maximum of 40% of local government income, Kelly (2003) estimates that property taxes contribute between 40%-80% of local government revenues. Property taxes have grown increasingly essential to all levels of government funding as more and more duties are transferred from the central to other tiers of government. However, just like any other types of tax, property tax still represents an expenditure for the taxpayers. The tax lowers the taxpayer's real income or buying power. It transfers funds from the taxpayer to the government while removing resources from the taxpayer. This is often referred to as the "tax's direct burden".

2.2. Theoretical Review

2.2.1. Ability to Pay Theory

This argument contends that taxes should be assessed in accordance with a person's capacity to pay, according to Anyanfo (1996). Simple maximisation of an explicit value judgement on the distributive impact of taxes is all that is being attempted. This method takes tax responsibility into account in its truest form, which is as a requirement to pay taxes to the government without receiving anything in return. It makes no assumptions about a formal or informal business connection between the government and its people. According to Bhartia (2009), a person must pay taxes simply because they are due, and their respective tax burden should be decided by their relative ability to pay. This concept has been prevalent at least as long as the benefits hypothesis. Socialist thinkers were forced to support this theory since it upholds the ideals of justice and equity. The concept, meanwhile, also received strong support from academics who were not socialists, and it was included into the welfare economics theory. This theory's core tenet is that the tax burden should be allocated among society's members in accordance with their individual financial capacity in order to promote the principles of justice and equality. The primary tenet of this theory is that the tax burden should be allocated among all members of society in a way that takes into account each person's particular capacity to pay in order to respect the principles of justice and equality. Both authors contend that if the government wants to redistribute income, it should base tax policies on the ability-to-pay concept.

2.2.2. Benefits-received theory

This approach operates under the presumption that taxpayers and the government have a basic contractual or trade relationship. Members of society get certain products and services from the government, and proportionately to the advantages gained, contribute to the cost of these goods (Bhartia, 2009). Issues like the fair distribution of wealth and income have no place in this system of exchange. Instead, it is assumed that the benefits gained serve as the foundation for allocating the tax burden in a particular way. According to Anyanfo (1996), taxes should be distributed based on the advantages derived from government spending. This hypothesis ignores the possibility that tax policy may be used to boost or stabilize the nation's economy.

2.2.3. Cost of service theory

The benefits-received hypothesis and this theory are quite similar. It places more emphasis on the state's and residents' somewhat commercial connection. The inference is that citizens have no right to any advantages from the state and, if they do, they are responsible for covering the associated costs. According to this idea, the state is being urged to renounce its traditional duties of protection and welfare. This theory expressly indicates a balanced budget strategy, in contrast to the benefits-received one, because it is to carefully recoup the cost of the services. The state is not to worry about the issues with income distribution throughout this process. No attempt should be made to improve income distribution, and no action should be done if the cost-of-service taxation system continues to worsen it.

2.2.4. Resource based theory

According to Prahalad and Hamel (1994), Jay Barney is mainly responsible for developing the resource-based theory. Barney noted that companies must exploit the resources present in their internal environment in order to attain economic sustainability. Resource-based theory, as defined by Rantakari (2012), is the idea that an entity may strengthen its competitive advantage by identifying its own capabilities and investing in them. As a result, this impacts how well a company will perform. Although researchers have claimed that in order to maintain a competitive edge, an entity must have resources that are exclusive to the entity alone. Grant (1991) clarified, however, that a company's capacity to effectively utilize its resources may also contribute to its competitive advantage.

According to Talaja (2012), these resources must be priceless, uncommon, one-of-a-kind, and non-replaceable. In this regard, the goal of this study is to investigate how the government might increase revenue based on two key players (private households and the public sector) within its control. According to resource-based theory, the government must properly manage taxes to produce a competitive advantage.

2.3. Empirical Framework

Studies on taxation and its impact on household income and spending patterns have been conducted over time by many academics to study the link between them. The purpose of this part is to examine the conclusions reached by various researchers as well as their contributions to the relevant research study.

