THE IMPACT OF DEBT-SERVICING BURDEN ON HOUSEHOLD EXPENDITURE IN NIGERIA: A CASE OF EKITI STATE SENATORIAL DISTRICTS

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ABSTRACT

This study employs binary logistic regression technique to explore the impact of household debt-servicing burden on expenditure patterns in South-West geo-political region of Nigeria, using Ekiti State as a case study. Questionnaires were randomly distributed to 2500 households, and the results unveil that households with high income, large family-size and heads within the age group (40 and above) were more susceptible to debt-burden. In addition, the paper highlighted that indebtedness compromises the quality of nutrition and health status of household members. Based on the above findings, we conclude that high indebtedness and debt burden trajectories cause deleterious effects on household consumption patterns and overall economic well-being. Thus, household heads should inculcate fiscal discipline which promotes saving culture and averts future shocks that could emanate from precautionary demands. Second, debt providers should regulate loans in cognizance to household repayment capacity and other stipulated policies which break the vicious cycle arising from over-indebtedness, install stability and spur economic development.

1. INTRODUCTION

Household debt is a significant part of the monetary framework. This is on the grounds that it has the possibilities to smoothen consumption, promote investment and various aspects of the informal venture as put by Sommarat, Atchana, Krislert & Bhumjai (2020). Clearly, over the most recent couple of decades, the worldwide economy has been confronted with two interrelated yet comparable challenges as per (Lombardi, Mohanty & Shim, 2017). To start with, it is the sizeable ascent in household debt following the subprime emergency of 2007-2008 and the resultant consistent decrease in the price of unrefined petroleum as noted by Scott & Pressman (2019). These have set off an influx of financial downturn from the US through the developed economies of North America, Europe, and Japan towards the developing economies of Asia and the Middle-East down to the developing nations of Africa. Second is the outstanding fall in the private consumptions, regardless of radical decrease in the worldwide interest rate, henceforth, making global development stay frail and economic recuperation extremely illusive. The aforementioned may have emanated as a result of the adverse effect of the demand side of debt mainly accounted for by the burden of debt-servicing.

Following the standard macroeconomic models, it is doubtful that household debt assumes a restricted role, since it can smoothen household consumption pattern; despite the fact that it is not a key determinant of consumption. The above notwithstanding, household debt and inability to adequately service their debts are the major determinants of the most recent financial crisis and resultant economic recessions. Drawing from the aforementioned, the previous decades have seen at least three varieties of evidence on the connection between household debt-servicing burden and consumption designs.

An abridgment of literature including Schularick & Taylor (2012) and Jorda et al. (2013, 2015 and 2016) contends that rising debt levels are not just significant pointers of looming future financial crisis; though, it is the key in estimating the level of crisis. Further, Drehmann and Juselius (2014) offered help to the perspectives above by surmising that household debt-servicing costs to a huge degree predict the future defenselessness of economies to banking stress and recession. Despite the fact that the basic neoclassical models recommended that debt accumulation is trailed by desires to upshoot future output growth by means of aggregate demand; notwithstanding, Main et al. (2015) invalidate it since their analysis uncovers that consumption declines with an expansion in household debt-to-GDP ratio.

In addition, literature evidence from the micro-level analysis with a focus on household behavior during an economic melt-down (Main & Sufi, 2010; Dynan, 2012; Mian et al. 2013), clearly reveals that debt-servicing patterns suppress consumption. More so, by modeling debt-limit, some factors may cause the consumption patterns of debtors and creditors to diverge (King, 1994; Guerrieri & Lorenzoni, 2011, Curdia & Woodford, 2010, Hall 2011, Eggertsson & Krugman, 2012). These factors might include uninsurable income risks and losses incurred by financial intermediaries.

Recently, authors such as Ceccheti & Kharroubi (2005) and Borio et al. (2016) pinpointed the need to look beyond the demand-side effects of debts while considering the economic implications of financial booms and busts. Thus, the supply-side effects of household debt-servicing cannot be overemphasized. This is because the dwindling repayment patterns and defaults in debt repayment are some of the factors affecting the supply-side. Other discourse ignored in literature is the varying fragility across countries as well as diversities among households, which aid understanding of the existing heterogeneity of households and the degree of complications on debt-servicing of consumption patterns (Krislert & Bhumjai, 2020). In this current study, modeling of the heterogeneous nature of households in three senatorial districts of Ekiti State is unique because data are obtained from both the urban and rural municipalities. More important, the study employed both descriptive analysis and binary logistic regression technique.

Also, the study seeks to examine the applicability of the life-cycle hypothesis among households within the study area (Schularick & Shim, 2017). Notably, household debt and debt-servicing trigger inequality (Giruad & Grasseli, 2019; Kakar, Daniels & Petrovska, 2019), and as such it becomes harmful if debt overhangs. Thus, there is the need for ameliorative measures. Furthermore, the identification of some key demographic characteristics of borrowers such as sex, gender, age, religion, ethnicity, educational attainment and family size are very germane (Berger & Houle, 2019). Other key factors include their occupation, income and residential location.

The rest of the paper proceeds as follows. Section 2 dissects related literature on household debt-servicing and consumption patterns, section 3 presents the methodology, theoretical framework of the model and model specification. Section 4 depicts discussions on data as well as descriptive statistics. Section 5 presents empirical results and discussions of finding. The paper provides the conclusion and policy-formulations in section 6.

