

Dynamics of Savings and Minimum Wage in Nigeria

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Abstract

The study examined and appraised effects of minimum wage on savings in Nigeria. These were with a view to determining the long-run relationship minimum wage and savings in respect to minimum wage legislations in Nigeria, 1980 to 2016. Secondary data were used for the study. Annual data on minimum wage, savings, per capita income, interest rate and inflation were sourced from Central Bank of Nigeria Statistical Bulletin, 2016 edition. An econometrics technique of Autoregressive Distributed Lag (ARDL) was adopted for this study. The result showed that wage legislation has appositive and significant effect on savings in the long-run ($t=2.997987$, $p<0.0071$). This was supported by bound test result indicating that there is long-run relationship between the dependent variable and independent variables. The study concluded that minimum wage legislation has a significant positive effect on both savings in the long-run.

Keywords

Saving, Debt, Economic Growth and Minimum Wage

1. Introduction

Savings and income of an individual in the micro level, as well as national savings and national income at the macro level are seen crucial for real sector survival of any household and economy. It is out of what an individual earns that he or she saves. In addition, the importance of savings to an individual and a nation cannot be overlook. A nation that does not save has no future. The Nigeria case in particular becomes unique given its population, plotted labour force, low minimum wage, and low savings, which would definitely affect investment in crucial areas of economic development. Savings is seen as the amount of income per time that is not consumed by economic units. Accordingly, [1] defined savings as income minus consumption. Hence, a close dynamics of what happens to wage levels reflects on what happens to savings of a nation.

Prior to 1936, the classical economists propounded their theories on the savings, and asserted that a positive relationship existed between increase of income and savings. It is expected that upward review of wage income will likely increase savings. Economic theory predicts that the absolute

amount of saving will increase with income. This is because people with more income have more resources available to save. Given the current economic reality and the money illusion where minimum wage can hardly provide the basic needs calls for an empirical investigation whether the minimum wage level can still exhibits positive relation with savings and the effect of their dynamics in the Nigerian context.

Theory also predicts that savings relative to income, the savings rate, will increase with income [2]. This occurs because people with more income also tend to consume more. As they consume more, the marginal benefit from additional consumption decreases. The current cost of saving, in terms of foregone benefits from consumption, is lower for people who consume more, and this increases savings. Empirical evidence clearly indicates that higher-income households save a larger portion of their incomes and accumulate greater wealth, than lower-income households. In fact, most low-income households have very low or negative saving rates and very limited or negative asset accumulation ([3]; [4]; [5]; [6]; [7]).

In addition, savings is determined by income as postulated by [8]. According to Keynes (1936), the major determinant

of both countries' level of savings is that country's national income. He, therefore, opined that the higher the income, the high the level of saving. There is an upward review of how minimum wage could have a great impact on saving in both short-run and long-run. He equally maintained that even at the individual level, a person's income daily determines to a large extent his consumption and savings. Keynes recognized this when he found apposite relationship between consumption and person's disposable income. But what is obtainable in the relationship between wage and savings is the crux of this study.

2. Method

This session covers the relevant literature and design methodology to achieve the set objective of the study.

2.1. Literature Review

The literature review is broadly divided into two: theoretical and empirical literature. This review will have an indebt understanding on the dynamic interaction between minimum wage and savings.

2.1.1. Review of Theoretical Literature

In the early 1950s, Franco Modigliani and his student Richard Brumberg worked out a theory named life-cycle hypothesis of spending based on the idea that people make intelligent choices about how much they want to spend at each age, limited only by the resources available over their lives of which they named life-cycle hypothesis. By building up and running down assets, working people can make provision for their retirement, and more generally, tailor their consumption patterns to their needs at different ages, independently of their incomes at each age. This simple theory also leads to important and inconspicuous non-obvious predictions about the economy in national savings which depend on the rate of growth of national income and level of wealth in the economy which bears a simple relation to the length of the retirement span. These predictions, which were untestable in the 1950s, have received empirical support in later work by Modigliani and other researchers.