Hadal and John (2022) investigated how the Value Added Tax affects consumer spending in South East Nigeria. According to the study, value added tax (VAT) decreased consumption, increased savings, and promoted economic development. There is no concrete evidence that consumption taxes really alter spending patterns or encourage savings. Some UAE residents have accepted the higher expenses of VAT without altering their purchasing patterns, but if the VAT rate were to rise, they would probably do so. Lower income families and those with greater than or equal to five members were more adversely affected.

Unegbu and Irefin (2011) evaluated the effects of value added tax (VAT) on the economic and social progress of developing countries between 2001 and 2009. According to the research, VAT allocations to the State throughout the aforementioned years were quite important and account for 91.2% of fluctuations in Adamawa State's expenditure patterns. Although statistics from primary sources indicate little VAT impacts, secondary data testifies to a fairly strong VAT influence on the State's economic and human growth from 2001 to 2009.

Gelardi (2012) examined if consumer behaviour changed in the UK and Canada after the introduction of the respective nations' Value Added Taxes (or Goods and Services Taxes). According to the study, when the new taxes were implemented, there was either no change in behaviour or only a little one. Consumers did modify their behaviour to take advantage of the changes by participating in arbitrage behaviour, nevertheless, when the tax

rates saw significant adjustment. Consumers in the US are expected to behave similarly to those in the UK and Canada.

Jorge et al., (2012) carried out a study to determine how taxation and public spending practices generally may impact how income is distributed. They discovered that company and personal income taxes that are progressive lessen income disparity. In open or globalized economies, corporate income taxes tend to have less of an impact. Additionally, they discovered that taxes on goods and services, excise taxes, and customs fees all negatively affect how income is distributed. On the expenditure side, we discover that greater GDP shares for public spending on social welfare, education, health care, and housing have a favourable effect on income distribution.

Obiakor et al., (2015) to examine how the value-added tax affects Nigeria's consumer price index and consumption spending patterns. The study took into account consumer price index, income from value-added taxes, and household consumption of durable and non-durable products from 1994 to 2014. The data for the study came from the Statistical Bulletin of the Central Bank of Nigeria and the National Abstract of Statistics of the National Bureau of Statistics. The investigation employed multiple regression models using the consumer price index to determine how much money families spent on durable and non-durable goods. The results showed a strong correlation between value added tax, household consumption of durable goods, and one-period delayed consumption of durable goods.

Ajibola and Olowolaju (2017) conducted research to investigate taxes and how it affects family spending. The study found that the value added tax, corporation income tax, and inflation rate all had a favourable impact on consumer spending. Therefore, it is advised that in order to boost family spending, the government should make sure that inflation is controlled and maintained to a minimum. In order to raise money and fund the necessities for the economy needed for manufacturing, the government also needs to establish and maintain a fair and effective taxation structure.

Gowtham and Chitra (2020) investigated the effects of the goods and services tax on consumer purchasing decisions. The study found that the Goods and Services Tax had a significant impact on consumers' shopping decisions. This is due to the fact that it has a significant impact on how various channels of distribution set their prices.

Audu (2020) carried out a study to examine the effect of spending patterns of the private and public sector on the level of tax revenue in Nigeria. The outcome demonstrates a modest link between governmental recurrent spending and tax collection in Nigeria. The amount of tax collection in Nigeria is not significantly impacted by either government or family expenditure.

Shafie et al., (2016) conducted a research work to assess the amount of consumer knowledge of the Goods and Services Tax (GST) and the link between that knowledge and their purchasing habits in Batu Pahat, Johor. The findings indicate that consumers in Batu Pahat have a moderate degree of comprehension of the

GST. Additionally, important findings indicated that changes in consumer purchasing patterns occurred in this study after the adoption of the GST. Additionally, it was shown that there was no connection between the study's participants' customers' purchasing habits and their level of GST comprehension.