2. LITERATURE REVIEW

A detailed review of contemporary literature x-rayed that only a few studies have examined the different aspects of household debt, household debt-servicing and their impact on household consumption (Chucherd, 2006; Dynan, 2012; Sommarat et al., 2020; Nakajima, 2020), government expenditures, inequality (Giraud & Grasselli, 2019; Kakar, Daniels & Petrovska, 2019), effectiveness of monetary policy instruments (Alpanda & Zubairy, 2018), growth (Checherita & Rother, 2010; Lombardi, Mohanty & Shim, 2017) and other economic outcomes (Maite & Santiago, 2015; Lombardi, Mohanty & Shim, 2017; Velez, Cominole & Bentz, 2018).

According to Scott & Pressman (2019), Hyman Minsky pinpointed the harms of financial instability even before the US households fell into high levels of debt. Their paper stressed that the Financial Instability Hypothesis (FIH) adopted debt among businesses (supply-side effects) to explain why capitalist economies experience periods of boom and bust. Particularly, the FIH noted that at the beginning of business cycles, firms increase their levels of debt, which they pay back easily because they are conservative in nature. However, as firms expand, they increase their debt to a point that they are able to pay back the interest. For firms which are risk lovers, they continue borrowing until they are not able to pay back both the principal and interest. This constitutes the pathway to financial instability in most economies, as the loan trickling down to the consumption (demand-side effects) is inevitable. Consequently, household debts among economies of the world are at record high today, thereby prompting the need to understand how financially unstable households are and what this means for consumption and other economic outcomes within the micro and macro-economy.

Few wonder why an earlier study by Chucherd (2006) looked into the effects of household debt and wealth accumulation on consumption pattern in Thailand focusing on economic recession and recovery periods beyond the 1997 Asian financial crisis. Using the life cycle and permanent income hypothesis, the results reveal that household debt and expenditure patterns are positively related. In addition, the study also noted a positive effect between debt and wealth via the consumption of durable goods and services respectively. Drawing from the above, the author concluded that household debt is beneficial since it smoothens consumption and facilitates asset accumulation. The paper recommends that it is important to expand the consumer credit market as well as enlighten borrowers on the need to maintain a debt-threshold which they can easily service.

As a follow up to the above mentioned, a macro study by Checherita & Rother (2010) utilized the pooled panel technique to examine the average effects of

government debt on output growth in 12 European Union (EU) countries from 1970 to an extension of 40 years. The results depict that debt and growth have a non-linear relationship, and government debt-to-GDP ratio retards growth in the long-run as debt approaches threshold of 70-80% of GDP. They further noted changes particularly in public debt ratio and budget deficit-to-GDP ratio exert linear, as well as negative effects on output growth.

In contrast, Dynan (2012) attempted to divulge whether household debt overhang is deleterious to consumption expenditure through the utilization of micro-level data between 2007 and 2009. Relying on panel study income dynamics (PSID) technique, the study revealed that more leveraged mortgage owners experienced substantial decline in spending compared to low leveraged homeowners. This finding supports the wealth effects alone; hence, the study concluded that it might take up to a decade for households to reduce the leverage effects to pre-crisis levels. Looking at the above from a different perspective, study by Maite & Santiago (2015) employed the random effects method to analyse the relationship between debt and health outcomes using longitudinal data sourced from the Spanish Survey of Household Finances (EFF). First, the study constructed debt-to-income ratios and debt arrear indexes to proxy debt strain; and also, differentiated between mortgage and non-mortgage debts. The results reveal that debt arrears and non-mortgage debt repayment adversely affect health of household members. Ceteris paribus, being less indebted results in improved health.

Lombardi, Mohanty & Shim (2017) examined the macroeconomic effects of household debt using the cross-sectional autoregressive distributed lag (CS-ARDL) technique. Here, the study tried to distinguish between the short-run and long-run effects using data from 54 countries from 1990 through 2015. The results reveal that household debt boosts consumption and growth in the short-run, but retard household expenditures and output growth in the long-run when household debt-to-GDP ratio exceeds 60% and 80% thresholds respectively. Subsequently, the study concludes that, the degree of legal protection accorded on creditors' accounts exhibits a significant long run impact on cross-country variations.

More recently, different studies have investigated the impact of household debt-servicing on consumption expenditure in developed and emerging economies. For instance, a study by Alpanda & Zubairy (2018) buttressed on the trajectory through which household debt-servicing influences monetary policy within the US economy. Adopting Ramey & Zubairy (2018) framework as well as the local projection method by Jorda (2005), the results reveal that monetary policy

instruments are less efficient when household debts are high. Interestingly, their study confirmed the above, by utilizing the partial equilibrium model via the effects of monetary policy on consumption, GDP and other macroeconomic parameters which appeared to be weak during periods of high household debts. In essence, pinpointing that monetary policy effectiveness tends to be weakened through the home equity loan pathway.

In a similar but slightly different dimension, study by Giraud & Grasselli (2019) examined the interrelationship between household debt, inequality and growth using a monetary stock-flow consistent framework. First, the paper divided households into consumers and investors; and utilized the Goodwin-Keen model to show that household consumption plays a key role towards explaining economic dynamics. Following the above classifications, the main result confirms that the level of inequality between these two groups is widened when the system approaches equilibrium with unbounded debt ratios, thereby concluding that the main determinant of this increasing gap is wealth transfer from workers to investor, resulting from interest payment to the latter. In converse to the foregoing, study by Velez, Cominole & Bentz (2018) investigated the relationship between undergraduate and graduates' post-college outcomes (employment, further education, family formation home ownership and net worth). Applying descriptive analysis on samples selected from 2007-2008 bachelor degree graduates, the paper finds that undergraduate debt greatly influenced borrowers' earnings, decisions to marry and procreate, job choice and net worth among others.

