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Managing Economic Recession and Growth with a Multinomial Logit Model: the Marketing Application

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Abstract

This study examines the major economic growth determinants as well as the direction of causality that exists between economic growth, recession and some selected economic growth indicators in Nigeria, employing multinomial logit model to manage the recession problems in Nigeria. The regression model is estimated using both pooled and cross-sectional data for 2014 – 2016. Correct management of the recession period in the cross – section regressions ranged from 62 – 88 per cent. Also, the predictive power of the model increased as more recent cross –section data was used in the estimation. This indicates that the closer the out of recession date approached, the greater the predictive power of the model. The directions of causality between economic growth and the selected determinants are mixed – unidirectional, bilateral and independent. Overall, the speed of the equilibrium adjustment (as indicated by well- defined negative multivariate coefficient of liquidity, profitability, marketing concepts and asset quality measured by the level of credit risk in a bank's portfolio) is slow and suggests that economic growth process in Nigeria tends to adjust slowly to the disequilibrium changes in those determinants suggesting policy lag effect., Based on these findings, the study recommends that the government should strive to achieve sustainable price stability, fiscal discipline, economic efficiency driven by infrastructural support and enhanced technological capabilities, strong institutional and economic reforms to increase production capacity. Stable polity should also be highly emphasized in order to promote trade, domestic and foreign investments. There is also need for the policy makers to take cognizance of the policy lag effect and design policies in line with the expected magnitude of expected changes.

Keywords: *Economic growth, Economic Recession, Multinomial Logit Model, Liquidity, Profitability, Marketing concept*

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Background to the Study

Economic growth and recession is a two-way relationship. The first chain consists of economic growth benefiting human development, since economic growth is likely to lead families and individuals to use their heightened incomes to increase expenditures, which in turn furthers human development. At the same time, with the increased consumption and spending, health, education and infrastructure,–systems grow and contribute to economic growth. Economic recession typically involves decrease in a variety of indicators such as literacy rates, life expectancy, GDP and poverty rates. Due to the fact that GDP alone does not take into account other aspects such as leisure time, environmental quality, freedom, or social justice; alternative measures of economic well-being have been proposed. Essentially, a country's in recession retard its economic development in the area of human development, which encompasses, among other things, health and education. These factors are, however, closely related to economic growth so that development and growth often go together. The Nigerian economy continues to face serious macroeconomic challenges and is in a recession for the first time in decades. Gross domestic product (GDP) growth for 2016 is estimated at -1.5%, with a moderate recovery expected in 2017. This is attributed to a series of shocks, including the continued decline in oil prices, foreign exchange shortages, disruptions in fuel supply and sharp reduction in oil production, power shortages, and insecurity in some parts of the country, as well as low capital budget execution rate (51%). Managers of the economy responded to the recession with a package of monetary, fiscal and exchange rate policies.

The CBN pursued a contractionary monetary policy stance. It increased the monetary policy rate to 14% from 11% in 2015 to attract capital inflow and control upward ticking inflation. To protect priority sectors from the rate hike, the cash reserve requirement was reduced and the amount raised was warehoused to be accessed by priority sectors at a single digit interest rare. The action resulted in an increase in broad money supply which together with cost push factors resulting from fuel, power and foreign exchange shortages contributed to the upward trend in the headline inflation which rose to 15.7% on average in 2016 from 9.1% in the previous year. The fiscal authorities on the other hand pursued an expansionary fiscal policy with the objective of relating the economy by allocating close to 30% of the budget to capital expenditure. The expansionary budget was planned on the back of existing fiscal consolidation underpinned by domestic resource mobilization and expenditure rationalization measures. In addition, the year saw a significant reduction in foreign reserves which fell to USD 25.8 billion as at yearend 2016 from USD 28 billion in the corresponding month of 2015. This was caused by a current account deficit as a result of low oil receipts, rising capital outflow caused by domestic and global financial market conditions and increased use of foreign exchange to defend the naira. A host of administrative measures were introduced to manage foreign exchange demand and an important policy shift was made to a more flexible exchange rate regime.