Prior to [8], consumption had been viewed as a passive residual, the amount of income remaining after saving. In this view, the decision of any economic agent to save was determined by the payment for the utility lost from consuming; by implication consumption was depended on the interest rate—a key factor of saving behaviour [4]. There are many theoretical approaches to savings however, to mention a few of the important and common are that which assume life-cycle hypothesis is the major theoretical foundation that has guided the study of savings behaviour over the years. Most of the determinants of savings are articulated in the context of the life-cycle hypothesis.

However, Keynesian Theory was contradicted by another empirical regularity, Even though aggregate saving rate did not grow over time as aggregate income grew. Duesenberry argued that relative income hypothesis could account for both

the cross-sectional and time series evidence. Duesenberry claimed that an individual's utility index depended on the ratio of his or her consumption to a weighted average of the consumption of the others. From this he drew two conclusions: aggregate saving rate was independent of aggregate income, which was consistent with the time series evidence; second, the propensity to save of an individual was an increasing function of his or her percentile position in the income distribution, which was consistent with the cross-sectional evidence. Despite its intuitive and empirical appeal Duesenberry's Theory has not found wide acceptance and has been dominated by the life-cycle / permanent-income hypothesis of Franco Modigliani and Richard Brumberg and Milton Friedman.

2.1.2. Empirical Literature Review

Earlier studies of the minimum wage effect on consumption, savings often used general equilibrium model analysis where the effect of the minimum wage on a number of variables is estimated. An Engle curve relation, as a function of the minimum wage, is often inserted in to the model. [10] Reviewed four of such studies. The effect on wage and price inflation of a 10% increase in the minimum wage across studies ranged from 0.15% to 0.76%. The study then criticized these studies on the grounds of several methodological problems in particular because they did not account for all steps of the transmission mechanism. She attempted to overcome such problems by inserting a modified wage determination equation into the macro model of the US economy which she estimated using 1974 to 1979 US time series data. One of the main contributions of this study was that the new wage equation accounted for wage increases that would have taken place regardless of changes in the minimum wage. That is, unless the minimum wage increase causes substantial gains in real terms, it might not be more than a change in the timing of the increases. The study reported evidence supporting spill over effects; the average annual total impact of a 10% minimum wage increase is 0.6% for wage and 0.2% for other economic variable.

Also, [11] look at abroad set of possible determinants of savings, such as income growth, financial liberalization, interest rates, terms of trade, and apply them to savings data for a large number of industrial and developing countries. [12] studies the determinants of savings for a panel of 36 countries and discusses the cross country differences in the saving ratios. His main results show that per capita income growth, political instability and financial development are important determinants of savings. This paper traces the impact of income distribution on savings analytically and empirically, thereby adding an important dimension to previous studies on savings. This task is timely because income distribution has received an enormous amount of attention recently, and has been made much easier using an improved data set on income distribution compiled by [13].

Furthermore, previous empirical studies on income distribution have been hampered by data sets with very different definitions of the Gini coefficients and very few

observations overtime and across countries. Using this newly compiled and greatly expanded data set on income distribution, can minimize the methodological differences in the definitions of Gini coefficients by selecting the Gini coefficients from national coverage household survey based on gross income, net income or expenditure. Since the study has explicit information on the definitions of Gini coefficients, we are able to control the differences in measuring income distribution based on different criteria and maintain consistency in the definitions of Gini coefficients. Using the new data set, the study found by variance decomposition analysis that income distribution is relatively stable within each country overtime, but is significantly different across countries. Because savings rates also vary significantly across countries, it is only natural to ask whether this variation has anything to do with the large variation in income distribution and other structural variables such as the initial income distribution, school attainment, financial development, and the civil liberty index.

