Employment – Real Wage Relationship and Economic Growth In Nigeria

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ABSTRACT

One of the major socio-political and economic issues in a contemporary Nigeria is the creation of adequate employment opportunities for the growing numbers of unemployed people. While several factors including the demand – supply anomalies have been a major contributor to the phenomenon of rising unemployment, efforts by the government to tackle the problem have remained a mirage. This paper attempts an investigation of the relationship between real wage and employment and their effect on economic growth. The critical question being addressed in this study is whether Keynes was right in his proposition that wage reductions are necessary to induce employment in the short run. Using a Granger – causality cointegration framework, this study finds a statistical evidence for a long-run relationship between real wage and employment for the period 1990 – 2009 and firmly rejects the hypothesis that wages cause employment in the short-run. It supports the Keynesian view that real wage fall because employment increases probably due to an increase in demand. The result further reveals that real wage reduction is not sufficient to induce an expansion of output and employment and that unemployment can be fought through the demand – side intervention. It concludes that Keynes was right after all.

KEY WORDS: Real Wage, Employment, Granger – causality.

1.1   INTRODUCTION

Taking their point of development from the traditional microeconomic development, both the classical and neoclassical economists suggested that wage variations should be the mechanism for maintaining the right level of employment. To them, every economy possesses an in-built self correcting mechanism and that flexibility of wages have the right capacity to ensure a rapid process towards full employment. Accordingly, the possibility of unemployment was effectively ruled out by Say's Law (Since supply is assumed to create its own demand). While the current market infrastructures in Nigeria would not allow for full employment to occur in the economy as the labour market picking the (theoretically) most qualified applicants from the pool of unemployed members of the society, what constitutes and causes unemployment in the country is difficult to describe in historical context because Nigerians are yet to see the full implications of it.

Even though the classical economists believe that unemployment is caused by excess labour supply occasioned by high price level of labour (wages), the philosophy is that when wages are set too high by social and political forces, demand would be low while supply would be high and that the excess supply represents unemployed labour. Consequently, in both the classical and neoclassical orthodoxy, there is a clear causal relationship from real wages to employment or unemployment levels with wages

taking the lead in the adjustment process towards full employment. By employing a Granger-causality cointegrations framework, this study investigates the employment – real wage relation and economic growth in Nigeria, and evaluates the direction of causality.

The rest of the paper is divided as follows: Section 2 examines the literature review and theoretical framework including empirical literatures which are necessary for an understanding of the subject matter. Section 3 presents model specification and procedures for estimation. In section 4, an empirical analysis of the data collected are carried out. The outcome of section 4 shapes the policy prescriptions that are presented in section 5. finally, conclusion and recommendations are presented in section 6.

2.1   LITERATURE REVIEW AND THEORETICAL FRAMEWORK

The traditional classical and neoclassical economic theory revolved around the vicissitude of the idea that perfect competition very quickly adjusts wage with a view to eliminating excess demand or supply in the labour market. As a matter of fact, Pigou (1933) discussing these issues in the works of Hansen (1953) argued that "with perfectly free competition… there will always be at work a strong tendency for wage – rate to be so related to demand that everybody is employed …. The implication is that such unemployment as exist at any

time is due wholly to the fact that changes in demand conditions are continually taking place and that frictional resistances prevent the appropriate wage adjustments from being made instantaneously". As Pigou (1933) noted, any given state of demand, is as good as any other state and a completely flexible wage policy would "abolish fluctuations of employment". The implication here is that an all round reduction in the rate of money wages might be expected to increase employment, while wages would diminish the volume of employment. As Apergis and Theodosiou (2008) observed, this view prevails almost unchanged in all versions of the classical theory and suggests that there is an unambiguous and close relationship between real wages and employment level and that a decline in real wage should be expected to lead to an increase of the employment level. In order words, if unemployment persist in any economy, it is as a result of downward wage inflexibility which prevents the unobstructed functioning of the self-correcting mechanisms in the labour market. Hence, Apergis and Theodosiou (2008) maintained that persistent unemployment is caused by real wages been set "too high". Based on the supply and demand interactions, when wages are held too high by social and political forces, demand would be low and supply would be high and that excess supply represents unemployed people. The belief of the classical economists was that if the economy were left on its own, it would adjust to reach an equilibrium wage for workers and the economy would be at full employment. This meant that the problem of unemployment is a self-solving one like every other thing. When wages falls, demand for labor will increase and eventually everyone who wants a job will get one.

