

FISCAL POLICY AND ECONOMIC ACTIVITY IN NIGERIA: Testing the existence of the Ricardian Equivalence

By

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Abstract

The paper examines the validity of the Ricardian Equivalence Theorem (RET) as a result of the continuous rising of fiscal debt in Nigeria. It makes use of data generated from a Nigerian population survey in purposely selected areas in Lagos State, Nigeria. The survey is conducted in the third quarter of 2018, with a randomly selected representation of 3000 Nigerians. The paper asked whether the respondents have altered their consumption attitude as a result of expected changes in fiscal taxes particularly, the value added tax (VAT) and growing fiscal debt that persisted for a decade (2008 – 2018). The paper concludes that in general, the RET does not hold in Nigeria. Conversely, the findings spotted that small proportion of the respondents believed that smaller proportion of their income is consumed in response to fiscal debt accumulation. A robustness test was conducted using multinomial logit regression, and found that individuals' consumption responses are significantly related to their economic situation and time preferences. It therefore recommends that fiscal policy should be more effective so as to stimulate economic activity through consumption and aggregate market activities.

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1.0 Introduction

In macroeconomics, the Ricardian Equivalence theorem has remained one of the theorems to reckon with as it asserts that, the relation between fiscal actions specifically, on taxes, and consumption activities would break down if individuals correctly expect and discount future fiscal receipts as a result of an increase in current taxes (Tavares and Valkanov, 2003). As a result, for a given level of fiscal expenditure, the present value of future taxes decrease by exactly the same level of current fiscal tax increases and individuals' net worth remains unchanged (Tavares and Valkanov, 2003). In Nigeria, the recent economic recession and slow growth experienced afterwards have invigorated research into the effectiveness of fiscal actions and the optimal fiscal policy stimuli. Studies abound in the field of fiscal policy and the real economy (Romer and Romer, 2010; Favero and Giavazzi, 2012; Cloyne, 2013 and Hayo and Uhl, 2014). These researches concentrated on developed economy and studies on developing countries are relatively scanty.

Findings from these studies actually were against the claim of the Ricardian Equivalence³. For instance, Seater (1993) states that though tests of Ricardian equivalence do not quite give an unambiguous verdict on the proposition's validity and concludes that Ricardian equivalence is strongly supported by the data. However, Romer (2006) found that there is little reason to expect Ricardian equivalence to provide a good first approximation in practice. Other related studies have make used of either macroeconomic data or microeconomic observations to test for the validity of the Ricardian Equivalence (Feldstein, 1982; Evans, 1988; Slate et al., 1995; Ricciuti, 2001; Tavares and Valkanov, 2003; and Adji et al., 2009). Studies that have used the macroeconomic data rest their empirical predictions on Vector Autoregression (VAR) models and multivariate regression analysis (Evans 1988; and Becker, 1997), while those with microeconomic data examine the existence of the Ricardian Equivalence through qualitative experiments (Slate et al., 1995; and Adji et al., 2009).

Besides, the two data forms have been strongly criticised in the literature. For example, Cardia (1997) stated that studies that have adopted macroeconometric approaches are subjected to serious identification problem as a result of simultaneity of aggregate income; consumption, fiscal spending and receipts, and fiscal debt. Whereas, qualitative approaches that involve the direct asking of people about their economic reactions was rarely used. The paper adopts the qualitative approach because of promising attribute as an alternative approach to testing the Ricardian Equivalence. With cognizance to the methodological weakness of the qualitative techniques in the literature, the paper designed a specific

³The theory opines that fiscal action especially either on increase in deficit financed public spending or reduction in fiscal taxes, will result to a crowding out of private consumption, and thus a decrease in the effectiveness of fiscal policy to stimulating economic activity.

population survey to address the relevance of the Ricardian Equivalence for peoples' consumption alternatives. Conversely, the approach manages the issue of identification that is common to macroeconometric studies.