The 2017 outlook is for a slow economic recovery. Growth is projected at 2.2% as economic policy reforms begin to take hold and a coherent set of policies to address the macroeconomic challenges and structural imbalances is implemented. In this regard, the federal government has developed a framework in the Nigeria Economic Recovery and

Growth Plan (2017-20). The plan focuses on five key areas, namely: improving macroeconomic stability; economic growth and diversification; improving competitiveness; fostering social inclusion; and governance and security. Some key reforms have been rolled out, including the conditional cash transfer initiative targeted at the poorest and most vulnerable population, improving capital budget execution, and strengthening public financial management at both state and federal levels. All these are geared towards the growth dynamics and they are propelled by the existence and exploitation of natural resources and primary products. Initially, the agricultural sector, driven by the demand for food and cash crops production was at the centre of the growth process, contributing 54.7 per cent to the GDP during the 1960s. The second decade of independence saw the emergence of the oil industry as the main driver of growth. Since then, the economy has mainly gyrated with the boom-burst cycles of the oil industry. Government expenditure outlays that are dependent on oil revenues have more or less dictated the pace of growth of the economy. Looking back, it is clear that the economy has not actually performed to its full potential, particularly in the face of its rising population. The Nigerian economy has grossly underperformed relative to her enormous resource endowment and her peer nations. It has the 6th largest gas reserves and the 8th largest crude oil reserves in the world. It is endowed in commercial quantities with about 37 solid mineral types and has a population of over 170 million people. Yet economic performance has been rather weak and does not reflect these endowments. Compared with the emerging Asian countries, notably, Thailand, Malaysia , China, India and Indonesia that were far behind Nigeria in terms of GDP per capita in 1970, these countries have transformed their economies and are not only miles ahead of Nigeria, but are also major players on the global economic arena.

Mcfadden and Train (2000) argue that a Multinomial Logit (ML) model can approximate any random utility model. Jain, Vicassion and Chintagunta (1994) developed an ML model that described marketing scenario in a recession with unobserved heterogeneity of preferences. Applying the multinomial logit approach to the case of managing economic recession, the crucial part is to specify the determinant variables (different policies related to economic recovery) in the utility function which include some economic related variables such as certain functions that the consumer expects to get i.e. taste, convenience, safety, brand name, etc.

Problems

The major factors accounting for the relative decline of the country's economic fortunes are easily identifiable as political instability, lack of focused and visionary leadership, economic mismanagement and corruption. Prolonged period of military rule stifled economic and social progress, particularly in the three decades of 1970s to 1990s. During these years, resources were plundered, social values were debased, and unemployment rose astronomically with concomitant increase in crime rate. However, since 1999 economic growth in Nigeria has risen substantially, with annual average of 7.4 per cent in the last decade. But the growth has not been inclusive, broad-based and transformational. The implication of this trend is that economic growth in Nigeria has not resulted in the desired structural changes that would make manufacturing the engine of growth, create

employment, promote technological development and induce poverty alleviation. Available data has put the national poverty level at 54.4 per cent. Similarly, there has been rising unemployment with the current level put at 19.7 per cent by the National Bureau of statistics (NBS).

The Nigerian economy is import dependent with very little non-oil exports. It relies heavily on crude oil and gas exports with other sectors trailing far behind. For example, crude oil accounts for about 90 per cent of foreign exchange earned by the country while non-oil exports account for the balance. The economy is, therefore, susceptible to shocks in the oil industry. In recent times, these shocks have been caused by either developments in the International crude oil market or the restiveness by the militant in the Niger Delta region of the country. Agriculture and other mining (besides oil and gas) have been abandoned to the rural poor and also grossly affected by the boko haram crises in the North East. Economic and social infrastructure, especially power is grossly dilapidated. The power sector is generally recognized as a binding constraint on Nigerian economy. Poor corporate governance and budgeting, both in the public and private sectors have led to high incidence of corruption and inequity in income distribution.