In contrast to the classical philosophy, Keynes (1963) denied the existence of self-correcting market mechanisms that are capable of clearing the labour market in a competition economy and asserted that competitive is not able to adjust the price of labour and thus eliminate excess supplies, or demands in the labour market. Keynes' view as widely expressed in the works of Tobin (1984) is that there are circumstances in which reduction of money wage rates would not succeed in increasing aggregate demand for goods and services. As Keynes argued, "production and employment would remain unchanged after the cut in wages". Changes in wages have both income and cost-effects. As urged by Apergis and Theodosiou (2008), a reduction in real wages reduces the cost component in the profit calculations of employers which also reduces income and real demand for workers since the money income of wage earners determines the total demand for consumers goods. Therefore, a reduction in real wages will increase employers' real income but, at the same time will influence workers' expenditures and thus, effective demand for output. As observed by Clower (1970), if a firm cuts wages, the employer is able to expand output since variable costs are now lower, but if money wage rates (driven by the pressure of competition in the labour market) fall all round, the money – demand function for goods (and the demand function for labour) will also fall. To this end, Clower (1970) was

able to show that if all firms follow suit, the problem of unemployment may still remain.

In a similar study, Kelecki (1939, 1966) suggested uncertain future demand conditions following a reduction in real wages which should be expected to result in lack of incentives for employers to increase employment. This is because, whenever the economy is not in equilibrium, firms change their production until production equals consumption. On the other hand, if there is too little supply, the point where production is less than consumption will meet the demands of consumers until equilibrium is restored. In the Keynesian model, the economy is continually adjusting as various factors influence the independent factors of investment, government spending, and net export as well as factors outside of income and production.

Given the level of employment, the marginal product, and the real wage being uniquely determined, it is worth noting that demand determines employment while employment determines the marginal product (i.e. the real wage) and not the other way round. Interestingly, if money wage rates are fairly stable under conditions of increasing marginal cost, employment could be raised, and as a result, real wage rates would fall to a level that is consistent with the increased level of employment. In this way, employment is not raised by a reduction of real wages but that real wage rate falls because employment has been increased via an increase in demand. Thus, as Vercelli (1991) remarked, employment is not determined by the course of wages but by what happens in the goods market.

2.2 EMPIRICAL LITERATURES

Many studies have tried to find out the precise direction of the relationship between real wage and employment. Keynes as well as Keynesians particularly Minsky (1975) accepted the presence of an inverse relationship between real wages and employment, which was primarily due to the presence of diminishing returns to labour over the short – run. In addition, other studies like Harnermesh and Pfann (1996) argues that wage – taking firms have to operate under an infinitely elastic labour supply curve, resulting in a rejection of the argument that wage adjustments can render an effects on employment adjustments.

There are conflicting evidences for the real wage – employment relationships across different countries. For example, in the United Kingdom, West Germany and Australia, Arestis and Mariscal (1994), Carruth and Schnable (1993), Smith and Hagan (1993) and Suedekum and Blien (2004) found a significantly negative relationship between wages and employment. On the other hand, no consistent relationship was found between the variables in the works of Darby and Wren-Lewis (1993) Bender and Theodosiou (1999) for the UK. The same outcome was found in the works of Nymoen (1989) for Norway and Nymoen (1994) for Finland. Finally, Danthine and Kurman (2004) proposed a fair wage model and

provides evidence in favour of a near – zero correlation between employment and wages. While Apergis and Theodosiou (2008) using a panel data from different OECD countries from 1950 to 2005 found statistical evidence for a long – run relationship between employment and real wage and firmly rejects the hypothesis that wages cause employment in the short – run.

In general, there is no accepted consensus about the impact of wage changes on employment. This lack of consensus is primarily due to the fact that wages are considered not only as a cost factor for firms but also as a substantial component of aggregate income as well as of aggregate demand. Even though this view is not generally accepted in modern macroeconomics, studies such as Appelbeum and Schettkal (1990) and Jerger and Michaelis (2003) opined that certain approaches, however, give emphasis on the demand side repercussions of wage increase. According to them, wage changes seem to have a significant impact on employment.