The interview was conducted in the last quarter of 2018 with about 3,000 respondents selected in the city side of Lagos State, Nigeria. The respondents are over 30 years of age, to cater for the age effect bias. To accommodate the issue of transversality, because respondents may not understand the drawbacks of transversality on their results from the survey, the study sampled citizens of Nigeria and ensures that responses were garnered over the long-term development of fiscal debt. This approach follows that of Hayo and Neumeier (2016). The survey also allows identifying the link for the causation between fiscal stimuli (spending, receipts and debts) and changes in private consumption. Additionally, the large sample taken has allowed the study to examine the predisposition to behave in a (non) Ricardian manner. The study interviewed respondent with different personal features and this permits the study to evaluate the importance of factors believed to invalidate the Ricardian Equivalence. According to extant studies, these include: economic well-being, time preferences and economic buoyancy.

The Ricardian Equivalence question of whether higher fiscal debt results in the decrease in consumption is crucial to assessing the effectiveness of fiscal policy, and also beneficial to designing macroeconomic models. For example, the tax multiplier for GDP is estimated to be larger than two (2) in absolute terms (see Romer and Romer, 2010; Cloyne, 2013; and Hayo and Uhl, 2014). Some studies believed in the rule of thumb, that is, consumption expenditures are assumed to be independent from the current or future fiscal policy stance (see Mankiw, 2000; and Gali et al., 2007). Based on these arguments, the paper presents an analysis of the effects of fiscal policy actions on the economic activities in Nigeria. This is performed on three main grounds: first, the study considered other microeconomic information apart from consumption expenditures. These micro level data consist of time preference and horizons, economic well-being, and knowledge. Other micro level data that directly affect the income level of individuals were considered. Second, the slow growth that characterized the Nigerian economy after the economic recession could be as a result of the ineffectiveness of fiscal actions. Third, the study for developing African countries was relatively few. This therefore makes this research work to be a foundation for subsequent researches on the subject matter.

The rest of the paper is arranged accordingly. Section two presents the Ricardian Equivalence theory and related empirical researches, while section three describes the methodology and data used for the study. Section four presents and discusses empirical estimations and Section five concludes the study.

2.0 Ricardian Equivalence Theory and Empirical Literature

The basic assumption of the Barro model states that consumer possess finite lives and care about the welfare of their lineage. This provides them with positive inheritance. It also show that consumers receive interest equal to the sum of the principal and taxes levied by the government to which interest is paid (see Barro, 1974). The reduction in fiscal savings is the offset by an increase in private savings, leaving the national savings unchanged. In this regards, fiscal bonds are not net wealth (Barro, 1974). Furthermore, if fiscal spending was endogenously determined, as a result of a tax cut, consumers would expect a reduction in fiscal spending. This occurs because a government that cares about the welfare of its people

trades off marginal increases in spending in public provided goods against marginal reductions in consumption (Bohn, 1992).

Since distortionary taxes increase the cost of publicly provided goods, Ricardian consumers expect a reduction in fiscal spending and do not reduce their consumption (Bohn, 1992). For instance, a family wishing to maximise its utility in the infinite horizon case, the utility function and the budget constraint for the family is represented by the following equation:

$$\left[\begin{array}{l} \int_{t=1}^{\infty} U(C_t) e^{-\theta t} dt \\ c_t + \dot{A}_t + nA_t = w_t + rA_t - \eta_t \end{array} \right] \quad (1)$$

Where C_t is real consumption, w_t is the real wage, A_t and \dot{A}_t are the holding and the variation of financial assets, η_t are fiscal taxes, n is the growth rate of the number of member of the family, r is the real interest rate and θ is the rate of time preference. Integrating the instantaneous budget constraint, the intertemporal budget constraint is:

$$\int_{t=1}^{\infty} C_t R_t dt = a_0 + \int_{t=1}^{\infty} w_t R_t dt - \int_{t=1}^{\infty} \eta_t R_t dt \quad (2)$$

Where a_0 is the initial holding of financial assets and $R_t = e^{-(r-n)t}$ is the discount factor. To understand Ricardian equivalence the study considers two cases: in the first case, there is no fiscal debt and the budget is balanced in each period of time. The second case, allows for fiscal budget deficits. In the case of no fiscal debt and a balanced budget, all financial assets consist of capital and thus, the intertemporal budget constraint is:

$$\int_{t=1}^{\infty} c_t R_t dt = k_0 + \int_{t=1}^{\infty} w_t R_t dt - \int_{t=1}^{\infty} g_t R_t dt \quad (3)$$