Although corruption is a global scourge, Nigeria appears to suffer particularly from it. Everyone appears to believe that the nation has a 'culture of corruption'. Over the years, Nigeria has earned huge sums of money from crude oil, which appears to have largely gone down the sinkhole created by corruption. The prospects for the Nigerian Economy depend on the policies articulated for the medium-to-long term and the seriousness with which they are implemented. It is the hope of this study to take cognizance of the policy lag effect and recommend policies in line with the expected magnitude of expected changes.

Review of Related Literature

Conceptual and Theoretical Issues

The term economic growth is described as the positive and sustained increase in aggregate goods and services produced in an economy within a given time period. When measured with the population of a given country, then economic growth can be stated in terms of per capita income according to which the aggregate production of goods and services in a given year is divided by the population of the country in the given period. Economic growth can also be stated in nominal or in real terms. Hence, when the increase in the aggregate level of goods and services is deflated by the rate of inflation, we have the real economic growth, otherwise when measured without deflating, it is called nominal economic growth.

However, the concept of economic growth has not been quite easy to grasp and measure in real terms. This is so because often on the literature of of economics, some authors have variously d differentiated economic growth from "economic development". For such authors like like Lewis (1978), the mere increase in the aggregate level of production of goods and services in an economy tells us nothing about the "quality of life" of a citizenry, given the threats of global pollution, abysmal lop-sided distribution of aggregate output and income, environmental degradation, prevalence of chronic and deadly disease, abject

poverty and the absence of freedom and justice. For such authors, attention should be focused not merely on the increase in aggregate output and income but also on the total quality of standard of living and that there is yet no satisfactory measure of "quality of life" that can be applied to quantitative measure of aggregate output and income which would be acceptable to all and sundry that will stand the test of the time.

Determinants of Economic Growth in Nigeria

Ajide denotes the amount of labor (measured by total population). Following the work of Rivera - Batiz (2004) and N"Zue (2011), we consider a Cobb - Douglas type of production (although restrictive) which is specify as follows; Y AL K (2) Where L and K are as previously defined and A is parameter that captures the effects of other factors of production. Technically speaking, A is a measure of Total Factor Productivity (TFP) but it is through it that the study intends to capture the impacts of both recession and economic freedom on economic growth. Traditionally, changes in A are thought to captures technological changes Solow (1956) but these may not necessarily be due to technology. The effects of other factors like war, natural disaster, and economic reforms may also stems from A channels.

On the basis of this, we therefore specify an explicit model with some other control variables, and thus we have:

Where recession (measured by net inflow of foreign direct investment and GDP), economic growth denoted by ECF and Is measured using Fraser Economic Freedom Index. The index quantifies forty - two data points in five broad areas: size of government (SG); legal structure and security of property rights (LS); access to sound money (AM); freedom to trade internationally (FT); and regulation of credit, labor, and business (RG) into a composite score on a scale of 0 to 10, with 10 representing the highest degree of economic freedom Gwartney (2011). LE is a life expectancy at birth, (measuring the quality of Human Capital Development) and FIV which is a financial variable, measures the level of domestic financial sector sophistication. This is measures by domestic credit to private sector as a percentage of GDP. The above specification does not have several other variables that some empirical works like Alfaro (2004) and Durham (2004) have included because the EF index already captures most of the other variables such as government consumption, inflation and black market premium. There are other measures like secondary and tertiary enrolment rates and health expenditures etc.