Also in the literature [14] supported the view that saving behaviours (more precisely, average propensity to save income) by agents vary as their income changes. This was in line with augmented buffer stock model where workers can borrow against predictable and temporary change in income. They reported that the model can generate economic cycles, if economy is in its wage-led area, which shows a virtuous cycle can happen: wage increases support consumption and eventually output which in turn brings about wage increase. However, in their findings it was recorded that too large wage decrease can reduce consumption so much that investment will not take off despite profit restoration. In that case, investment and consumption decline together as in a typical Keynesian unemployment case.

A study in U.K, on the precautionary savings was carried out by [15], and estimated a model of the labour market in which precautionary savings interacts with labour market frictions to produce substantial inequality in wealth among ex ante identical workers. He showed that a model of on-the-job search, in which workers are risk averse and markets are incomplete, provides a direct and intuitive link between the empirical earnings and wealth distributions. The mechanism that generates the high degree of debt in the model is the dynamic of the “wage ladder” resulting from the search process. He also reported that there is an important asymmetry between the incremental wage increases generated by on-the job search (climbing the ladder) and the drop in income associated with job loss(falling off the ladder).

However, Regression analysis was used by [16], to examine the effect of the 80s and 90s minimum wage increases on income in the US and Canada. This allowed them to exploit variation in time and location to identify their estimates. [16] used data between 1978 and 1997. The study estimated that a 10% minimum wage increase raises prices by 0.72%-0.73%. These estimates are remarkably close to [17] estimates, which use an entirely different methodology and data. The authors contributed to the literature by

performing a number of robustness checks. For example: (a) they argued that the minimum wage might be endogenously determined with income if politicians favour minimum wage increase. However, in their re-estimations, they found robust estimates and concluded that endogeneity was not much of a concern. (b) They estimated the minimum wage price effect and found that increase in income partially drives the significant minimum wage pass-through coefficient, which can be as large as 1.6%. (c) They also found evidence that income respond quickly to minimum wage increases, within a 4 to 6 months window around the increase.

The determinants of saving and investment in deprived district capitals in Ghana were examined by [18]. This study was based on amicro economic approach of estimating the determinants of financial saving and investment in one of the most deprived district capitals in Ghana. Two separate multiple lines a regression models were fitted for saving and investment. The paper found that there was the propensity to save and invest in spite of low income. Whereas the levels of income, educational status and occupation had positive influence on savings. Besides, the number of dependents exerted a negative influence on saving. This paper found that age composition and assets did not have a significant effect on saving. It was reported that the factors that drive household investment are occupation, expenditure, assets and saving. Any decision or policy pertaining to finance and development by government, the private sector or financial institutions geared towards improving saving and investment in must incorporate these factors.

Summary from the literature review indicated that many of these studies have explored the relationship between income distribution and economic growth (see, for example, [19], [20]), without examining the impact of income distribution on savings. This is unfortunate because savings and investment are the driving force of economic growth, and a detailed examination of the relationship between savings and income distribution should proceed before any systematic study on the impact of income distribution on income growth. Our current study intends to fill up this missing gap. The literature on savings behaviour is enormous. For a detailed survey, see [21]. In general empirical evidence shows that countries with a high savings rate, such as Japan, South Korea, and Singapore are typically associated with high growth rates.

2.2. Theoretical Framework

Following the relationship between consumption and income, saving can also be expressed in the principle of Keynes theory,

$$S_t = \alpha + \beta Y_t \quad (1)$$

Where S_t and Y_t denote the total personal savings and total disposable income, respectively at time t . β , the marginal propensity to savings (MPS) is expected to be constant and positive but less than unity, so that higher income leads to higher savings. The autonomous component of savings, α , is assumed to be small but positive. By capturing the

conjectures of the fundamental law, the absolute income hypothesis has these important features: (1) that the savings increases or decreases with increase or decrease in income but non-proportionally. This non-proportional savings function implies that in the shortrun average propensity to save (APS) is greater than the MPS: $APS > MPS$, where $APS = \frac{S}{y}$ and $MPS = \frac{\Delta S}{\Delta y}$. The short-run autonomous savings do not change with income but over the long period horizon, as wealth and income increase, savings also rise; the marginal propensity to save out of the long-run income is closer to the average propensity to save, as income rises, the proportion of it falls, so the income elasticity of savings defined as would be less than unity; (2) That savings function is stable both in the short-run and long-run.