In the absence of fiscal debt, the Keynes-Ramsey rule⁴ determines the interest rate that produces the marginal productivity condition (Bohn, 1992). The condition is used to determine the capital per head and output per head. Output in this regards is independent of g . Therefore, increase in fiscal spending will have no effect on capital or output per head, and must be reflected in an equal fall in consumption. Contrarily, in the case of fiscal debt, the government remains solvent. In other words, the government is in the money and the ability to repay the debt is high. The fiscal intertemporal budget equation that represents the fiscal behaviour in this condition is as follows:

⁴The Keynes-Ramsey rule, $\dot{u}_t / u_t = \theta + n - \eta$, produces the optimal allocation of consumption over a specific period of time.

$$b_0 + \int_{t=1}^{\infty} g_t R_t dt = \int_{t=1}^{\infty} \eta_t R_t dt \quad (4)$$

Where: b and g are respectively the fiscal debt and spending. The rule says that extra fiscal spending will always be financed by higher taxes at some point in time: deficits are just deferred taxes. By substituting equation (4) into (2), it gives equation (3). This indicates that, as long as the intertemporal budget constraint and the Keynes-Ramsey rule are the same, therefore, consumption is wholly unaffected by fiscal deficit (Bohn, 1992). This remains the mystery behind the Ricardian Equivalence theory (RET).

Related Empirical Literature

Recent empirical research on test for the validity of the Ricardian Equivalence theory is dated back to the work Hayo and Uhl (2015). In this work, the researchers make use of data from survey to study wage earners' consumption and labour supply responses to a payroll tax reduction. However, their interest is not in testing directly the validity of RET. Studies that have make use of the United States survey data to evaluate individual consumption responses to one-time tax rebates include the work of Johnson et al. (2006), Shapiro and Slemrod (2009), and Parker et al. (2013), respectively. These studies found that people spend most of the additional disposable income generated by the tax rebates in 2001 and 2008. In addition, Shapiro and Slemrod (2009) opined that most people intend to use the money to offset their debt.

Stix (2013) test the validity of the RET using the Austria data. Heinemann and Henninghausen (2012) makes use of the German data set. The two studies provide evidences on the association between factors invalidating the RET. They found that individual support for fiscal consolidation such as credit constraints and the absence of the inheritance mind set favours deficit spending. This approach suffers from an identification problem and it is actually not clear whether attitudes toward public indebtedness are actually linked to individual consumption. The a priori on most variables considered were also not clearly linked in the study.

Allers et al. (1998) as old as it is remains the main survey-based direct test of RET. The study makes use of data from a mail-in newspaper survey in the Netherlands. The questionnaires were sent to subscribers of regional newspapers. The study found that respondents do not engage in Ricardian-style behaviour and that those with lower levels of education, as well as older respondents, are more likely to increase their savings. The results reported were based on descriptive statistics. This study suffers from methodology deficiency, the inability of the study to exploit a number of survey methods makes the findings to lack potential advantages of the survey approach. Our paper improves on their attempt by modifying the research framework in three essential manner. One, the respondents used in our survey are representative and randomly selected, thereby reducing concerns on selection bias. Two, the data garnered consist of additional information about the respondents. These include: information on socio demographic characteristics, economic knowledge, attitude toward fiscal consolidation and time preference. This makes it feasible to test several theories and stated hypotheses.

3.0 Methodology and Data

In the work of Barro (1979), it proposes that individual perspective on taxes and public debt has the main means of financing fiscal spending and borrowings remains a macroeconomic reference. It is of important to note that, in the modern civilization and digital age we lived in, consumers are well informed about fiscal intertemporal budget constraint and, thus, in the event of a fiscal deficit, consumers anticipate that fiscal taxes shall be raised in the future to repay the fiscal debt used to finance the deficit. Consequently, individuals save the additional disposable income generated by the fiscal stimulus and increase savings with the aim of smoothing consumption over time (Romer, 2006). Therefore, any fiscal stimulus created by a deficit-financed tax changes will reduce the share of disposable income that is spent on consumption⁵. However, the validity of RET is sensitive to the assumptions of Barro (1974) and extended in the work of Romer (2006).