In a similar and related study, Kim & Chatterjee (2019) examined the effects of student loan on health outcomes and life satisfaction among the US households using 2011, 2013 and 2015 waves of the Panel Study of Income Dynamics (PSID). The result finds that student loan has a deteriorating effect on their health outcome and lessened life satisfaction even among Hispanic households. Thus, the paper recommended that higher education costs should be reduced in order to lessen debt burdens and improve health status and life satisfaction among US households.

Focusing particularly on the post-recession period, Kakar, Daniels & Petrovska (2019) examined the impacts of student loan on household wealth using 2013 and 2016 data obtained from the US Survey of Consumer Finances. The results show that on average, households without outstanding student debt possess wealth four times greater than households with outstanding student loan. In addition, households with outstanding student loan within the 15th, 30th, 50th, 70th and 85th percentile of wealth distribution experience wealth loss of 80%, 49%, 37%, 35% and 36% respectively. The paper concluded that student loans explained up

to 3% and 7% of the wealth gap between Black and White households across the wealth distribution channels.

Lee, Lee & Kim (2019) employed the logistic regression on 2016 Survey of Consumer Finances (SCF) to ascertain whether holding different varieties of loans triggered debt delinquency among millennial and non-millennial households with the US. The findings show that the effects of auto loan and other installment loans on debt delinquency were negative and positive respectively for both groups. More so, housing loans among millennials were less likely to cause debt delinquency on repayment. The paper recommends debt management enlightenment; in addition, the government should provide assistance for households with severe debt burden. Similarly, study by Liu, Zhong, Zhang & Li (2019), using ordered logit model on China's household Finance Survey data, investigated the effects of household debt on happiness. Amazingly, the results unveil that families which are risk-averse experience lower happiness when in debt. Equally, the effects of different types of loans are heterogeneous and housing and education debts exert the highest degree of negative effect on happiness.

Nakajima (2020) applied the panel regression analysis on data obtained from the Japanese Preference Parameter Study to examine the impact of household debt heterogeneity on consumption. The results arising from the analysis confirm that highly-indebted households have higher household income elasticity of consumption compared to households with-little-to-no debt. The paper recommends the need to embrace savings for precautionary motives in order to evade future unemployment or longevity risks.

To compliment the above, study by Sommarat et al. (2020) exploited data from the Thailand Credit Bureau to verify the life-cycle hypothesis between 2008 and 2017. The paper decomposed debt per capita and delinquency rate into a single index using the descriptive analysis; and revealed that household indebtedness followed the inverted-U life-cycle pattern as projected by economic theories. Notably, age plays a vital role, since younger heads of household embrace debt earlier compared to the older age groups. Thus, the older remain indebted years after their retirement, and as such follows a declining trend of delinquency over their life cycle. They concluded that financial assess should be regulated in order to reduce distress, improve stability and economic development.

Deductions from this succinct review of contemporary literature include: i) there is dearth of literature on the topic within the African context and Nigeria in particular ii) most authors focused on survey and secondary data which cover the cross-sectional and panel data analyses. Very few concentrated on countries, municipal or district levels, which involves the use of questionnaire instruments to

collect data that are highly representative of the characteristics of the population. iii) Also, only a few combined both descriptive analysis and logistic regression techniques to achieve its objectives, which makes their results and policy-formulation robust. iv) lastly, no study to best of our knowledge is able to draw logical comparative analysis between the urban and rural households on debt-servicing, consumption pattern and household welfare, hence, providing broader view and arguments on the discourse.

3. METHODOLOGY

3.1. Study locations, sample and data

As of 2020, Nigeria has a population of 208 785 240 million people according to the United Nations Department of Economic and Special Affairs Population Division; UNDESAPD (2020). Nigeria lies between 4^0 16' and 13^0 53' and between 2^0 40^1 and 14^0 41^1 East. The country is in the West African sub-region and shares borders with Niger in the North, Chad in the Northeast, Cameroon in the East, and Benin Republic in the West according to NDHS (2003). It is an ethnically and religiously complex country with over 250 ethnic groups. Majority of the population belong to the Hausa-Fulani, Yoruba and Ibo ethnic groups. Around 50% of the population are Muslims, 40% are Christian and 10% hold indigenous beliefs. The official language is English, but over 348 other languages are spoken. Nigeria is divided into six geo-political zones which comprise South-South, North-West, South-East, North Central, North-East and South-west respectively. As a matter of fact, the South-West comprises of six states: Lagos, Osun, Oyo, Ondo, Ogun and Ekiti State which is the focal point of this study due to its level of resources, population and occupation dynamics. This is with the aim of ascertaining the implication of household indebtedness amidst the recent economic conditions that are currently befalling the country and the impact of the ravaging global pandemic that is bedeviling the economy of the whole world. The state consists of three (3) senatorial districts. Majority of the people living in Ekiti state are Yoruba; spread across the Christians, Muslims and traditionalists divides. Also, the major occupation of the people is farming, agri-business and civil service. To ensure a reliable statistical inferences and generalizations to be made from the population, the study deemed it necessary to be cautious in terms of obtaining a sample that would be representative and sufficiently large as put by Maleske (1995). To actualize the above, a confirmatory factor analysis (CFA) was deployed to test for internal consistency. In addition to that, Cronbach alpha was utilized to conduct a reliability test. Surprisingly, the results of the principal component analysis (PCA) extraction method revealed that the household debt

servicing burden (HDSB) construct is unidimensional and loaded under a single factor. Equally, the reliability test unveiled Cronbach's Alpha of 0.803. Though, it was observed that the above Cronbach's Alpha is slightly lower than the one obtained in previous studies (see Bonett & Wright, 2014). Notwithstanding, it is sufficiently high to infer high reliability; the factor loadings of each item range between 0.763 to 0.621 as calculated in the course of the study.