Afolayan and Okoli (2015) carried out research to ascertain how VAT has impacted the Nigerian Economic growth. The findings indicated that, despite various issues impeding its effectiveness, there is a positive and insignificant association between VAT Revenue and actual GDP. Salti et al. (2015) observed that raising taxes on every kind of tobacco item by doubling the cost of imported tobacco products will reduce consumption by 7% while boosting the use of locally made cigarette by more than 90%. The young people between the of ages 15-30 tend to be more highly sensitive, with consumption dropping by 9% for imported cigarettes and 100% for local cigarettes. The government income would go up by around 52%.

Paolo and Riccardo (2015) carried out a study to offer an original study of how a tax on home wealth affects consumption. The study discovered that wealthy families are negatively impacted by increasing tax rates on other residential properties, which has a negligible effect on their consumption. Surico and Trezzi (2019) used cross-sectional patterns to conduct a novel examination of the consumption consequences of a tax on home wealth. A tax increase on the primary residence resulted in significant spending reduction among mortgagors, who had minimal liquid wealth despite possessing big illiquid assets. Higher tax rates on other residential properties, on the other hand, impacted rich families, resulting in a slight increase in consumer expenditure.

Nisreen et al., (2017) carried out a study to address the welfare and public finance effects of increasing taxes on tobacco products in Lebanon. According to the study, increasing taxes on all tobacco products to twice the price of cigarettes would reduce import cigarette usage by 7% and domestic cigarette consumption by nearly 90%.

2.4. Gaps in Literature

Numerous studies on tax and its impact on consumer income and spending patterns have been conducted throughout the years. Without a doubt, these studies have contributed numerous discoveries and contributions that have benefitted the Nigerian economy as a whole. However, these studies have just measured mostly the effect that VAT has on household purchasing power. However, other taxes such as PIT and Property tax also influence the income and spending patterns of consumers since they relate to them on an individual basis and this concept hasn't been fully examined by numerous scholars. To this end, this research work seeks to examine the full effect and impact of tax on household income and spending patterns taking into consideration these three metrics.

3. METHODOLOGY

The ex-post facto research design was found adequate for the goals of this research project. This research uses the ex post facto design

to forecast a prospective consequence that has already occurred. This research design according to Feyitimi et al. (2016) choose their subjects based on a pre-existing trait. The primary goal of the study is to examine how taxes affect households' purchasing power in Nigeria utilizing annual data from 1994 to 2021. The following describes the time series econometric model:

$$\ln PPP_t = \beta_0 + \beta_1 \ln VAT_t + \beta_2 \ln PIT_t + \beta_3 \ln EXG_t + \varepsilon_t \quad (1)$$

Where; "ε" is the error term, "t" is the time dimension, which is the data from 1994 to 2021, and "ln" is natural logarithm. The logged consumer price index is abbreviated as lnPPP, the logged value added tax is abbreviated as lnVAT, the logged personal income tax is abbreviated as lnPIT, and the recorded value added tax is abbreviated as lnVAT. To get started, unit root examination must be used to determine the equilibrium features of the series as well as the direction of the method of estimation. It is important to remember that the estimation approach used depends on whether the time series data are stationary at the level or at the first difference. The Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests are two different unit root tests proposed by Dickey and Fuller (1979) and Phillips and Perron (1988). In contrast to the null hypothesis in the ADF and PP unit root tests, the alternative hypothesis states that there are no unit roots.

The sample used in the research period (1994-2021) additionally encompasses a number of shocks, such as the COVID-19 pandemic, VAT reforms in 2004, 2020, and administration transitions in 2005, 2011, and 2015. Because Nigeria is heavily reliant on oil, changes in the price of petrol or oil on the international market may cause price rising changes in the data series. These significant inflationary effects are expected to have a significant impact on Nigeria's macroeconomic situation. This necessitates the use of unit root tests, which is critical.