In an attempt to test for the validity of RET in Nigeria, the paper emphasized the following question in the survey: There are prompt increase in the fiscal budget deficit and debt between 2015 and 2018. Did this increasing fiscal debt financing result in changes in the way you spend or save? Based on this question, the paper raised the following options:

- A. Yes, I now spend more of my income and save less
- B. Yes, I now spend less of my income and save more
- C. No, I did not change my spending and saving behaviour because of the fiscal action

The selection of option B affirms the existence of RET. However, a larger selection of option A will be a reverse situation of the Ricardian vice. This inquiry was followed by the two questions: first, the respondents were asked whether the increasing in fiscal debt and fiscal responses to finance it could affect their consumption in the future. Second, the respondents were asked whether the consumption can be affected due to tax changes arising from aggressive fiscal debt financing. The existence of RET supports that respondents who believed that the tax changes will lead to future reduction in consumption and pension payments will save the additional disposable income.

The study used a survey method thereby; three thousand (3000) Nigerians were randomly selected for sampling in the main cities of Lagos State. Our respondents are above 30 years of age in order to have high quality of responses for the research. The paper adopted a multinomial logit to estimate the responses obtained from the survey. A major drawback of our research design is that the study is not able to estimate the magnitude of the aggregate effect. In other words, the study is unable to assess by how much savings and consumption have changed in response to the recent rise in fiscal debt (see figure I). Conversely, the study intensively provides individual consumption responses to fiscal debt accumulation to validate the RET on one side. On the other side, the study examined the responses of individual on consumption level as result of changes in fiscal receipts, specifically the taxes. The two sides are sought to wholly address the three research questions raised in the introductory part of this paper. These sides are discussed on the following factors.

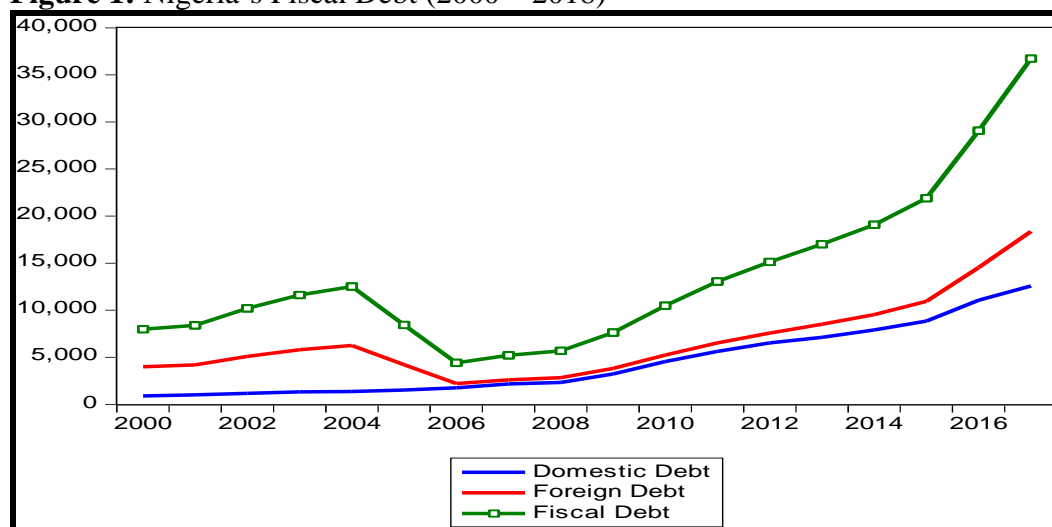
- i. Time Preferences and Horizons: the existence of RET is particularly sensitive to the assumptions made concerning the time preference and horizon of the current

⁵ In this regards, the level of private consumption remains the same and equivalently, private savings increase.

generation of individuals (Heinemann and Henninghausen, 2012). The RET exists, if the current generation that benefits from fiscal spending has to carry the burden of a future debt reduction or cares about the welfare of future generations that believed in inheritance. The study use the respondent’s age as a proxy for remaining life expectancy and include a dummy variable for respondents with children. This is in line with the work of Heinemann and Henninghausen(2012).