Consequent upon the above and given the limited time and available resources, the study conducts a cross-sectional study via a two-stage sampling (see Galway et. al., 2012). First and foremost, a stratified sampling method was conducted to guarantee representativeness of the selected households across the Senatorial districts of Ekiti State, Nigeria which include: Ekiti-South, Ekiti-North and Ekiti-Central. The above stage was followed by selecting respondents based on a convenience sampling approach where respondents were chosen based on their availability. To achieve the aforementioned, enumerators and research assistant were appointed who in turn approached the respondents (household heads) from public areas such as residential buildings, neighborhoods, state and local government secretariats, schools, markets, public hospitals and so on. Notwithstanding the above, the researchers did not take for granted the demerits that are accrued to the convenience sampling method which includes generalization.

Despite the above, this method was embraced due to time and cost-merits, while ensuring that an adequately large sample was obtained from across the study area. Amazingly, a total of 2002 useable responses (80.1%) were obtained for the study from 2500 administered questionnaires after a three-month timeline. The responses collected above are large enough to conduct a reliable statistical inference on the study population as buttressed by Krejcie & Morgan (1970). As a matter of fact, the two-stage sampling approach actualized the expected representation of the population though with little difference based on the strata. However, the contact with the respondents with respect to the second stage approach via the use of convenience sampling method resulted into a little disparity in the distribution. In this study, the questionnaires were structured into sections in which the items therein are a closed-type. Primary data were sourced through the use of well-structured questionnaire. Information from the survey among others includes household characteristics such as: age, gender and marital status, years of work experience, religion, household size and educational background. In addition, information on formal and informal methods of obtaining loans, economic welfare effect of debt, attitude of households towards the financial outlets (both formal and informal) were captured. At the same time, information on indebtedness were extracted and measured by the study as a measure of household debt burden via the ratio of monthly debt service to monthly income.

Similarly, household financial distress was captured by the persistent difficulty encountered by households in servicing their debt.

3.2. Data Analysis

Data obtained from the survey were imported to Microsoft Excel 2016 for the purpose of trendline analysis. Afterwards, data were loaded on SPSS 22.0 and Stata 12.0 statistical software for descriptive and inferential statistics respectively. Furthermore, the relationship between household debt-servicing burden and household expenditure pattern in the 3 Senatorial districts were modeled via the use of logit regression technique. In particular, the analysis of quantitative data was segmented on three levels - univariate, bivariate and multivariate levels (Multilevel and Multi-process event history analysis); while qualitative data were analyzed using appropriate software including NVivo and Stata 12.0 version. NVivo statistical package handled coding and data categorization.

3.3. Definition of variables

Variables are described in Table 1 below.

Table 1. Definition of variables

Variables	Definition	Mean Values
Household debt-servicing burden	Debt-burden affects consumption expenditure = 1, Did not affect consumption = 0	0.80
Uncertainty shock affects consumption	Affects purchase of goods and services = 1, Did not affect the purchase of goods and service = 0	1.19
Welfare implication of debt	Has implication on welfare = 1, Has no implication on welfare = 0	1.21
Payment of house rent	It retards payment of house rent =1, Does not affect payment of house rent	1.24
Quality of nutritional and health content	Tampers with the quality of nutrition and health content =1, Did not tamper with the quality of nutrition and health content = 0	1.20
Pricing strategies	Impacts pricing strategies =1, Did not impact pricing strategies = 0	1.17
Payment of utility bills	Affects payment of utility bills = 1, Did not affect the payment of utility bills = 0	1.20
Gender of household heads	Male = 1, Female = 0	0.67
Household marital status	Married = 1, others = 0	0.19
Professional status	Employed =1, Unemployed = 0	0.21
Age	40 & below = 0, 41 & above = 1	0.47
Income of household head	Low = 0, high = 1	2.41

Source: Authors' computation from survey data, 2019

3.3. Ordered Logistic Regression Technique

In order to provide a detailed analysis on how household heads' debt-servicing burden impacts their consumption expenditure behaviour, we applied both discrete and continuous choice binary model (yes, no) responses. Binary logistic regression model estimates and the probability of occurrence of an event were fitted into a logistic curve. As a matter of fact, the probability is dependent when the resulting outcome equals 1, such that the parameters derived from the explanatory variables can be utilized to obtain or estimate the odd ratios for each of the independent variables showcased in the model. The typical logistic model that this study intends to utilize is of the below form according to (Peng et al., 2002; James et al., 2013).

$$\pi(x) = e^{\beta} + \beta_1 x_1 + \beta_2 x_2 + ... + \beta_p x_p \,/\, 1 + e^{\beta_0 + \beta_1 x_1 + \beta_2 x_2 + ... + \beta_p x_p} \quad (1)$$

Where π is the probability of the outcome of interest or event, β_0 is the intercept, $\beta_1,...,\beta_p$ are the regression coefficients, $x_1, x_2, \ldots x_p$ are independent variables. The above model in equation can be a transformation of the conditional mean π(x) logistic function is known as the logit as the transformation of the below form:

$$Log(\pi(x) / 1 - \pi(x)) = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + ... + \beta_p x_p + e \quad (2)$$

The importance of the logit transformation is that it is linear in its parameters and may range from $-\infty$ to $+\infty$. Therefore, equation (2) will be estimated using the SPSS statistical package.

To evaluate the impact of household debt servicing burden on household consumption expenditure, indicators of consumption expenditure were regressed on the dependent variable via the collected responses coded in numerals. Hence, the main hypotheses are: (a) household debt-servicing burden is positively related to consumption expenditure, (b) household gender is positively related to household debt-servicing burden and (c) level of household income impacts household debt-servicing burden.