Recession

The term recession implies a fall in real GDP. Recession is a period of negative economic growth for two consecutive quarters. Recessions are primarily caused by a fall in aggregate demand. This demand side shock could be due to several factors, such as financial crisis, rise in interest rates or fall in asset prices (like houses) Tejvan (2015). A recession is an economic crisis in the business cycle contraction, which results in a general slowdown in economic activities in two or more quarters(6months and above). Macroeconomic indicators get worse showing that if there is no appropriate policy response, the economy may slip further into a depression. The Gross Domestic Product (GDP), investment and consumption spending, savings rate, imports and exports,

capacity utilization, household income, trade, capital flows, business profits and inflation decline, while indebtedness, illiquidity, bankruptcies and the unemployment rates rise. Economic recession is also a negative economic growth for two consecutive quarters. The National Bureau of Economic Research (NBER), defines recession as "a significant decline in economic activity spread across the macro economy, lasting more than a few months, normally visible in real gross domestic product (RGDP), real income, employment, industrial production and wholesale - retail sales". Usually, recession may be triggered by financial crisis and or credit crunch, as well as demand and supply side shocks, (Kamar,2012).

Multinomial logic Model

Multinomial regression is a multi-equation model, similar to multiple linear regression. For a nominal dependent variable with k categories the multinomial regression model estimates k-1 logit equations. Multinomial logistic regression is used to predict categorical placement in or the probability of category membership on a dependent variable based on multiple independent variables. The independent variables can be either dichotomous (i.e., binary) or continuous (i.e., interval or ratio in scale).

The estimated logit model describing the likelihood of the failure of the economy is :

$$Z_i = \log \frac{P_i}{I - Pi} = \alpha + \beta X + e_i \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

Where Z_i is the indicator of the Economic health of the country i and is the logarithm of the odds that Economy i would fall into recession and, therefore, has a weak aggregate demand; P_i is the probability that the Economy i would go into recession; β is a vector of parameters to be estimated; X is a vector of independent variables (liquidity, profitability, marketing concepts and asset quality (measured by the level of credit risk in a bank's portfolio); α is a constant term; and e_i is the error term. This model is estimated for 2014 to 2016 when the Economy is officially reported to be in recession. (NDIC Annual Reports and Statement of Accounts, 2016).

What are logits? The basic idea behind logits is to use a logarithmic function to restrict the probability values to (0,1). Technically this is the log odds (the logarithmic of the odds of y = 1). Sometimes a probit model is used instead of a logit model for multinomial regression.

Theoretical Framework for Understanding Economic Growth

The framework for understanding growth over the long-term is rooted in two main theories that relates to possible sources of growth. These are the growth theory and the growth accounting theory. Growth theory is concerned with the theoretical modeling of the interactions among growth of factor supplies, savings and capital formation, while growth accounting addresses the qualification of the contributions of the different determinants of growth.

Three waves of interest have currently emerged in studying economic growth. The first wave is associated with the work of Sir F. Harrods (1900-1978) and E. Domar (1914-1997) in what was termed the "Harrods – Domar Model". The theory presupposed that growth depended on a country's savings rate, capital/output ratio, and capital depreciation. This theory has been criticized for three reasons. Firstly, it centers on the assumption of exogeneity for all key parameters. Secondly, it ignores technical change, and lastly, it does not allow for diminishing returns when one factor expands relative to another (Essien 2002) and Woodford 2000.

The second began with the neoclassical (Solow) model, which contained the thinking that growth reflected technical progress and key inputs, (labour and capital). It allowed for diminishing returns, perfect competition but not externalities. In the neoclassical growth process, savings were needed to increase capital stock, capital accumulation had limits to ensure diminishing marginal returns, and capital per unit of labour was limited. Essien and Bawa (2007) postulates that growth also depended on population growth rate and that growth rate amongst countries was supposed to converge to a steady state in the long-run. Despite the modifications, the basic problems associated with the neoclassical thinking are that it hardly explains the sources of technical change.

The third is the newer alternative growth theory, which entrances a diverse body of theoretical and empirical work that emerged in the 1980s. This is the endogenous growth theory. This theory distinguished itself from the neoclassical growth model by emphasizing that economic growth was an outcome of an economic system and not the result of forces that impinged from outside. Its central idea was that the proximate causes of economic growth were the effort to economize, the accumulation of knowledge, and the accumulation of capital. According to this theory, anything that enhances economic efficiency is also good for growth. Thus this theoretical framework indigenized technological process through "learning by doing" or "innovation processes". It also introduced human capital, governance and institutions in the overall growth objectives Romers, 1994 and Essien, 2002).