- ii. Knowledge of the Economy: Following Barro (1979), the study believed that respondents are able to evaluate the future burden associated with deficit financing and capable of deriving their optimal consumption plan as a result of their intertemporal fiscal budget problem that is been solved. In the field, the study considered respondents that have full knowledge of fiscal debt and related economic issues and measures. Also, the study put the level of intellectual erudition of respondents in action. Although existing studies show that people are rather ignorant about economic measures in general and specifically public debt (see Reiter, 199; Blinder and Krueger, 2004; and Hayo and Neumeier, 2016a), but the study was able to addressed this issue by raising three questions: (i) the size of the Federal government budget deficit between 2015 and 2018; (ii) the current rate of interest charged on government treasury bills between 2015 and 2018 and (iii) the inflation rate in these fiscal years.
- iii. Economic buoyancy: In line with the proposition of Cukierman and Meltzer (1989), individuals differ in their abilities and, consequently, in the level of earned income. In their work, people who are comparatively worse-off would like to borrow resources from future generations in order to increase their current consumption. In this regards, the study assess individual economic well-being with three carefully selected variables – two objective indicators and one subjective indicator – the first two are net monthly expenditure as a proxy for monthly income; and household real wealth, which is proxy by a binary variable that shows whether the respondent lives in a self-owned house or a rented apartment). The subjective indicator is the respondent’s personal economic situation, ranging from 4 (absolute satisfied) to 1 (absolutely dissatisfied).

Figure 1: Nigeria’s Fiscal Debt (2000 – 2018)



Source: Central Bank of Nigeria Statistical Bulletin (2017)

Additional controls included in the estimation were: respondent’s characteristics such as employment status, marital status and attitude towards fiscal consolidation, which was conducted by asking whether the government should reduce fiscal debt, retain its level or increase fiscal debt. The choice of this question is that, the Ricardian consumption status can be identified from the response given by the interviewee on the question. This was not a novelty, studies have established that respondents that oppose public debt reduction are less likely to exhibit a Ricardian Consumption (see Heinemann and Hennunghausen, 2012; and Stix, 2013). The study survey was conducted in Ikeja, Victoria Island and Marina. The choice of these cities is that, these areas accommodate large proportion of the working populace and most headquarters of firms. The survey was conducted in the third quarter of 2018 specifically, July-September, 2018.

4.0 Results and Discussions

This section focuses on the results on consumption responses to changes in fiscal actions – fiscal spending (rise in fiscal debt) and fiscal receipts (changes in taxes). It provides cross-tabulations of the conditional distributions of responses for various subgroups of the sample. This was followed by the result of the bivariate relationships between private consumption responses to fiscal debt accumulation. Lastly, results of bivariate relationships between private consumption and changes in fiscal receipts between 2015 and 2018 were presented and discussed extensively.

4.1 Change in Private Consumption in response to Fiscal Debt Accumulation

Table 1 shows the results of Pearson’s chi-square tests. The test was conducted to present the significance of the association among the respondents’ characteristics. The first row suggests that 19% of the respondents reacted to the increase in fiscal debt. This is in a way consistent with the Ricardian Equivalence theory. 53% of the population sampled behave in a non-Ricardian Equivalence manner. In other words, these people consume a larger part of their income in response to fiscal debt accumulation. 72% of the respondents did not change the private consumption and savings habit due to fiscal debt accumulation. This therefore implies that large percentile of the sampled Nigerians do not engage in the economic adjustment due to fiscal debt accumulation. The results are evidence to buttress the assumption of rule-of-thumb as presented in the work of Gali et al. (2007). More so, our results indicate that the behaviour is even more prevalent among the middle age group (40-60 years old).

Table I: Respondent's Characteristics and Fiscal Debt Accumulation

Details	Consume More	Consume Less	No Change	Obs.	Cramer's V	Chi-SQ
Low Income	13.78	7.83	78.39	872	0.062	7.46
Medium Income	19.05	7.93	73.02	1482		
High Income	16.28	9.89	73.83	646		
Satisfied with situation	18.09	9.32	72.59	1705	0.058	8.34
Dissatisfied with situation	19.15	5.74	75.11	491		
No response	16.72	7.98	75.3	804		
Self owned House/Flat	16.93	8.17	74.9	1989	0.032	2.04
No self owned House/Flat	19.25	7.05	73.7	1011		
No response	NA	NA	NA	NA		