4. RESULTS AND DISCUSSION

4.1. Descriptive analysis of the demographic characteristics of respondents

Evidence from the results of the descriptive analysis revealed that majority of the household heads are mainly male (65.2%) and about 26.9% of the total respondents fall between the age range of 31 - 40 years. Perhaps those in the latter category of age do not engage in obvious debt-concerned activities because they

do not want to remain indebted until retirement as buttressed by Sommerat et al (2020). Amazingly, 30.9% (619) and 28% (560) of the household heads fall into the category of the lowest and middle-class income group. Consequently, 82.5% of the respondents were indigenes of Ekiti state, which constitutes the majority of the ethnic group as reported in Table 2 below. Unsurprisingly, most of the respondents are married (57%), while others were either divorced/separated or widow/widowers. The majority of the sampled respondents are from Ado-Ekiti (22.0%), followed by Oye-Ekiti (20.6%); while the fewest are from Gboyin (0.8%) and Ijero (0.9%) respectively. In addition, the modal household size is two (27.2%); while the least is household size between 5 and above (15.5%). Interestingly, a total of 28.1% of the respondents had tertiary education (Ordinary national diploma - OND, Bachelor of Science - BSc and its equivalents). Similarly, 25.2% and 24.6% had secondary and primary education, while approximately 22% had informal education. Similarly, Table 3 presents distribution of the impact of household debt-servicing burden from the survey results.

Table 2. Socio-economic and demographic characteristics of household heads

Variables	Frequency	Percentage (%)
Gender		
Male	667	33.3
Female	1335	66.7
Total	2002	100
Professional status		
Self employed	558	27.9
Government employee	616	30.8
Other employee	406	20.3
Retired	333	16.6
Unemployed	89	4.4
Total	2002	100
Marital status		
Never married	433	21.6
Married	**1141**	**57.0**
Divorced/separated	234	11.7
Widow / widower	194	9.7
Total	2002	100
Age group		
30 & below	394	19.7
31 - 40	538	26.9
41 - 50	446	22.4
51 - 60	300	15.4
60 & above	313	15.6
Total	2002	100

Variables	Frequency	Percentage (%)
Education of household head		
No formal education	441	22.0
Primary	493	24.6
Secondary	505	25.2
Tertiary	563	28.1
Total	2002	100
Senatorial district of household heads		
Ekiti-Central	701	35.01
Ekiti-North	871	43.51
Ekiti-South	430	21.48
	2002	100
Household income		
Less than #20, 000	619	30.9
#21,000 - #40,000	512	25.6
#41, 000 - #100, 000	560	28.0
#101, 000 - #250, 000	201	10.0
More than #250, 000	110	5.5
Total	2002	100

Source: Authors' computation from the field survey, 2019

4.2. Distribution of the impact of household debt-servicing burden from the survey results

In Table 3, we commenced the classification task, which started with predicting whether debt-servicing affects household expenditure or not. This was achieved by assigning 1 to households affected by their debt-servicing obligation and 0 to the non-affected households. The study extracted 10 indicators of household consumption expenditure from the 2002 sampled households. The result reveals that debt-servicing burden affects consumption expenditure of 1595 households, while the remaining 407 households were not affected as reported in Table 3.

Table 3. Distribution of the impact of household debt-servicing burden

Category Name	Category Size	Category Distribution
Affected households	1595	79.7%
Non-affected households	407	20.3%

Source: Authors' computation from the survey results, 2019

Drawing from Table 3, the total sample (2002) was classified into two groups. The first group is tagged (n_1 = 1595) which represents 79.7% of the overall responses, and the second group is labeled (n_2 =407) representing 20.3% of the responses. In Table 4, we generated the Best Logistic Regression Analysis (BLRA)

after applying it to the survey data set to evaluate the relationship between the response variable and combination of independent variables to find the most significant predictors that discriminate the kind of test. The latter provides information of the model fitting by showing the statistical significance of the final x^2 value.

Table 4. Information of the model fitting

Model	Model fitting criteria (- 2 likelihood)	Likelihood ratio test		
		X^2	D.F	Sig.
Intercept Only	1951.239	604.888	9	0.000
Final	1346.351			

Source: Authors' computation from the field survey, 2019

Observation from Table 4 depicts that the inclusion of only the intercept, that is the value of -2 log likelihood of basic model was (1951.239), and has decreased to 1346.351 with the existence of the set of explanatory variables in the model. Importantly, the value of the X^2 was (604.888) when compared with the corresponding probability value (0.001), which suggests that the model is significant and as a result, we reject the null hypothesis and accept the alternative hypothesis which says that there is an essential relationship between household debt-servicing obligation and the indicators of its consumption expenditure. In Table 5, the researchers proceeded to the goodness of fit test via the use of Hosmer-Lemeshow (H-L) test to determine the good fit of the model.

Table 5. Results of Hosmer-Lemeshow (H-L) test

Hosmer and Lemeshow			
Step	Chi-square	df	sig
1	5.690	9	0.682

Source: Authors' computation from the field survey, 2019

The results unveil that the X^2 of H-L test was 5.690 with p-value of 0.682 which indicates that the number of households affected with debt-servicing burden is greater than 0.05 alpha level. Consequently, we fail to reject the null hypothesis that there is no difference between the observed and the model-predicted value, hence, implying that the model estimates are at the acceptable level. This supports the argument that the overall model is of good-fit. Following the above, there is Table 6 which presents three pseudo R^2 values.