A number of endogenous growths is referred to in the literature as non-Schumpeterian growth. (Schumpeter emphasized the importance of temporary monopoly power as a motivating force in the innovative process). The model further incorporates the fact that technological advancement comes from what people do and existence of monopoly rents discoveries. The emphasis on knowledge and technology in the Schumpeterian model raises question about the role of government in promoting growth. Contessi, et al (2009) opined that government should be seen as a critical agent that provides key intermediate inputs establishes rules, and reduces uncertainly, by creating the right macroeconomic environment for growth.

Methodology

Here, we develop an argument for choosing suitable methodologies for modelling and analyzing the economic growth -recession framework. Relevant mathematical techniques will be presented which will result into the justification of the approach that will be

adopted. To identify the primary determinants of managing recession in Nigeria, we specify and estimate a multinomial logit regression model. The model is then used to predict the probability of in or out of recession. A logit model is essentially a binary choice model that assumes that an individual firm, in this case the Country is faced with two alternatives – in or out of recession and that the outcome is dependent upon some economic specifics.

Methods for Measuring Economic Growth Factors

The measurement of economic growth has received considerable attention from both academia and practitioners in the last two decades (Parasuraman *et al.*, 1991; Cronin and Taylor, 1992). Pearson and Wilson (1992), report that over 15,000 articles have been published on economic growth measurement in the past 20 years. The main interest in economic growth measurement is based on GDP and some selected economic growth-indicators namely: productivity index (industrial), stock market capitalization and FDI indicating that they are major growth determinants and to help managers to understand the relationship between these elements. There are a number of methods for measuring economic growth determinants. They include the critical incident techniques (CIT), Kano's Questionnaire and regression analysis with dummy variables (RADV).

The Critical Incident Technique (CIT)

The method was developed by Flanagan in 1954. This method is similar to the analysis of complaints and compliments. The method classifies economic attributes into three types: basic, exciting and performance. The basis for this procedure is that the basic attributes are never associated with growth, the exciting attributes do not elicit dissatisfaction, and finally, the performance attributes can be associated with both economic growth and development. The respondents are asked to indicate the antecedents of dissatisfaction and satisfaction for specific government indices of growth. The anecdotes are then associated with a list of attributes. The factor structure of economic growth is estimated based on the frequency of each attribute. Several studies, in the field of economic growth, have questioned the reliability of the CIT (Silvestro and Johnston, 1990; Stauss and Hentschel, 1992; Bakhaus and Bauer, 2000). The reliability of the method can be questioned with respect to attribute classification as it uses rank-order numbers instead of the actual frequency values. Moreover, Johnston (1995) argues that the time that data collection undertaken may significantly affect the result of CIT. If the process of data collection takes place after the incidents (good or bad experience) then respondents' perception may have been modified.

Kano's Questionnaire

Kano (1984) developed a questionnaire to classify government service attributes. For each attribute, a pair of questions was designed in which the respondent is asked to answer two questions: if the service attribute performed poor? and if the attributed performed well?, using the 5-likert scale (extremely satisfied, somewhat satisfied, neither satisfied nor dissatisfied, somewhat dissatisfied, and extremely dissatisfied). Next, the frequency of responds for each attribute was used for attribute classification. The limitation of this method is that the questionnaire becomes too long when many attributes are analysed. In

addition, Busacca and Padula (2005) argue that the method has weak outcomes as it is based on frequency distribution of the responses.