Correct answer	18.66	8.09	73.25	2016	0.045	3.96
No correct answer	19.97	7.89	72.14	984		
Risk averse	18.94	9.04	72.02	1178	0.033	3.26
Risk prone	17.09	9.63	73.28	954		
Risk neutral	19.87	8.03	72.1	868		
Age (30 - 39)	12.59	9.69	77.72	855	0.082	10.15
Age (40 - 44)	18.22	11.57	70.21	1113		
Age (45 - 54)	19.11	9.77	71.12	568		
Age 55+	18.31	9.01	72.68	464		
Family with no children	19.88	8.64	71.48	796	0.058	2.19
Family with children	18.09	9.55	72.36	2204		
Increase fiscal debt	17.98	0	82.02	1826	0.039	2.89
Reduce fiscal debt	19.35	8.21	72.44	1092		
No change in fiscal debt	19.59	9.32	71.09	82		

Note: the conditional distribution of answers is presented in the first three columns of Table 1. The chi-square statistics are all significant at varying levels of significance. Initial data was extracted from responses from the survey conducted in 2018. Stata statistical software was used for the estimations.

Additionally, about one-fifth of the respondents show that they consume a larger share of their income, this is non-Ricardian. The results can be justified on two main thrusts: the first thrust is that, decrease in propensity to save may reflect widespread fear of rising inflation rates, which can be caused by the accumulated fiscal debts. More so, the price-fear as a result of growing inflation rates and high inflation expectations in 2017 and 2018 would make it less essential for households to pay higher fiscal taxes in future to repay fiscal debt. Second, the government's fiscal actions may have shifted peoples' believe about consumption and savings. The allocation of income between savings and consumption may be affected by socially constituted norms and values and the idea that individuals try to strengthen self-esteem through group membership (see Turner et al., 1987; and Akerlof and Kranton, 2010).

Furthermore, table I presents the distribution of responses of interviewee on changes in private consumption as a result of fiscal debt accumulation within various subgroups of the sampled population. The results show that respondents who assess their personal economic situation as good, have a strong future orientation, and are somewhat more likely to behave in a Ricardian manner, that is, they are more inclined to consume a smaller share of their income in reaction to fiscal debt accumulation. This finding could be interpreted as evidence supporting the importance of liquidity constraints and consumption reduction and thus, the adequacy of the savers framework (see Eggertsson and Krugman, 2012; and Bibliie et al. 2013). Nonetheless, the absolute share of interviewees reporting that they increase consumption is also higher than within these subgroups of the sampled. This contradicts the research question on fiscal debt accumulation. In other words, it appears that the educated and forward-looking subgroup of the population sampled, and people within the age bracket of (30-39) are more likely to adjust consumption when the fiscal debts increase.

In the quest to finding out the association between individual attitudes towards fiscal debt accumulation and consumption plan, the results show that there is no significant relationship between these variables and therefore, contradicts the findings of Heinemann and Henninghausen (2012) and Stix (2013) that argued that it is possible to draw conclusions about a Ricardian Equivalence from individual attitudes towards fiscal consolidation. To

accommodate for the potential collinear relationships between our covariates in the cross tabulations, the robustness of the analysis was conducted through multinomial logit regressions. The results are presented in Table II as follows.

Table II: Individual Consumption response to Fiscal Debt Accumulation

Details	Increase Consumption	Reduce Consumption	No change
<i>Economic Literacy</i>			
No Correct answers (reference variable)			
One correct answer	0.019	-0.032	0.013
Two correct answers	0.008	-0.036	0.029
<i>Employment</i>			
Employed (reference variable)			
Unemployed	-0.006	-0.044	0.051
Retired	-0.062	-0.084	0.076
<i>Time Preference/horizon</i>			
Beta	0.077	0.068	-0.097
Age	0.004	-0.0008	-0.0048
Children	0.006	-0.004	-0.009
<i>Economic Situation</i>			
Household Income	0.005	0.017	0.019
Property	0.079	0.011	0.028
Subjective well-being	0.033	0.048	0.033
<i>Other controls</i>			
Married	-0.073	0.018	0.043
Divorced/Widowed	-0.035	-0.029	0.035
Gender (Female)	-0.047	0.014	0.029
Risk attitudes	-0.023	0.018	0.008
Obs.	2998	2998	2998
Pseudo R Squared	0.038	0.032	0.036

Note: Results in Table II are based on multinomial logit maximum likelihood estimation. The marginal effects reported are based on sample averages. The robust standard errors used are based on White (1980) test. All the estimates are rounded up to be significant at 90% confidence levels.