3   SPECIFICATION OF THE MODEL

This section explores an econometric model that sek to explain the evolution of the relationship between employment and real wage and finally link this relationship with output. From the directions of both the neoclassical, Keynesian or other approaches, the main relationship that have shown better results in econometrics modeling is investigated in this study. Starting with the familiar production function in its intensive form;

$$Y_t = A_t F (K_t L_t) \dots\dots\dots\dots 1$$

Where: Y_t = Output at time t; A_t = technological at time t; K_t = level of physical capital at time t; L_t = level of labour at time t.

In the neoclassical theories, the following properties are assumed for the above production function;

1.   F(*) is concave in K and L. That implies a positive and diminishing marginal productivity of each input and is such that;
      $F_k (*) > 0$ and $F_{kk} (*) < 0$ for all $K > 0$ and $L > 0$,
      $F_L (*) > 0$ and $F_{LL} (*) < 0$ for all $K > 0$ and $L > 0$,

2.   F (*) exhibit a constant returns to scale, such that;
      $F (\delta K_t \delta L_t) = \delta.f(K_t L_t)$ for all $\delta > 0$;

3.   F (*) satisfies the Inada conditions:

$$\text{Lim}_k \longrightarrow 0 \ (F_k) \implies \text{Lim}_L \longrightarrow 0 \ (F_L) \implies \infty$$

$$\text{Lim}_k \longrightarrow \infty (F_k) \implies \text{Lim}_L \longrightarrow 0 \ (F_L) \implies 0$$

From the neoclassical perspective, the price of output multiplied by the real marginal productivity of labour is a function of monetary wage. This imply that real marginal productivity at moment t is a function of real wage. Thus:

$$P_t F_L = f (WM_t) \text{ and } F_L = f (W_t); \text{ with } W_t = WM_t/P_t \dots\dots 2$$

Where WM_t is money wage, W_t is real wage, P_t is the index of price of value – added while F_L is the marginal productivity of labour in real terms ($\delta Q_t / \delta L_t$) being Q_t real output, and is defined by GDP at constant price). Being related to the Cobb-Douglas production function, the mean productivity per worker is the marginal productivity and thus the real wage. This implies that:

$$F_L = \alpha Q/L \text{ and thus } MP = \alpha FL = \alpha W \dots\dots\dots 3$$

The MP = Q/L is the mean real productivity per worker.

Since the real wage is usually the result of supply of and demand for labour force in a market economy[1], with the real value added of real output per worker and the cost of physical capital as both restrictions which limit the capacity of the production units to demand for labours, it means that from the Philips Curve[2] and the Lipsey – Parkin (1970) model[3] of two equations system, the explained variables are monetary wage and a general price index. In this system, the rate of growth of real productivity in period t – l is expected to have a negative impact on the price index and to affect positively on the real wage for a given level of other explanatory variables[4].

In this study, an explanation of how real wage is related to productivity is directly provided, having into account the role of demand and supply in the determination of wages and employment in line with the studies by Guisan (2005), Guisan (2006) and Apergis and Theodorosiou (2008). At the beginning of period t + l, the average real wage agreed upon should usually have an upper limit, for a given level of available capital and the minimum rate of returns considered by production units necessary per unit of capital (r). The upper limit is given by W^*_{t+l} in equation (4) as:

$$W^*_{t+l} = f (Q^*_{t+l} – r^*_{t+l} KA_t) / L_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 4$$

Where Q^*_{t+l} is the expected output produced in year t+l by the L_t workers with the available physical capital KA_t at constant prices, while r^*_{t+l} is the minimum rate of returns accepted by the production unit per unit of physical capital KA_t. the expected value of the mean real productivity per worker $MP^*_{t+I} = Q^*_{t+l} / L_t$ has an important role to explain the upper limit of real average wage W^*_{t+l}.

Finally, the real wage W is a function of a lower limit (usually its lagged value), the upper limit W* and one or more variable(s) related with demand for and supply of labours (as unemployment) and other factors which may have influence, so that the increase in real wage may be expressed as:

$$W_t – W_{t-l} = \delta_1(W^*_t – W^*_{t-l}) + \delta_2(UR_{t-l} – Ur_{t-2}) + \lambda \ldots\ldots\ldots\ldots\ldots\ldots.. 5$$

Where UR is unemployment rate, λ represent other factors. Trade Union abilities in reaching wage agreement has some significant effects on the parameters of equation (5).

According to Guisan and Aguayo (2001), the sign of the first parameter of equation (4) is expected to be positive and ranges between 0.5 and 1, while that of the second parameter is expected to be negative.