2.3. Model Specification

In line with the theoretical framework discussed above, the

$$\ln S_t = \ln \alpha_0 + \alpha_1 \ln MW_t + \alpha_2 \ln IN_t + \alpha_3 \ln INF_t + \alpha_4 \ln PCI_t + \alpha_5 \ln PO_t + U_t \quad (4)$$

$$\text{let } \alpha_0 = \ln \alpha_0$$

The cointegration relationship for equation (3) is estimated by using the bounds test based on the following unrestricted error correction model.

$$\Delta \ln S_{jt} = \alpha_0 + \alpha_1 \ln S_{jt-1} + \alpha_2 \ln MW_{t-1} + \alpha_3 \ln IN_{t-1} + \alpha_4 \ln INF_{t-1} + \alpha_5 \ln PCI_{t-1} + \alpha_6 \ln PO_{t-1} + \sum_{i=1}^k B_i \Delta \ln S_{jt-i} + \sum_{i=1}^k \theta_i \Delta \ln MW_{t-i} + \sum_{i=1}^k \lambda_i \Delta \ln IN_{t-i} + \sum_{i=1}^k \gamma_i \Delta \ln INF_{t-i} + \sum_{i=1}^k \pi_i \ln PCI_{t-i} + \sum_{i=1}^k \mu_i \ln PO_{t-i} + U_t \quad (5)$$

Where $\Delta \ln S$, $\Delta \ln MW$, $\Delta \ln INTR$ and $\Delta \ln INFL$ are the first differences of the logarithms of the respective variables; k is the lag length. The null hypothesis of no-cointegration for equation (4) is tested by excluding the lagged-variables in the model. Specifically, the study performed a joint significance test where the null hypothesis of: $H_0: \alpha_1 = \alpha_2 = \alpha_3 = \alpha_4 = 0$ (i.e there is no cointegration) is tested against the alternative hypothesis of $H_1: \alpha_1 \neq \alpha_2 \neq \alpha_3 \neq$

effect of minimum wage on savings is as follows:

$$S = f(MW, X) \quad (2)$$

Where S represents savings; MW represents minimum wage and X represents other control variables that may influence S (consumption, savings and debt behaviour apart from minimum wage. Thus control variables considered include: Variables such as Interest Rate (IN), Inflation Rate (INF), per capita income (PCI), and Population (PO). Equation (1) becomes:

$$S_{it} = \alpha_0 MW^{\alpha_1} * IN^{\alpha_2} * INF^{\alpha_3} * PCI^{\alpha_4} PO^{\alpha_5} U_t \quad (3)$$

Where t represents time period and U is the stochastic error term and I is consumption savings and debt behaviour. Taking the logarithm of equation (2), it becomes

$\alpha_4 \neq 0$. (i.e there is co-integration) The decision rule from above is to accept the null hypothesis of no-cointegration if the F-statistic value is below the lower bound of test table. However, if the F-statistic value is more than the upper bound of the critical value bound, then null hypothesis of no long-run relationship (no-cointegration) can be rejected, and thus accept the alternate hypothesis.