Personal economic situation is found to be significant and positively related to the propensity to consume. Therefore, when controlling for the effect of other factors, the results remain unchanged when compared to the bivariate analysis. The more satisfied the respondents are with his economic situation, the higher the likelihood that he behaves in accordance with Ricardian Equivalence. Put differently, he reduces his consumption in response to fiscal debt accumulation. The result supports the claim of Cukierman and Meltzer's (1989). In other words, the result shows that a 1 point increase in the economic well-being of individual sampled is associated with a 2 percentage point higher likelihood of reducing consumption

expenditure and a 2 percentage point lower likelihood of not adjusting consumption expenditure.

Employment status has a strong effect on consumption plan. People on a paid job are likely to reduce consumption following the increase in fiscal debts. However, unemployed and retired people are significantly less likely to do so. This is because the unemployed and retired groups are credit constraints and less likely to be affected by a future tax increase as they do not pay income tax. The average marginal effects are -5 percentage points and -7 percentage points. The interaction effects between explanatory variables show that, the marginal effects of respondents' subjective economic well-being is systematically related to the economic literacy. For instance, if people are better informed about the economic situation then, they tend to behave in accordance with the Ricardian Equivalence motive. The marginal effect of our result shows that a 1 point increase in the subjective economic well-being is associated with a 2 percentage point higher likelihood of reducing consumption when respondents are poorly informed about economic indicators.

More so, people who are particularly knowledge oriented may not care much about a future tax increase and thus will not react in accordance with the Ricardian Equivalence. Our result shows that subjective economic well-being varies with time preferences. The larger the marginal effect, the more likely it is that person assessing their economic situation as good behave in line with the Ricardian Equivalence.

4.2 Consumption response to changes in Fiscal Tax

The Ricardian Equivalence Theory stipulates that a person's consumption plan depends on the present and future fiscal policy stance, neglecting the role played by an individual's expectations about the future consequences of rise in public debt may lead to an inaccurate picture (Cukierman and Meltzer, 1989; and Bohn, 1992). The paper examined consumption response to changes in fiscal tax. To address this concern, our survey contains three additional items, allowing us to evaluate individual consumption and savings responses to specific tax reduction. At the beginning of 2015, the issue of raising the value added tax (VAT) on some commodities was presented by the Central Bank of Nigeria (CBN) to increase fiscal receipts, thereby increasing the overall tax burden. In the survey, respondents were asked whether they use the additional disposable income to increase (i) consumption or (ii) savings/repay debt. Then, the survey asked two questions designed to elicit interviewees' expectations about the future consequence of the fiscal tax changes. First, respondents were asked whether they believe that the introduction of VAT in the near term will lead to a higher consumption rate in the future. Second, the interviewees were asked whether they think that the VAT rate increase implies lower future consumption expenditure payments.

Based on the answers to these questions, we sort the interviewees into three groups. The 'Ricardians' are those who expect that either the future VAT rate will rise or consumption expenditure payments will decrease and, at the same time, state that they use the additional disposable income to increase savings/repay debt. The 'Non-Ricardians' are those who report that they use the additional income for consumption despite the expectation that future VAT rate will rise and/or consumption expenditure payments will decrease. The 'unclear' are those who do not expect future VAT rate to rise and/or consumption expenditure payments to decrease.

Ricardians make up 36% of the respondents; however, the large of non-Ricardians is also larger in this context 46%. Thus, relatively more persons behave in a way completely inconsistent with RET. Next, the paper investigates whether the individual-level variables and their effects on the three groups of respondents differ across the two samples. The paper estimate a multinomial logit regression using a variable indicating which group a respondent is assigned to as to as the dependent variable and the same controls as before. The results are presented in Table III.