Since firms faces the same production function[5], their "price setting" equation may be contingent upon the number of labour

demanded and thus, may not take the real wage as given so that their competitive labour demand curve reflects a given level of employment at a given real wage. Under such a production function, an adverse technological shock may increase the competitive price, given the real wage and employment while decreasing output, given employment in the same proportion. Consequently, the estimating equation for the above description is given as follows:

$$rlw_t = \beta_0 + \beta_1 emp_t + \mu \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 6$$

where rlw = real wage at present t; emp_t = employment at time t; β_0 and β_1 are parameter estimates while μ is the error term.

3.2 DATA AND ESTIMATION PROCEDURE

The data used in this study to explore the relationship between employment and real wage are obtained from the National Bureau of Statistics and the Central Bank of Nigeria. The time period under examination is from 1990 to 2009. Annual data on wages (in Naira term) and employment are used. The wage index was set in real terms by dividing it by the implicit price deflator, which is considered as a more appropriate index than the consumer price index (CPI) since it includes prices of investment goods as well as prices of consumer goods including indirect taxes; hence, it is able to capture the main developments in domestic price behaviour. Additionally, it is able to accommodate the relevant comparisons for the supply decisions of domestic firms.

Throughout the paper, small letters indicate variables in logs in accordance with other studies such as Mehra (1991), Darrat (1994) and Apergis and Theodosiou (2008). The estimating variables are: real wage (rlw) employment (emp) and real GDP (rgdp). The log-linear estimation of the variables is done as follows.

a.   For the real wage – employment relationship;

$$rlw_t = \beta_0 + \beta_1 emp_t + \mu_{1t} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 7$$

b.   For the real wage, employment and real GDP relationship:

$$rlw_t = \alpha_0 + \alpha_1 emp_t + \alpha_2 rgdp + \mu_{2t} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 8$$

The μ_{1t} and μ_{2t} terms estimate the deviation from the modeled long – run relationship. Results are presented in section 4.

4. EMPIRICAL ANALYSIS

4.1   Model Estimation: Stationarity and cointegration.

For a guide to an appropriate specification of equations (7) and (8), the characteristics of the time series data used for estimating the models were examined in order to avoid spurious regression which emanate from the regression of two or more non-stationary series. While stationarity test is usually performed on the levels of the variables, cointegration test is performed on the error term of the static regression specified in levels. In this study, cointegration test is performed to ascertaining whether (or not) long – run equilibrium relationship exists between or among the non – stationary dependant and independent variables. Granger and Newbold (1977), Davidson et al (1978), Granger and Engle (1985)

have all shown that the existence of cointegration is a sufficient condition for the formulation of a model that allows for the incorporation of an error correction mechanism (ECM). According to Ogiogio (1995), the inclusion of an ECM in a model ensures that the long – run relationship is preserved.

In the conduct of cointegration test, the Engle – Grander (1987) procedure which ignores the possibility of cointegration amongst the independent variables was employed. The model includes the leads of the regression as follows:

Series 1: Wages and Employment Relationship.

From equation (6), the cointegration equation is so defined with the associated augmented – by – leads autoregressive distributed lag (ARGL) equations described by a (1,1,1) model. The causality between wages and employment exist if:

a. $rlw_t = \mu_{11} + \beta_{11}\, emp_t + \beta_{12}\, rlw_{t-1}$ …………………………..… 8

       and

b. $emp_t = \mu_{21} + \beta_{21}\, rlw_{t-1} + \beta_{22}\, emp_{t-1}$ …………………………….. 9

where μ_1 and μ_2 are serially uncorrected with zero mean and finite covariance matrix. The causalities running from employment to real wage are termed "demand-side" causation while those running from real wage to employment are termed "supply-side" Causation.

Results are reported in table 4.2. The causality is tested for, using the standard F-test computed from the unrestricted version of

equations 8 and 9. symbolizing "cause" by an arrow, the decision rule is that:

    i.   Employment causes real wage if its overall significance defined by F-test is greater; and

   ii.   Real wage causes employment if its F-test is greater.

  iii.   Employment and real wage are independent of each other if (i) and (ii) above hold; while

  iv.   Employment and real wage are independent if (i) and (ii) above are not rejected.

Results are contained in the table below:

TABLE 4.1 REGRESSION RESULTS OF THE LOG-LINEAR RELATIONSHIP BETWEEN REAL WAGE AND EMPLOYMENT.