The long-term ARDL equilibrium relation is given as; ed

$$\ln S_{jt} = b_0 + \sum_{i=1}^p b_1 \ln S_{jt-i} + \sum_{i=1}^p b_2 \ln MW_{t-i} + \sum_{i=1}^p b_3 \ln IN_{t-i} + \sum_{i=1}^p b_4 \ln INF_{t-i} + \sum_{i=1}^p b_5 \ln PCI_{t-i} + \sum_{i=1}^p b_6 \ln PO_{t-i} + ECT_t \quad (6)$$

Where ECT_t is the error correction term defined as the gap between the $\ln Z_{jt}$ and its equilibrium level which is to be filled in the next period. Therefore, the model that emanates from equation (5) is in the form of

$$\Delta \ln S_{jt} = C_0 + \sum_{i=1}^q C_1 \Delta \ln S_{jt-i} + \sum_{i=1}^q C_2 \Delta \ln MW_{t-i} + \sum_{i=1}^q C_3 \Delta \ln PCI_{t-i} + \sum_{i=1}^q C_4 \Delta \ln PO_{t-i} + \sum_{i=1}^q C_5 \Delta \ln IN_{t-i} + \sum_{i=1}^q C_6 \Delta \ln INF_{t-i} + C_7 ECT_{t-1} + U_t \quad (7)$$

In this study, both descriptive and econometrics techniques of analysis were adopted. To achieve objective one, which was trends of consumption, savings, debt following the minimum wage legislation in Nigeria, descriptive analysis such as trend analysis, graphs and tables were used. Objective two and three were achieved by estimating Autoregressive Distributed Lag (ARDL) test. Furthermore,

this study made use of the following variables; minimum wage (MW), per capita consumption (CO), per capita savings (SA), debt (DE), per capita income (PCI), population (PO), interest rate and inflation rate (INTR). The per capita consumption was measured by dividing consumption with the working population. Also per capita savings was measured by dividing savings with working population. Per

capita income was measured by dividing income with population. The population used in this study was the population between the age ranges of 18-60 years; the debt was measured from the addition of both domestic and foreign debt. This study will make use of secondary data from annual time series between the periods 1980 to 2016, and obtained from issues from Central Bank of Nigeria Statistical Bulletin.

3. Result

Here the short-run and long-run dynamics of savings and wage are presented and discussed. The short-run relationship of the estimated coefficients of the model, are presented in Table 1. The results showed that there was positive and significant relationship between one period lagged minimum wage and current level of savings ($t=2.6$, $p<0.05$); with the coefficient of minimum wage with respect to savings was 0.2. This confirmed that if minimum wage increases by 1%, on average, savings goes up by 0.2%. More over the life-cycle theory explained that national saving depends on the rate of growth of national income, not its level. This implies that income policies such as minimum wage legislation could enhance savings in Nigeria. Furthermore, the results showed that positive and significant relationship exists between the two periods lagged per capita income and current level of consumption ($t=2.07$, $p<0.05$). This conforms to apriori expectation and indicates that the coefficient of per capita income with respect to consumption was 3.1. Thus, if per capita income increases by 1%, on average, consumption was expected to change by 3.1%. The estimation results of the short-run model indicate that minimum wage raised the growth of savings in Nigeria. The coefficient of interest rate with respect to savings was positively signed and statistically significant. This can be interpreted that an increase in interest rate would cause savings to rise. The coefficient of interest rate with respect to savings was 0.01 which suggested that one percent increase in the interest rate would cause savings rise by 0.01%. The results on the relationship between savings and minimum wage can be related to those achieved by Jeremy (2011) who found that those who are optimistic about future income and future economy are more likely to save more. The study discovered that no effect of minimum wage was found on savings given the fact that presence of high rate of inflation had not made the impact of minimum wage on savings felt.

Having observed along-run cointegrating relationship among the variables; this study proceeded to estimate the long-run relationship among the variables using the ARDL technique. The coefficients of the long-run relationship as presented in Table 1 showed that minimum wage had positive and significant relationship with savings in the long-run ($t=3.0$, $p<0.05$). The coefficient of wage with respect to savings reflects a positive value of 0.34 expressing positive relationship between minimum wage and aggregate saving. The positive sign showed that a unit change in minimum wage would increase aggregate savings by 0.34%. In addition, the coefficient of the per capita income was also positive and

had a significant impact on savings in the long-run ($t=2.9$, $p<0.05$). The coefficient of per capita income with respect to savings displayed a stronger significant and negative relationship with savings in the long-run having recorded a coefficient of 3.5. However, the empirical interpretation of this result was that one percent increase in per capita income will increase savings by 3.5%. These results indicate that minimum wage legislation had apposite significant effect on workers savings in the long-run, caused by increase in workers earning due to upward review of minimum wage act. The result on the relationship between savings and minimum wage was related to those achieved by Bhaduri-Marglin (2001) who was of the view that supported the view that savings behaviour vary as the wages of workers changes and this contradicts the submission of Haruna (2015). The study found that income and asset did not have significant effect on savings.

