Drivers of Unemployment in Developing Economies: Evidence from Nigeria

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Abstract: *Unemployment is a global phenomenon whereby eligible workforce of a nation is disengaged in the service of the nation. It is not only a serious economic issue but has social implications that affect almost all countries and all people either directly or indirectly. It causes social disquiet and is the harbinger of the spate of crimes, social chaos, perennial youth unrest and unstable socio-economic structure that has bedeviled several nations. The increasing rate of unemployment has become an issue of concern for both policymakers and scholars in developing economies, while the developed ones are not excluded. This study sought to investigate the determinants of unemployment in developing economies using Nigeria as a case study. the study covers the period from 191 to 2018. Using annual timeseries a GLM model was estimated after examining for stationarity (using ADF and PP) and cointegration (using PQ). The result obtained indicates that raising the minimum wage is not the major cause of unemployment in Nigeria. It also shows that the CBN monetary policy stance and rural urban drift precipitate rather than reduce unemployment. It is therefore recorded supply-side solution be considered for controlling unemployment especially when the CBN policy is biased towards inflation control.*

Key Words: *Unemployment, GLM, Monetary Policy, Rural-urban drift, minimum wage.*

I. INTRODUCTION

Low unemployment is a corollary of full employment which is one of the key macroeconomic objectives of economic policy. Full employment is a critical macroeconomic objective because it reflects the aggregate performance of the economy, that is, it mirrors aggregate economic activities. Folawewo and Adeboje (2017) also adds that unemployment is a measure of economic wellbeing of a country. According to Bryne and Strobl (2004), unemployment is a key outcome of the labour market, and an indicator of the state of an economy in general, as it clearly reflects the economic development of a country. Thus, both policy makers and researchers are overwhelmingly concerned about high unemployment. However, Nigeria has been associated with long history of high unemployment (Bakare, 2011; Raifu, 2017).

Over the years, unemployment rate has soared at an alarming rate as many young graduates graduating from the higher institutions are joining the labor market without the capacity to absorb them. Historically, during the first two decades after independent of Nigeria as a country, unemployment was not an issue. This is because majority of citizens during that time resided in rural areas and engaged in farming and those in urban areas were gainfully employed. In other words, unemployment rate as at that time was very low. However, the country made a journey into unemployment when the oil sector took over as a primary driver of the economy (Nwankwo & Ifejiofor, 2014). Since then, unemployment issue has become a thorny one in the country. For example, unemployment rate rose from 1.7% in 1967 (Nwankwo & Ifejiofor, 2014) to 7.2% in 1981 (WDI, 2018). The unemployment rate declined steadily in 1985, 1990 and 1995 recording 6.5%, 5.5% and 6.2% respectively. It however, rose to 13.1% in 2000 and 21.4% in 2010. It reached an all-time peak of 27.4% in 2012 and later fell to 24.7% in 2013. Following the revision of the computational methodology of unemployment in 2014, unemployment recorded its lowest rate of 7.8 in over a decade. The rate began to rise slightly from 7.8% in 2014 to 9.9% in 2015 and 12.2% in 2016. In 2017, the unemployment rate jumped to 18.8%. in 2018, it increased further to 23.1%.

Economic theorists have continued to search for reasonable explanations of the determinants of unemployment in an economy. The first attempt was made by the classical economists. As noted by Maqbool, Sattar and Bhalli (2013), the classical theory of unemployment posits that unemployment is a transient phenomenon. In other words, there is no unemployment in the long run. The classical theory is anchored on the assumption that there is full employment and the market clears to steer the economy towards full employment equilibrium. The Keynesian economists fault the classical postulation, insisting that involuntary unemployment is a constant and long-lasting experience in free market economies. According to Keynesian theorists, unemployment is a consequence of demand deficiency and since wage rigidity prevails (rather than wage flexibility), economic equilibrium can be attained at less than full level levels. Unlike the classicists, Keynesians support the use of monetary and fiscal policy (howbeit, with more emphasis on fiscal policy). Harris-Todaro model also made a critical departure from the basic unemployment framework, suggesting that unemployment is reinforced by such institutional factors as rural-urban migration.