From Table 6, it was discovered that the dependent variable contributed with 63.4%, 81.6% and 77.4% of the variance in the explanatory variables based on Cox and Snell, Nagelkerke's and McFadden pseudo R2 value respectively.

Table 6. The values of the pseudo R^2

Name of R^2	Value
Cox and Snell	0.634
Nagelkerke's	0.816
McFadden	0.774

Source: Authors' computation from the field survey, 2019

4.3. Estimation of the logistic regression coefficients

Here, the researchers relied on the Maximum Likelihood Estimator (MLE) method for the estimation of parameters of the logistic regression. However, this depends on the Wald statistic outcome for the final model as reported in Table 7. This provides the results fitting the logistic regression model to household debt servicing burden - consumption expenditure pathway, and their respective coefficients. Evidently, as seen from the output of the logistic regression coefficients, seven out of ten predictors were found to be statistically significant. This means that they made a unique contribution to the prediction that household debt servicing burden does not have impact on consumption expenditure. For instance, the coefficient of welfare exhibited a strong relationship to household debt servicing burden. Interestingly, the quality of nutrition and health status tend to be the strongest predictors that trigger household debt servicing burden based on the relationship they exert on household debt. Correspondingly, it recorded an odds ratio of 396.8, indicating that when holding all other predictors constant, households whose income is low could increase the debt-servicing burden by 396.8.

Table 7. Logistic regression coefficients

Variable	B	S.E	Wald	D.F	Prob.	EXP(B)	95% CI for odds Ratio	
							Lower	Upper
nn(1)	0.394	0.378	1.085	1	0.298	0.675	0.323	1.415
OO(1)	0.789	0.452	1.049	1	0.051	0.454	0.217	1.101
pp(1)	5.983	0.762	61.736	1	0.000	396.781	0.793	0.981
QQ(1)	0.093	0.023	16.509	1	0.000	1.098	0.559	1.402
RR(1)	-0.064	0.038	2.803	1	0.094	0.938	0.594	2.921
SS(1)	-0.005	0.033	0.022	1	0.883	0.995	0.917	1.598
TT(1)	2.179	0.057	4.099	1	0.000	1.882	0.888	1.053
UU(1)	0.150	0.137	5.381	1	0.023	1.521	0.351	0.560
VV(1)	-0.796	0.127	39.066	1	0.000	0.451	0.352	0.579
XX	- 1.597	0.602	7.046	1	0.008	0.202	0.062	0.658
YY	-2.354	0.468	25.238	1	0.000	0.095	0.038	0.237
Constant	5.049	0.949	28.299	1	0.000	155.794		

Source: Authors' computation from the field survey, 2019

After a cursory look at the results, we noted that the purchases of the households did not contribute significantly to the prediction (p=0.30) which is greater than (p>0.05) alpha level. However, the Exp(B) i.e. the odds ratio associated with uncertainty shock is 0.675. The implication is that when household purchase is raised by one unit, the odds ratio is approximately 0.7 times, and as such households are less likely to belong to the group that is affected by the debt-servicing burden. Similarly, marital status of the households was found to contribute significantly (p<0.05 =0.001) to the prediction of the model. In addition, the value of odd ratio connected with marital status is 1.882. It signifies that when marital status of married household head is raised by one unit, the odds ratio is approximately 1.9 times as large; hence, married households are 1.9 times more likely to belong to the category affected by debt servicing burden.

Furthermore, the odds ratio of 1.9 indicates that when holding all the other predictors constant, respondent who is single is 1.9 times more likely to be non-affected by debt burden compared to the married. From Table 7, the coefficient of professional status was found to be key predictor in the model. This is because of the value of its probability (p=0.023<0.05) and 1.521 odds ratios respectively. In particular, the odds ratio suggests that holding all other predictors constant, the professional status (employment) has the tendency to determine the extent to which the number of household heads employed impacts household debt servicing burden, all other things being equal. This corroborates the study by (Crook, 2006) which opines that employed persons are more inclined towards debt than the unemployed, since the former can access credit facilities from the formal sector.

Meanwhile, the coefficient of gender has a negative and statistically significant effect on the outcome variable as evidenced from its p-value and odds ratio (p=0.001; 0.451). This supports the study by (Berger & Houle, 2019) which affirmed that employment status and other socio- demographic factors are very germane to meeting debt obligations. Particularly, the above odds ratio value of only women is 0.451 times less likely to uphold the hypothesis “household debt-servicing burden impacts their consumption expenditure”; and this corroborates the findings of Mohanty & Shim (2017). In percent terms, the odds ratio of being affected by household debt decreases by 31.1% for women household heads. In contrast, the coefficients of price strategies and utility bills were found not to have significant impact on the outcome variable, with their probabilities and odds ratios equal to (p=0.094; Exp(B)=0.938) and (p=0.883; Exp(B)=0.995) respectively. This means that when there is one-unit increase in pricing strategies and utility bills, we will expect 0.064 and 0.005 decrease in the log-odds of household debt-servicing burden, holding all other explanatory variables con-

stant. This further implies that each one-point increase in pricing strategies and utility bills on the binary scale is associated with the outcome variable. The finding above is consistent with the study of Dynan (2012) which emphasized that household debt overhang is detrimental to consumption expenditures.

In consonance with the above, the coefficient of income was found to contribute significantly to the prediction. Based on the probability value (p=0.008<0.05) and odds ratio EXP(x)= 0.202, there is a negative relationship. This means that households within the low-income category would correspond with lower odds of being affected by debt-servicing burden. Furthermore, high-income household is only 5.452 times more likely to continue to be affected by household debt-servicing burden as confirmed by the study of Nakajima (2020). In percentage terms, high income household will 0.85 times predicts the extent to which household debt servicing burden affects their consumption expenditure. On the other hand, for every low-income group probability (0.17) predicts that household debt servicing burden did not affect consumption expenditure. Thus, high income groups are more susceptible to debt servicing burden than low-income groups holding other predictors constant.