The co-integration test was performed using the autoregressive distributed lag (ARDL) model proposed by Pesaran et al. (2001). The ARDL model has some advantages over other cointegration strategies that are frequently discussed in the literature. To begin, the ARDL approach does not require a strictly integrated order of variables. Second, the model provides more accurate estimation results, particularly for small sample attributes. Third, the ARDL model is a useful tool because it considers the effects of endogenous independent variables. Using the baseline model in Equation (3) as a starting point, the ARDL model can be stated as follows:

$$\begin{aligned} \Delta \ln PPP_t &= \sigma_0 + \sum_{i=0}^p \alpha_1 \Delta \ln PPP_{t-i} + \sum_{i=0}^p \alpha_2 \Delta \ln VAT_{t-i} \\ &+ \sum_{i=0}^p \alpha_3 \Delta \ln PIT_{t-i} + \sum_{i=0}^p \alpha_4 \Delta \ln EXG_{t-i} + \delta_1 \ln PPP_{t-1} + \delta_2 \ln VAT_{t-1} \\ &+ \delta_3 \ln PIT_{t-1} + \delta_4 \ln EXG_{t-1} + \mu \end{aligned} \quad (3)$$

Where: PPP, VAT, PIT and EXG remain as earlier described. Δ is the difference operator and ε denotes the left over term. Equally, α symbolizes the drift, t-1 denotes the lag lengths, α₁-α₄ are

coefficients to be estimated while ln denotes natural logarithms μ_t and is the error term.

The ordinary least squares (OLS) technique is used as an initial step before the bound test is employed for testing for a long-term balance connection between the parameters. The different assumption that the variables have an extended association is used to test the null assumption that there is no co-integration between them. The null hypothesis, which claims that there is no long-term connection, could be communicated as follows:

$$H_0: \alpha_1 = \alpha_2 = \alpha_3 = \alpha_4 = 0$$

In this case, the alternative hypothesis would be as follows:

$$H_1: \delta_1 \neq \delta_2 \neq \delta_3 \neq \delta_4 \neq 0$$

where, α₁, α₂, α₃, and α₄ remain as defined earlier. Finally, the technique known as ARDL employed AIC to select the most suitable model and the right length for the lag level.

The long run and short run ARDL approaches must be specified because the study's goal is to understand both the short and long run dynamics of VAT influence on purchasing power in Nigeria. As a result, equation 4 indicates the long run of the model:

$$\begin{aligned} \ln PPP_t &= \alpha_0 + \sum_{i=1}^{v_1} \alpha_1 \ln PPP_{t-i} + \sum_{i=0}^{v_2} \alpha_2 \ln VAT_{t-i} \\ &+ \sum_{i=0}^{v_3} \alpha_3 \ln PIT_{t-i} + \sum_{i=0}^{v_4} \alpha_4 \ln EXG_{t-i} + \mu_t \end{aligned} \quad (4)$$

The unrestricted ARDL of the error correction model is estimated as shown in equation 5 to predict the short run parameters of the model when the long run equilibrium exists:

$$\begin{aligned} \Delta \ln PPP_t &= \alpha_0 + \sum_{i=1}^{v_1} \alpha_1 \Delta \ln PPP_{t-i} + \sum_{i=0}^{v_2} \alpha_2 \Delta \ln VAT_{t-i} \\ &+ \sum_{i=0}^{v_3} \alpha_3 \Delta \ln PIT_{t-i} + \sum_{i=0}^{v_4} \alpha_4 \Delta \ln EXG_{t-i} + \theta ECM_{t-1} + \mu \end{aligned} \quad (5)$$

Where θ is the system's rate of adjustment and ECM stands for the stochastic error term. The variables information and measurement are shown in Table 1 below:

4. DATA ANALYSIS AND INTERPRETATION

In this chapter, datasets were analysed and results were presented to allow the testing of hypotheses previously presented in this research. It also revealed the estimation interpretation while meeting the study objectives listed. The descriptive statistics, correlation analysis, unit root test, bound test, lag order selection criteria, long run estimation with ARDL, and short run estimation with ECM are all shown in this section.