Regression Analysis with Dummy Variable (RADV)

Regression Analysis with Dummy Variable (RADV) method classifies attribute performance of the economy ratings into three groups: high performance (1,0), average performance (0,0), and low performance (0,1). Based on this coding scheme, two regression coefficients are obtained for each attribute, one to measure the impact when the attribute performance is low, and the other one when attribute performance is high. If the positive coefficient is significantly greater than the negative coefficient, then the attribute associated to the exciting factor. On the other hand, if the negative coefficient is significantly greater than the positive coefficient, then the service attributes that is associated to the basic factor. Finally, if the positive and negative coefficient is relatively close, then the service attribute associated with the dimensional or performance factor. To date the attempts employed by practitioners to account for non-linear and asymmetric response of economic growth to productivity attributes are based on the application of the regression with dummy variables. All these arguments suggest that the regression analysis with dummy variables seem the more suitable method in the real world applications and it thus, use to analyze the data collected for this study.

Hypothesis Testing:

The general objective is to study the relationship between economic growth and overall performance is non-linear and asymmetric. This leads to the following hypothesis:

H1. That poor savings, militants' activities, late signing of budget and made-in- product are not a significant predictor of economic growth.

Mlogit -Regression

Variables Entered/Removed

Model	Variables Entered	Variables Removed	Method
1	POOR SAVINGS, MILITANTS ACTIVITIES LATE SIGNING OF BUDGET MADE-IN-PRODUCT[b]	.	Enter

Dependent Variable: LIQUIDITY, PROFITABILITY, MARKETING CONCEPT, ASSET QUALITY

b. All requested variables entered.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.774[a]	.599	.592	2.15563	.599	82.388	4	276	.000	2.134

a. Predictors: (Constant), POOR SAVINGS, MILITANTS ACTIVITIES LATE SIGNING OF BUDGET MADE-IN-PRODUCT

Dependent Variable: LIQUIDITY, PROFITABILITY, MARKETING CONCEPT, ASSET, QUALITY

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	1914.171	4	382.834	82.388	.000[b]
	Residual	1282.495	276	4.647		
	Total	3196.667	281			

a. Dependent Variable: LIQUIDITY, PROFITABILITY, MARKETING CONCEPT, ASSET,QUALITY

b. Predictors: (Constant), POOR SAVINGS, MILITANTS ACTIVITIES LATE SIGNING OF BUDGET MADE-IN-PRODUCT

Coefficients

Model		Unstandardized Coefficient		Standardized Coefficients	T	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	2.532	.775		3.269	.001		
	POOR SAVINGS	.303	.046	.295	6.518	.000	.711	1.407
	MILITANT ACTIVITIES	.177	.042	.224	4.246	.000	.524	1.908
	LATE SIGNING OF BUDGET	.224	.061	.197	3.680	.000	.507	1.974
	MADE- IN-PRODUCTS	.310	.079	.196	3.935	.000	.584	1.713

a. Dependent Variable: LIQUIDITY, PROFITABILITY, MARKETING CONCEPT, ASSET,QUALITY

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions				
				(Constant)	POOR SAVINGS	MILITANT ACTIVITIES	LATE SIGNING OF BUDGET	MADE-IN-PRODUCT
1	1	5.863	1.000	.00	.00	.00	.00	.00
	2	.041	11.930	.01	.83	.03	.09	.00
	3	.036	12.694	.00	.01	.00	.01	.22
	4	.026	14.917	.59	.01	.02	.02	.34
	5	.020	17.187	.22	.15	.05	.46	.43

a. Dependent Variable: LIQUIDITY, PROFITABILITY, MARKETING CONCEPT, ASSET,QUALITY

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	8.9339	23.0510	17.6667	2.60998	282
Residual	-8.37478	6.76863	.00000	2.13636	282
Std. Predicted Value	-3.346	2.063	.000	1.000	282
Std. Residual	-3.885	3.140	.000	.991	282

a. Dependent Variable: LIQUIDITY, PROFITABILITY, MARKETING CONCEPT, ASSET,QUALITY

Discussion of Findings

Results of the Multinomial Linear Regression Model indicate that:

α_0=2.532, α_1=0.303, α_2=0.177, α_3= .224, α_4= -0.310

Thus, our model becomes

LPM_cA_q = 2.532 + 0.303PS + 0.177MA + 0.224LSB + 0.310MP

The calculated t statistics were 3.269, 6.518, 4.246, 3.680 and 3.435 for constant, X_1, X_2, X_3 and X_4 respectively. The associated significant probabilities are 0.001, 0.000, 0.000, 0.000 and 0.000 for constant X_1, X_2, X_3 and X_4 respectively, thus indicating that three of the independent variables (Poor Savings, Militants Activities and Late Signing Of Budget as it relates to LPM_cA_q) are significant predictors of managing recession at the ninety-ninth percent (99%) confidence level, hence t value of 4.246 at P = 0.000 is highly significant. It further indicates that all our variables are significant predictors of LPM_cA_q.

The ANOVA table indicated a calculated F statistic of 82.388 with a significant probability of 0.00, thus indicating that the overall significance of the regression model is good (model fit positive). The value of R square (coefficient of determination) is 0.599 while the adjusted R-square was 0.592, thus indicating that approximately fifty-Nine percent (59%) of the variation toward LPM_cA_q is accounted for or explained by variations in poor savings, militants activities and late signing of budget, and made-in-products, while the remaining 41% is explained by the error term.

The multicollinearity diagnostics indicate that the contribution of X_1 (poor savings) to the variations in constant X_1, X_2, X_3, and X_4 are 0.01, 0.83, 0.03 and 0.09 respectively. The contribution of X_2 (militant activities) to the variations in constant X_1, X_2, X_3 and X_4 are 0.00, 0.03, 0.00 and 0.02. The contribution of X_3 (late signing of budget) to constant X_1, X_2, X_3 and X_4 are 0.00, 0.09, 0.01 and 0.02. The contribution X_4 (made-in-products) to constant X_1, X_2, X_3 and X_4 are 0.00, 0.00, 0.22 and 0.34 respectively. To constant X_1, X_2, X_3, and X_4 are 0.00, 0.00, 0.79, 0.12 and 0.09 respectively. Consequently, X_4 (made-in-product) is the most important contribution to the variance of the predictors and X_3 (late signing of budget) followed by X_1 (poor savings) while the least contributor to the proportion of total variance of the predictors is X_2 (militant activities).

The variance inflation factor (VIF) is less than 10 for all the independent variables PS (1.407), MA (1.908), LSB (1.974) and MP (1.713). They further confirmed the absence of multi collinearity.

Conclusion

In the main, most small and medium scale businesses have been quick to respond to the recession, as most of them have taken action by cutting costs while some realigned their focus from a wider offering to core products and services. This was indicated in the results of made-in-products.

The model performed reasonably well given that:

1. The sample was small compared with that used in some previous studies;
2. The Economic indices used were limited to those that were publicly available, some of them were even suspected to have been manipulated by the respondents;

3. Some of the explanatory variables were highly inter correlated.

In spite of these problems, however, the findings are considerably in accord with those reported by other similar studies for Nigeria and the USA.

Particularly noteworthy is the increasing predictive power of the model as more recent data is applied in the estimation. This phenomenon provides further validation logit model, as it shows that the closer the out -of- recession, the more the predictive accuracy of the model.

Recommendations

The empirical results presents above provide modest support for the recommendations advance

herein:

1. There is need to continue to ensure that the managers of the economy comply with liquidity regulations through proper supervisory mechanism
2. While it seem clear that increased militancy has contributed to declining profitability in terms of forex inflow, government needs to put in place consistent and forward-looking macroeconomic policies.
3. While budget delay exposes small and medium scale businesses to greater and more complex risks, appropriate regulatory and supervisory process, especially through constant review and improvement on the prudential guidelines issued in 1990.
4. There should be an intensified search for new products by the managers of the economy because of the declining profitability in the oil sector.

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