In the same vein, age of household heads was found to contribute to the prediction based on its probability value (p= 0.001<0.05) and odds ratio (0.095). The implication is that, the effect of age group contributes significantly to the prediction of the outcome; hence, lower age group fell short of a significant effect based on its odds ratios. This is in-tandem with the study of Sommerat et al (2020). This further implies that higher age-group is more likely to be affected by debt servicing burden than the lower age-group. This upholds the works of Daud et al. (2019), Keese (2010) and Loke (2016) which opine that the number of bankruptcy cases are more from economically active age group (males).

5. CONCLUSIONS AND POLICY RECOMMENDATIONS

The study unveiled the impact of debt-servicing burden on the expenditure pattern of households in Ekiti state, Nigeria. To achieve the above, we utilized the binary logistic model. The findings of the study reveal that household socioeconomic characteristics play a key role in determining the extent to which debt servicing obligations impede expenditure pattern. In particular, it was found that highly indebted households are most vulnerable, since it has negative effects on the quality of their nutrition and health status relative to households without debt obligations. Similarly, the paper revealed that price strategies and utility bills do not contribute to the predictions because they can be put on hold until household

heads are relieved of their debt obligations. In addition, it was pinpointed that households within the low-income group were less likely to be affected by their debt obligations compared to those in the high-income group. More so, the results confirmed that older age-group respondents are more likely to be affected by their debt obligations than their counterparts in the younger age-group. Based on this established premise, we conclude that high indebtedness causes deleterious effects on the expenditure pattern of household heads as observed in the literature. Thus, the paper recommends that household heads should inculcate fiscal discipline which promotes savings and averts shocks emanating from precautionary demands. Second, debt providers should regulate loans in cognizance to household repayment capacity and other stipulated policies which break the vicious cycle arising from over-indebtedness, install stability and spur economic development. Future study should dissect the determinants of household debts using macro-data and macro-econometric techniques.

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REFERENCES

Alpanda, S. & Zubairy, S. (2018). Household debt overhang and transmission of monetary policy. *Journal of Money, Credit and Banking, 00*(0), 1-43.

Ando, A. & Modigliani, F. (1963). The life cycle hypothesis of saving: Aggregate implications and tests. *The American Economic Review, 53*(1), 55–84.

Berger, L.M. & Houle, J.N. (2019). Rising household debt and children's socio-emotional well-being trajectories. *Demography.* doi: 10.1007/s13524-019-00800-7

Bonett, D.G. & Wright, T.A (2014). Cronbach's alpha reliability: Interval estimation, hypothesis testing, and sample size planning. *Journal of Organizational Behavior*. doi: 10.1002/job.1960

Borio, C., Kharroubi, E., Upper, C. & Zampolli, F. (2016). Labour reallocation and productivity dynamics: Financial causes, real consequences. *BIS Working Paper*, No 534.

Checherita, C. & Rother, P. (2010). The impact of high and growing government debt on economic growth: An empirical investigation for the Euro Area. *European Central Bank, Working Paper Series, No. 1237*

Chucherd, T. (2006). The effect of household debt on consumption in *Thailand. Bank of Thailand, Discussion Paper, No. 1.*

Curdia, V. & Woodford, M. (2010). Credit spreads and monetary policy. *Journal of Money, credit and Banking*, *42*(6), 3–35.

Daud, S.N. M., Ainulashikin, M., Nursilah, A., and Zurina, K. (2019). Financial Vulnerability and Its Determinants: Survey Evidence from Malaysian Households. *Emerging Markets Finance and Trade, 55*(1), 1991–2003.

Drehmann, M. & Juselius, M. (2014). Evaluating early warning indicators of banking crises: satisfying policy requirements. *International Journal of Forecasting*, *30*(3), 759–780.

Dynan, K. (2012). Is a household debt overhang holding back consumption? *The Brookings Institution Papers on Economic Activity No. 10,* Spring.

Eggertsson, G. & Krugman, P. (2012). Debt, deleveraging and the liquidity trap: A Fisher-Minsky-Koo approach. *Quarterly Journal of Economics*, *127*(3), 1469-1513.

Galway et. al. (2012). A two-stage cluster sampling method using gridded population data, a GIS, and Google earth imagery in a population-based mortality survey in Iraq. *International Journal of Health Geographics, 11*, 1-9

Giraud, G. & Grasselli, M. (2019). Household debt: The missing link between inequality and secular stagnation. *Journal of Economic Behaviour and Organisation.* doi:10.1016/j-jebo.2019.03.002

Guerrieri, V. & Lorenzoni, G. (2011). Credit crisis, precautionary savings and the liquidity trap. *NBER Working Paper*, *no. 17583.*

Hall, R. (2011). The long slump. *American Economic Review*, *101*(2), 431-469.

James G., Witten D., Hastie T., & Tibshirani R. (2013). *An Introduction to statistical learning: with applications in R*: Springer.

Jordà, Òscar (2003). Model-Free Impulse Responses, *Working Paper, No. 03-8,* University of California, Department of Economics, Davis, CA. Retrieved from: https://core.ac.uk/download/pdf/188986594.pdf

Jordà, Ò., Schularick, M. & Taylor, A. (2013). When credit bites back. *Journal of Money, Credit and Banking*, *45*(2), 3–28.

Jordà, Ò., Schularick, M. & Taylor, A. (2015). Betting the house. *Journal of International Economics*, *96*(1), 2–18.