Table 1: Measurement of variables

	Variables	Measurements
Dependent	Household Income and Spending Patterns	Purchasing power parity measured in local currency
Independent	<ul style="list-style-type: none"> • Value added tax • Personal income tax 	Billions of local currency
Control Variable	Exchange rate	Bilateral Exchange Rate

4.1. Descriptive Statistics of Datasets

Descriptive metrics in Table 2 are short coefficients of information that lay out a given data set, which may encompass a population as a whole or an isolated portion of an entire population. Determinants of centre of gravity and indicators of fluctuations or spread are two types of statistical descriptions. The average, median, and mode are examples of metrics that assess centre of gravity, whereas deviation from the mean, the variance, the lowest and highest parameters, kurtosis, and skewness are examples of indicators of fluctuations. In this work descriptive statistics is used to test the normality of datasets distribution. The mean values for PPP, VAT, PIT and EXG are 3.880, 9.418, 5.238 and 4.760 respectively. Accordingly, the median values include 4.039, 10.14, 5.906 and 4.889 for PPP, VAT, PIT and EXG. The standard deviation for all the variables shows there is a low dispersion as the mean values are higher than the level of deviation. The Kurtosis values are within the acceptable range of 2 and 3 values. Most importantly, the Jarque-Bera has P-values that are above 0.05 level of significance, thus, all datasets used in this research are confirmed to be normally distributed.

Correlation analysis in Table 2 is a factual strategy used in research to quantify the strength of the direct correlation between two factors and determine their affiliation. It determines the amount of progress made in one variable as a result of a change in the other. A high correlation emphasises a strong relationship between the two factors, whereas a low correlation implies that the factors are only tenuously related. In statistical surveying, experts use this strategy to break down quantitative data gathered through research methods such as reviews and live surveys. They attempt to recognise the correlation, designs, massive associations, and patterns that exist between two variables or datasets. When an increase in one variable causes an increase in the other, there is a positive correlation. Here, VAT has a moderate negative relationship with PPP and PIT while having a weak negative link with EXG. However, PPP positively and strongly associate with PIT and EXG. The correlation between PIT and EXG is also positive and strong.

4.2. Unit Root Testing

The unit root test must be run to ensure that no variable is integrated with an order greater than one. This is due to the fact that the ARDL limits test is based on the variables $I(0)$ and $I(1)$, so estimating variables beyond $I(1)$ will result in an incorrect result. For the unit root test, the study employs the Augmented Dickey-Fuller (ADF) and Philips-Perron (PP) tests.

The unit root tests in Table 3 included an intercept, a trend, and an intercept for both the levels and the first difference of the variables to ensure the reliability of the results. Table 3 shows the results of the ADF and PP unit root tests at level and first difference. It can be observed in Table 3 that PPP is stationary at order zero or level

Table 2: Descriptive statistics and correlation analysis

	PPP	VAT	PIT	EXG
Mean	3.880	9.418	5.238	4.760
Median	4.039	10.14	5.906	4.889
Maximum	5.028	13.24	6.686	5.991
Minimum	2.018	6.177	2.391	3.086
SD	0.836	2.461	1.458	0.883
Skewness	-0.446	0.024	-0.526	-0.920
Kurtosis	2.127	1.379	1.779	2.925
Jarque-Bera	1.819	3.067	3.028	3.959
Probability	0.403	0.216	0.219	0.138
Sum	108.6	263.7	146.7	133.3
Sum Sq. Dev.	18.85	163.5	57.43	21.04
Observations	28	28	28	28
Correlation				
PPP	1.000			
VAT	-0.523	1.000		
PIT	0.974	-0.500	1.000	
EXG	0.909	-0.379	0.878	1.000

while the rest of the other variables are stationary at order 1 or first difference. Thus, because none of the variables are of order two, we can perform the autoregressive distributive lag (ARDL) analysis.