Dependent Variable; Log of Real wage

S/N	Variable	Coefficient	Standard error	t-value
1	constant	-0.126	0.0342	-3.680
2.	employment	0.690	0.1705	4.0469
$R^2 = 0.476$; $R^{-2} = 0.447$; F = 16.368; D – W = 1.521				

      Source: own computation using SPSS version 19.0

The regression results above are plausible in that the estimated t-ratios are statistically high and significant at 5 percent level. The model provides an overwhelming evidence that about 69 percent of the variations in real wage were found to be caused by variations in employment. Under conditions of increasing marginal

cost, a stable money wage rates could instigate a rising level of employment so that real wage rates would fall to a level consistent with the increased level of employment. Even though employment is not raised by a reduction in real wage, the process demands that real wage fall because employment has been increased via an increase in demand. This is because demand determines employment while employment determines the marginal product (the real wage) and not the other way round. As vercelli (1991) noted, employment is not determined by the course of wages but by what happens in the goods market. In some other studies like Hamermesh and Pfann (1996), wage-taking firms have to operate under an infinitely elastic supply curve so that wage adjustment can render an effect on adjustment in the levels of employment.

Based on this result, the paper advocates a policy of fighting unemployment via the demand side intervention such as creating a conducive environment for investment, reduction in money wage and provision of social security nets for the teeming unemployed.

TABLE 4.2: RESULTS OF BIDIRECTIONAL RELATIONSHIP BETWEEN EMPLOYMENT AND REAL WAGE BASED ON F-TEST.

$$emp_t \longrightarrow rlw_t = 28.274 \qquad rlw_t \longrightarrow emp_t = 7.758$$

Source: own computation using SPSS version 19.0.

The F-test for causality running from employment to real wage is higher and statistically significant showing that employment causes real wage while the reverse is not the case.

Series 2: Wages, Employment and Real GDP Relationship:

To ascertain the multivariate causality relationship between employment, real wage and real gross domestic product, the associated ARDL equations are equally described by a (1, 1, 1) model as follows:

a. $rlw_t = \mu_{31} + \beta_{31} emp_t + \beta_{32} emp_{t-1} + \beta_{33} rlw_{t-1} + \beta_{34} rgdp_t + \beta_{35} rgdp_{t-1} + \varepsilon_1$ ……………………………………………………. 10

and

b. $emp_t = \mu_{41} + \beta_{41} rlw_{t-1} + \beta_{42} emp_{t-1} + \beta_{43} rlw_{t-1} + \beta_{44} rgdp_t + \beta_{45} rgdp_{t-1} + \varepsilon_2$ ……………………………………………………. 11

These yield the error correction equation as follows;

c. $\triangle rlw_t = \lambda_{11} (rlw_t - \beta_{01} - \beta_1 emp_t - \beta_{34} rgdp_t) - \lambda_{12} \quad emp_t \quad \triangle$

$-\lambda_{13} \triangle rgdp_t + \varepsilon_3$ ……………………………………………………… 12

and

d. $\triangle emp_t = \lambda_{21} (emp_t - \beta_{02} - \beta_2 rlw_t - \beta_{34} rgdp_t) - \lambda_{22} \quad rlw - \quad \triangle$

$\lambda_{13} \triangle rgdp_t + \varepsilon_4$ ……………………………………………………… 13

These causalities are tested for, using the same procedure as described in series 1. Results are contained in the table below

TABLE 4.3: RESULTS OF MULTIVARATE CAUSALITY RELATIONSHIP BETWEEN EMPLOYMENT, REAL WAGE AND REAL GROSS DOMESTIC PRODUCT BASED ON F-TEST.

$$Emp_t \longrightarrow rlw_t = 11.214 \qquad rlw_t \quad emp_t = 6.446$$

Source: own computation using SPSS version 19.0

The F-test is, again higher and statistically significant for causality running from employment to real wage indicating that only employment does, cause the real wage while the reverse not true.

CONCLUSION AND POLICY RECOMMENDATION

This study investigates the existence and direction of a long – run relationship between real wage and employment within the context of the Nigerian economy. Using time series data obtained from National Bureau of Statistics (NBS) and Central Bank of Nigeria (CBN) from 1990 to 2009, the paper applies a Granger – causality framework and finds statistical evidence for the existence of a relationship between real wage and employment variables and firmly reject the hypothesis that wages cause employment. Rather, it finds that real wage either rise because employment falls or falls because employment increases through a corresponding variations in demand. This result in consistent with other studies such as Apergis and Theodosiou (2008), Bachinsky et al (2003), Belzil (2000), and Topel (1986) in which wages respond to Labour demand and to aggregate demand shocks.