Jordà, Ò., Schularick, M. & Taylor, A. (2016). The great mortgaging: Housing finance, crises and business cycles. *Economic Policy*, *31*(85), 107–152.

Kakar, V., Eric, Daniels, G.E. & Petrovska, O. (2019). Does student loan debt contribute to racial wealth gaps? A decomposition analysis. *The Journal of Consumer Affairs.* doi: 10.1111/joca.12271

Keese, M. (2012). Who feels constrained by high debt burdens? Subjective vs. objective measures of household debt. *Journal of Economic Psychology, 33*(1), 125–41.

Kim, J. & Chatterjee, S. (2019). Student loans, health, and life satisfaction of US households: Evidence from a panel study. *Journal of Family and Economic Issues, 40,* 36–50. doi: 10.1007/s10834-018-9594-3

King, M. (1994). Debt deflation: theory and evidence, Presidential Address, *European Economic Review*, *38*(4), 419–445.

Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and psychological measurement, 30*(3*),* 607-610. Retrieved from:

http://136.145.180.68/referencia/investigacioninstitucional/DOCUMENTO_SampleSizeResearch_KrejcieandMorgan.pdf.

Lee, J.M., Lee, Y.G. & Kim, S. (2019). Loan type and debt delinquency among millennial and non-millennial households. *Family and Consumer Sciences Research Journal, 47*(4), 342–358. doi: 10.1111/fcsr.12315

Liu, Z., Zhong, X., Zhang, T. & Li, W. (2019). Household debt and happiness: evidence from the China Household Finance Survey. *Applied Economics Letters.* doi: 10.1080/13504851.2019.1610706

Lombardi, M., Mohanty, M. & Shim, I. (2017). The real effects of household debt in the short and long run. Bank for International Settlements (BIS) *Working Papers No. 607.*

Maite, B.C. & Santiago, B. (2015). The effects of over-indebtedness on individual health. Institution for the Study of Labour (IZA) *Discussion Paper No. 8912.*

Maleske, R. T. (1995). *Foundations for gathering and interpreting behavior data.* Pacific Grove, C. A: Brooks.

Mian, A, Rao, K. & Sufi, A. (2013). Household balance sheets, consumption and the economic slump. *Quarterly Journal of Economics*, *128*(4), 1687–1726.

Mian, A, Sufi, A. & Verner, E. (2015). Household debt and business cycles worldwide. *NBER Working Paper*, no 21581.

Mian, A. & Sufi, A. (2010). Household leverage and the recession of 2007 to 2009. *IMF Economic Review*, *58*(1), 74–117.

Nakajima, J. (2020). The role of household debt heterogeneity on consumption: Evidence from Japanese household data. *Economic Analysis and Policy, 65,* 186-197

Peng C., Lee K., & Ingersoll G. (2002). An Introduction to logistic regression analysis and reporting. *The Journal of Educational Research, 96,* 3-15.

Ramey, V. A., & Zubairy, S. (2018). Government spending multipliers in good times and in bad: evidence from US historical data. *Journal of Political Economy, 126*(2), 850-901. Retrieved from: https://www.nber.org/papers/w20719

Schularick, M. & Shim, I. (2017). Household Credit in Asia-Pacific. In *BIS Papers No. 91 Financial Systems and the Real Economy*, 129–44. Bank for International Settlements.

Schularick, M. & Taylor, A. (2012). Credit booms gone bust: monetary policy, leverage cycles and financial crises. *American Economic Review*, *102*(2), 1029–1061.

Scott, R.H. & Pressman, S. (2019). Financially unstable households. *Journal of Economic Issues*, *53*(2), 523-531. doi: 10.1080/00213624.2019.1603765

Sommarat, C., Lamsam, K.S. & Tangsawasdirat, B. (2020). Household debt and delinquency over the life cycle. *Asian Development Review, 37*(1), 61-92

Velez, E., Cominole, M. & Bentz, A. (2018). Debt burden after college: the effect of student loan debt on graduates' employment, additional schooling, family formation, and home ownership. *Education Economics.* doi: 10.1080/09645292.2018.1541167

УТИЦАЈ ТЕРЕТА СЕРВИСИРАЊА ДУГА НА ПОТРОШЊУ ДОМАЋИНСТАВА У НИГЕРИЈИ: СЛУЧАЈ СЕНАТОРСКИХ ОКРУГА ДРЖАВЕ ЕКИТИ

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САЖЕТАК

Ова студија користи бинарну логистичку регресиону технику за истраживање утицаја терета сервисирања дуга домаћинстава на обрасце издатака у југозападном геополитичком региону Нигерије, примјењујући је на државу Екити у својој студији случаја. Упитници су насумично распоређени на 2500 домаћинстава, а резултати откривају да су домаћинства са високим приходима, великом породицом и главом породице у старосној групи од 40 и више година била подложнија терету дуга. Поред тога, рад је нагласио да задуженост угрожава квалитет исхране и здравствено стање чланова домаћинства. На основу горе наведених резултата, можемо да закључимо да висока задуженост и крива терета дуга узрокују штетне ефекте на обрасце потрошње домаћинстава и укупну економску добробит. Стога, носиоци домаћинстава треба да инсистирају на фискалној дисциплини која промовише културу штедње и спречава будуће шокове који би могли произаћи из предострожности. Друго, даваоци дуга треба да регулишу зајмове у складу са способностима отплате домаћинстава и других предвиђених политика које прекидају зачарани круг настао из презадужености, успостављају стабилност и подстичу економски развој.

Кључне ријечи:
домаћинство, дуг, образац издатка, логистичка регресија, SPSS