4.3. ARDL Co-integration Bound Testing

The outcome of the ARDL bound testing determines whether a long or short run relationship exists. If the F-statistic is greater than the upper and lower bounds at 5% significance, we reject the null hypothesis of no long run co-integration; otherwise, we fail to reject the null hypothesis.

Table 4 shows the results of the ARDL bound test, which was used to determine the existence of a long-run relationship. As a result, the F-statistic value (41.29) exceeds the critical value of both the lower bound (3.23) and the upper bound (4.35), as determined by Pesaran et al., (2001). As a result, the null hypothesis, which states that there is no long-run relationship between the variables tested, cannot be accepted because one has been confirmed.

4.4. Selection Criteria for Lag Length

Table 4 shows the results of the ARDL bound test's most appropriate lags. Confirming the appropriate lag results in a more reliable output while avoiding serial correlation and an unbiased result. As shown in Table 5, the best lag to use is 4, and this is supported by all criteria.

4.5. ARDL Long Run Estimation

Having established the existence of a long run co-integration among variables, the result of the long run relationship is displayed in Table 6.

The result in Table 6 shows that the standard error of regression, which indicates the level of prediction accuracy, is 0.06, implying

Table 3: Unit root test

Variables	ADF T-statistic	Critical value @ 5%	P-value	PP T-Statistic	Critical value @ 5%	P-value	Order of integration	Remarks
lnPPP	-3.552	-2.992	0.015	-3.229	-2.976	0.029	I (0)	Stationary
lnPIT	-4.694	-2.981	0.001	-4.695	-2.981	0.001	I (1)	“
lnVAT	-5.786	-2.986	0.000	-12.57	-2.981	0.000	I (1)	“
lnEXG	-4.998	-2.981	0.000	-4.997	-2.981	0.000	I (1)	“

Table 4: Bound test result

Critical value	I (0)	I (1)
10%	2.72	3.77
5%	3.23	4.35
2.5%	3.69	4.89
1%	4.29	5.81

F-statistic=41.29; K=3

Table 5: VAR lag order selection criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	13.28	NA	0.027	-0.774	-0.577	-0.722
1	41.98	45.43	0.002	-3.082	-2.836	-3.017
2	42.63	0.975	0.003	-3.053	-2.758	-2.974
3	42.63	0.000	0.004	-2.969	-2.626	-2.878
4	47.29	6.213*	0.002*	-3.274*	-2.882*	-3.170*

*indicates lag order selected by the criterion

that our forecast is 94% accurate in this study. The R2 co-efficient of determination confirms that the predictor variables determine nearly 99% of the changes that can occur in Nigerian households' spending capacity. The fact that the Durbin-Watson is 2 indicates that there is no autocorrelation in this study. We also confirm that the P-value for the F-statistic is 0.000 0.05. This finding indicates that all of the independent variables have a statistically significant impact on household expenditure in Nigeria. Nonetheless, in Table 4, all of the lag length criteria chose lag 4. The result in Table 5, on the other hand, confirms that AIC has the lowest value, implying that the lag length chosen by AIC is superior to other criteria in the case of varying lag length choice. The mean dependent value of 4.1 also demonstrates that the datasets cluster around the mean values, as the standard deviation is 0.66, which is significantly lower than the mean value.

4.6. Test of Null Hypotheses Based on Long Run ARDL Estimation

The study will be using Table 5 to test for long run effects and Table 6 to test for short run effects.

H_{01} : Value Added Tax has no consequence on households' purchasing power

In this study, we began with the assumption that VAT has no significant impact on Nigerian households' spending capacity. The t-statistic is -1.39, with a P-value of 0.17, as shown in Table 5. This finding confirms that VAT has a negligible negative impact on PPP. As a result, we cannot reject H_{01} , which claims that VAT has no significant impact on PPP. This result is consistent with the findings of Paolo and Riccardo (2019), but contradicts the findings of James and Asmaa (2012).