The paper further revealed that labour union activities may be instrumental in pushing wages up through bargaining. While this paper acknowledge that a variety of policy issues emanating herewith may generate some intense debates, it is worth stating that the presence of nominal wage rigidities in our labour markets complicates much of the relations between real wage and employment. In the short-run, while this relation may not be expected to hold and their correlations difficult for interpretation, their "theoretical" presence may reflect the dominance of labour supply or labour demand shocks so that in the medium to long-term, nominal money leads to variations in unemployment and in wages. This is because an unexpected increase in nominal money leads to higher output and employment (or lower employment) and to a decrease in real wage as long as technology coefficient is positive. This is due to the increase in marginal cost of the firms in response to demand. Whether real wages exhibit this countercyclical behaviour was the subject of the Dunlop – Tarshis debate. On the evidence presented in this paper, it could be concluded that Keynes was right after all because only the money wage is so determined by wage bargain and not the real wage while unemployment can be fought by apply the demand-side interventions such as creating some conducive environments for investment in the economy, government spending on infrastructures and net export. Secondly, any reduction of

unemployment level should be accompanied by a reduction in wages as this will make labour relatively cheaper to induce employers to hire more "army" of the unemployed labour. Finally, instituting a social security net may help to deal with the problems of unemployment at least, in the short-run.

NOTES

1. See Blanchard, O. (1998): "Unemployment & Real Wage: A basic model" for detailed exposition.

2. Curve that analyze the negative effect of unemployment on monetary wages.

3. where the rate of monetary wages depends on the inverse value of the average unemployment rate in period t and t-1, the rate of growth of the unemployment rate in t, and the rate of increase of a general price index.

4. Kuh (1967) and other authors included productivity in monetary terms as an important variables in the explanation of monetary wage.

5. For a production function that is Cob-Douglas, an increase in natural resource price will have the same effect as a decrease in the co-efficient multiplying technology. On the other hand, if the production function is Leontief, then the relation between imputs and output will not be affected, but the price of resources may enter the price equation so that an increase in the resource price will increase the price of output given the wage rate.

APPENDIX

Regression Data

Year	Real GDP N' Million	Wage N' Million	Employment	Implicit Price Deflator	Real Wage N' Million *
1990	267,550.0	16,562.0	40,684,944	100.0	16,562.00
1991	265,379.1	18,783.6	41,539,865	117.6	159,724.49
1992	271,365.5	28,733.4	43,981,673	196.3	146,374.94
1993	274,833.3	40,976.4	44,756,874	248.8	164,696.14
1994	275,450.6	49,647.3	45,403,112	326.7	151,966.02
1995	281,407.4	72,302.9	45,922,865	687.0	105,244.40
1996	293,745.4	88,569.8	46,201,061	920.1	96,261.06
1997	302,022.5	98,300.6	46,112,721	927.7	105,961.63
1998	310,890.1	122,807.5	47,765,354	871.2	140,963.30
1999	312,183.5	136,255.6	47,765,366	1,023.1	133,179.16
2000	329,178.7	188,393.7	48,264,920	1,392.0	135,340.30
2001	356,994.3	256,527.9	48,504,920	1,323.6	193,810.74
2002	433,203.5	271,708.1	48,544,921	1,595.6	170,285.85
2003	477,533.0	296,038.6	48,666,246	1,777.3	166,566.48
2004	527,576.0	342,092.3	48,824,440	2,162.9	158,163.72
2005	561,931.4	383,934.6	48,931,002	2,593.2	148,054.37
2006	595,821.7	794,761.7	49,021,064	3,115.8	255,074.68
2007	634,251.1	1,143,876.2	49,111,061	3,257.0	351,205.47
2008	672,202.6	911,817.8	49,200,235	3,614.4	252,273.63
2009	716,949.7	950,151.9	49,310,786	3,446.9	275,654.04

Source: Central Bank of Nigeria (2009) Statistical Bulletin

National Bureau of Statistics: Annual Abstract of Statistics. Various issues

Note: * Is self-computed

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