Expectedly, it was observed from Table 1 that the coefficient of population with respect to savings was positive and significant ($t=3.7$, $p<0.05$) between one period lagged of population and current level savings. The coefficient of population with respect to savings was 3.8. This means that if population rises by 1%, on average, savings increases by 3.8%. The observed positive relationship between saving and population was in line with the finding of Lee and O'Roark (1999) who averred that population has apposite and significant effect on savings. Similarly, from Table 1, the coefficient of the relationship between one periods lagged interest rate and current level of savings was positive and significant ($t=2.6$, $p<0.05$). In the same vein, the coefficient of interest rate with respect to savings was 0.02. This showed that one percent increase in the concentration interest rate would cause saving to increase by 0.02%. The positive significant relationship between savings and interest can be traced to the increase in the commercial banks capital base introduced by the Central Bank of Nigeria to encourage savings in the year 2015.

Table 1. Short Run and Long Run Relationship between Savings and Minimum Wage in Nigeria Dependent Variable: $D(LSA)$.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CONSTANT	-66.31357	30.46695	-2.176574	0.0448
SHORT-RUN EFFECT				
D(LWA(-1))	0.185589	0.072337	2.565619	0.0245
D(LPO(-1))	-8.249891	7.360474	-1.120837	0.2789
D(IN(-2))	0.016434	0.005326	3.085431	0.0019
D(PCI(-2))	3.101866	1.500603	2.067080	0.0301
D(INF(-1))	-0.000419	0.001953	-0.214282	0.8330
D(LSA(-1))	0.597873	0.214899	2.782114	0.0123
LONG-RUN EFFECT				
LSA(-1)	-0.052458	0.018847	-2.783314	0.0133
LWA(-1)	0.335664	0.111963	2.997987	0.0071
LPO(-1)	3.779606	1.680282	2.249388	0.0389
IN(-1)	0.016773	0.006357	2.638497	0.0132
INF(-1)	-0.001602	0.002079	-0.770782	0.4521
PCI(-1)	3.510753	1.220001	2.877664	0.0104

Source: Author's Computation, 2015

4. Discussion

From the empirical analysis conducted, the following constitute the summary discussion of main findings: On the issue of the short-run and long-run relationship between consumption and savings with respect to minimum wage legislations in Nigeria. It was discovered that: Minimum wage had positive and significant relationship with savings in the long-run ($t=3.0$, $p<0.05$). The elasticity of minimum wage with respect to savings reflects a positive value of 0.34 expressing positive relationship between minimum wage and aggregate savings therefore exacting an increasing effect on economic growth. The positive sign showed that a unit change in minimum wage would increase aggregate savings by 0.34%. The results also confirmed that there was positive and significant relationship between one period lagged minimum wage and current level of savings ($t=2.6$, $p<0.05$); with the coefficient of minimum wage with respect to savings was 0.2. This confirmed that if minimum wage increases by 1%, on average, savings goes up by 0.2%. More over the life-cycle theory explained that national saving depends on the rate of growth of national income, not its level. This implies that income policies such as minimum wage legislation could enhance savings in Nigeria.

5. Conclusion

The objective of the study is to determine effects of minimum wage on savings in Nigeria. The study also found that minimum wage had positive and significant relationship with savings in both the Short-run and long-run. Hence, minimum wage policy should be reviewed upward with a view to enhancing the saving ability of workers, particularly the low income earners.

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