Table 6: Long run estimation using ARDL

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNPPP(-4)	0.447243	0.101317	4.414292	0.0003***
LNVAT(-4)	-0.009224	0.006615	-1.394334	0.1793
LNPIT(-4)	0.138932	0.049258	2.820489	0.0109***
LNEXG(-4)	0.144033	0.037708	3.819711	0.0012***
C	1.181562	0.146888	8.043945	0.0000
R-squared	0.991144	Mean dependent var		4.103478
Adjusted R-squared	0.989279	S.D. dependent var		0.662004
S.E. of regression	0.068544	Akaike info criterion		-2.339635
Sum squared resid	0.089267	Schwarz criterion		-2.094207
Log likelihood	33.07562	Hannan-Quinn criter.		-2.274523
F-statistic	531.6043	Durbin-Watson stat		2.049193
Prob (F-statistic)	0.000000			

Researchers' calculation, 2023

Table 7: Short run estimation and error correction model using ARDL

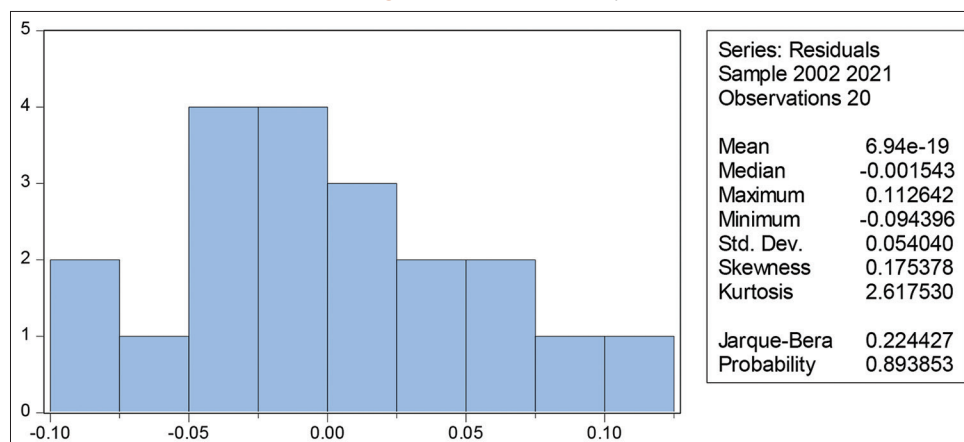
Variable	Coefficient	SE	t-Statistic	Prob.
C	0.083560	0.043318	1.928973	0.0743
D (LNPPP(-4))	0.039196	0.346752	0.113038	0.9116
D (LNVAT(-4))	-0.001855	0.007978	-0.232517	0.8195
D (LNPIT(-4))	0.022492	0.069264	0.324726	0.7502
D (LNEXG(-4))	0.015649	0.053013	0.295187	0.7722
ECM(-4)	-0.374795	0.311819	1.201964	0.0093
R-squared	0.862701	Mean dependent var		0.090213
Adjusted R-squared	0.736334	S.D. dependent var		0.059057
S.E. of regression	0.062954	Akaike info criterion		-2.449489
Sum squared resid	0.055486	Schwarz criterion		-2.150769
Log likelihood	30.49489	Hannan-Quinn criter.		-2.391175
F-statistic	0.544088	Durbin-Watson stat		2.082311
Prob (F-statistic)	0.000237			

Researcher's calculation, 2023

H_{02} : Personal Income Tax has no influence on households' purchasing power

The earlier hypothesis in this investigation is that personal income tax has no significant influence on household expenditure on goods and services. According to the results in Table 4.5, PIT has a significant positive influence on PPP. The outcome indicates that H_{02} is rejected, and the alternative that indicates otherwise is hereby accepted. This result could not be compared to previous studies because no previous study has assessed the level of influence PIT has on PPP.