Table III: Individual Consumption response to changes in Fiscal Tax			
Details	Non-Ricardian	Ricardian	No Response
<i>Economic Literacy</i>			
No Correct answers (reference variable)			
One correct answer	0,039	-0.079	0.048
Two correct answers	0.053	-0.037	-0.007
<i>Employment</i>			
Employed (reference variable)			
Unemployed	-0.013	-0.009	0.001
Retired	-0.039	-0.004	0.023
<i>Time Preference/horizon</i>			
Beta	-0.103	0.107	0.041
Age	0.003	0.009	-0.008
Children	-0.078	0.079	0.027
<i>Economic Situation</i>			
Household Income	0.053	-0.075	-0.004
Property	-0.084	0.044	0.028
Subjective well-being	-0.044	0.065	-0.009
<i>Other controls</i>			
Married	0.065	-0.079	0.038
Divorced/Widowed	0.024	-0.0012	-0.035
Gender (Female)	0.087	-0.042	-0.083
Risk attitudes	-0.052	-0.006	0.073
Obs.	3000	3000	3000
Pseudo R Squared	0.022	0.024	0.021

Note: Results in Table III are based on multinomial logit maximum likelihood estimation. The marginal effects reported are based on sample averages. The robust standard errors used are based on White (1980) test. All the estimates are rounded up to be significant at 90% confidence levels.

In general, the estimates shown in Table III are qualitatively similar to those presented in Table 2. In most cases, the signs of the coefficients are unchanged, but standard errors and, correspondingly, p-values are larger, reflecting the smaller sample size. In line with the findings in Table I, subjective well-being and time preferences are positively related to the propensity of behaving in a Ricardian manner, while economic literacy decreases the likelihood of behaving in accordance with RET. To check whether there are significant differences across the coefficients in Tables II and III, the estimates show seemingly

unrelated regression system and test whether the estimates are equal across the equations. The results indicate that there is no statistically significant difference between the coefficients estimated for the two samples. Thus, RET fares somewhat better in this subgroup of the population, especially when assuming that this group has a relatively stronger influence on consumption decisions than others in a household. Even in this specific group, two-thirds of respondents do not behave in line with RET.

5.0 Conclusion

The paper tests for the existence of the Ricardian Equivalence Theorem using a survey-based approach, which we believe has a number of advantages compared to macroeconometric or experimental laboratory studies. Employing data from a specifically designed, representative Nigerian population survey carried out in 2018, the paper investigates whether interviewees have altered their consumption and saving behaviour in response to the recent notable increase in fiscal debt and proposed increment in the VAT rate. The dataset consists of about 3,000 observations and contains a great deal of information about the respondents, which allows us to evaluate the importance of a number of factors believed to invalidate RET, thereby putting theoretically informed hypotheses to an empirical test. The research design improves upon the existing survey literature on RET, as it avoids serious problems of identification, as encountered by Heinemann and Henninghausen (2012) and Stix (2013), as well as selection biases, possibly affecting the study by Allers et al., (1998).

Regarding the implications for macroeconomic theory, the findings of the paper supports the assumption of the rule of thumb or impatient consumers (Bilbee et al., 2013; Gali et al., 2007; and Mankiw, 2000). However, our results suggest that non-Ricardian behaviour is even more prevalent than is usually assumed in macroeconomic models and that it reflects the norm rather than the exception, at least in our dataset. Rejecting RET can be rationalised by a violation of one or more of the underlying assumptions, some of which are quite demanding. In contrast, we find it puzzling that, depending on sample and definition, about 20-45% of the respondents engage in non-Ricardian behaviour. This paper discusses three explanations for this finding at the aggregate level: (i) widespread fear of inflation, (ii) liquidity constraints, and (iii) alternative behavioural assumptions. Our conclusion is that fear of inflation is not a likely explanation. Liquidity constraints are certainly possible, but it is not entirely plausible that such a large percentage of the population is liquidity constrained.

At the individual level, we find that people who assess their personal economic situation as good, are more forward-looking, and are more likely to react to fiscal debt incurrence, but not in a systematic way, as both the share of respondents who have reduced consumption as well as the share of those who consume more is still larger within these groups. Arguably, the estimation results for the personal economic situation indicator suggest a rejection of Cukierman and Meltzer's (1989) hypothesis. Moreover, other hypotheses put forward in the literature, related to time preference and time horizon, knowledge set, and other controls, do not receive direct empirical support either. Finally, the paper finds no significant differences

with respect to the individual-level influences of fiscal debts accumulation and fiscal receipts specifically, increasing the VAT rate on their consumption patterns.

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