H_{03} : Exchange rate does not affect households' purchasing power

Figure 3: Test of normality

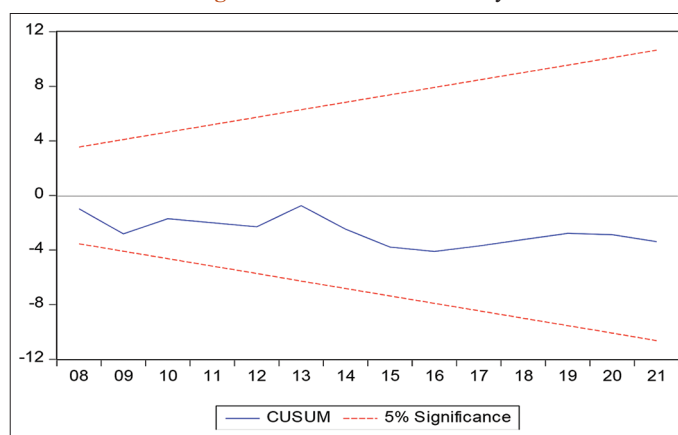
Initially, the study suggested that EXG does not have a significant effect on PPP. We reject H03, because the results in Table 4.5 show that the EXG rate has a significant positive influence on PPP. This variable combination is also difficult to compare due to the scarcity of existing studies that use it.

The ECT coefficient in Table 7 is discovered to be negative and significant at the 1% level. This shows a fairly sluggish convergence rate as the model pushes itself towards equilibrium by 37% on an annual basis. The implication is that, it requires 37% speed of adjustment for any disequilibrium brought on by shocks from the previous year to converge back to the long-run equilibrium in the current year. However, the variables are totally insignificant and do not affect the households' spending pattern in the short run. Although VAT expresses a negative minute influence but do not exhibit significant effect on PPP. Thus, the H01-H03 are hereby rejected in the short run. Durbin-watson shows absence of autocorrelation, AIC is the lowest of all the criteria, standard error of regression confirms accuracy of study prediction. The F-statistics proves that the independent variables jointly affect the PPP while the R2 proves that the variation in PPP can be explained by VAT, PIT and EXG at 86.27% level while the remaining 13.73% is associated with other factors we did not include in this research model.

The model stability is tested using CUSUM in Figure 1 while datasets normality is equally confirmed using Figure 2.

The study revealed that VAT had a negligible negative impact on PPP. This suggests that households' consumption will be restricted due to the incidence of value added tax on products and services. This result is consistent with the findings of Paolo and Riccardo (2019), but contradicts the findings of James and Asmaa (2012).

The result of PIT and EXG show that both significantly and positively influence PPP. There is evidence the PIT is a progressive tax and does not hurt families' choice of spending or their purchasing power. Exchange rate is also household friendly since families can decide to consume locally made goods and services thereby avoiding products with high exchange rate.

Figure 2: Test of model stability

5. CONCLUSION AND RECOMMENDATIONS

The research investigated the effect of VAT and PIT on household spending pattern and discovered that VAT is negatively negligible while PIT is positively impactful on PPP. Thus, the study concludes that the retrogressive nature of VAT affects the spending pattern of families because the cost of goods and services purchased by the rich is the same cost the poor also pay to obtain consumable goods and services. While in the case of PIT, all income earners pay tax according to what they earn. Thus, PIT is progressive and meets the needs of households in Nigeria while also benefiting the government significantly. Exchange rate is also meaningful since the households patronize most local goods and services.

5.1. Recommendations

The following are this study's recommendations:

1. The study recommend improvement to VAT reforms to avoid financial stress on households.
2. The research proposes a household friendly and stable exchange rate by monetary authorities.
3. The research recommends that PIT should be improved through elimination of ghost workers to enable more revenue accruing to the government.

5.2. Suggestion for Further Studies

1. Additional researchers have the opportunity to explore the topic of VAT and PIT on public health services of households.
2. More scholars can investigate the same topic in different economies of Africa.

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