As theoretical explanation of the determinants of unemployment has hardly achieved convergence, O'Nwachukwu (2017) argues that there is no single theory of unemployment that could explain the determinants

of unemployment in every economy. This implies that unemployment drivers may vary among economies depending on economic fundamentals and configurations of an economy. In this regard, there are plethora of empirical investigations on the drivers of unemployment across countries (Meccheri, 2005; Monastiriotis, 2006; O'Nwachukwu, 2017). Based on theoretical and empirical inferences, unemployment has been attributed to be a consequence of several factors. For instance, Fajana (2000) noted that persistence soaring of unemployment figure can be attributed to the long period of initial unemployment among the job seekers or university, faulty manpower planning, increase in population, economic recession, collective bargaining process or labor market conditions and formal and informal sector wage differentials (Verick & Islam, 2010, Choudhry, Marelli & Signorelli, 2012). Other factors examined by researchers include exchange rate, national income, inflation, investment, foreign direct investment and balance of payment (Bakare, 2011, Oniore et al., 2015; Tiryaki 2018). The failure of policies anchored on these research outcomes to address the surging problem has compelled the researcher to contribute to this debate by examining other macroeconomic variables that could have implications for labour market outcomes.

So far, empirical search for drivers of unemployment in Nigeria is yet to establish the role of rural-urban drift, minimum wage, monetary policy stance and government borrowing on unemployment. This study seeks to fill this gap in the body of literature. The rest of the paper is arranged as follows. Section two presents the conceptual framework. In section three, the empirical framework is discussed while section summarizes the presentation of econometric results. Policy implication and conclusion are summarized in chapter five.

II. CONCEPTUAL FRAMEWORK

Concept of Unemployment

Unemployment is a popular concept well understood by many people of different countries as unemployment rate usually suggests the economic state of a country. In theory, unemployment concept appears simple, however in practice it is complicated because individuals have to be categorized as employed, unemployed or out of the labour force by taking into consideration a lot of factors (Khumalo, 2014). In 1954, the International Labour Organization (ILO) articulated a standard definition of unemployment that enabled countries to classify individuals as either employed or unemployed. According to the ILO standards, a person is unemployed if he or she is: without work, currently available for work and seeking work. However, the 13th International Conference of Labour Statisticians (ICLS) made a provision that allowed for the relaxation of the seeking work criterion that was emphasized in the initial standard definition of unemployment. The standard definition of unemployment was thought of as rather constrictive and unable to entirely capture the prevalent employment conditions in many countries. The latter definition of unemployment is confined to specific situations whereby the orthodox means of seeking employment were of partial significance, and cases where the labour market is largely unorganized or of limited scope, where labour absorption is at the time insufficient, or where the labour force is largely self-employed (Hussmans, 1990).

Since then, scholars have adopted this definition of unemployment in some form. Similarly, scholars have also used the definition provided by ILO as a benchmark for their own definitions of unemployment. For instance, Kuper and Kuper (1996) conceptualize unemployment in terms of not being employed and available and looking for work. Dwivedi (2005) defined unemployment as a situation in which those who are able and willing to work at the prevailing wage rate cannot find jobs. Dwivedi (2005) however, found this definition of unemployment ambiguous from a policy point of view as it did not specify the persons who should be and who should not be included in the category of job seekers. He further defined unemployment as the gap between full employment and the number of employed persons.

According to International Labour Organization cited in NBS (2018) the unemployed includes persons within the aged 15-64 who during the reference period (in most cases the week preceding the time the survey is administered) were available and actively seeking for work but were unable to find work. For Gbosi (2005), unemployment is the labour force percentage that is without job but is able and willing to work. Englama (2001) posits that unemployment rate in an economy is the number of people unemployed expressed as a percentage of the total labour force. Similarly Jhingan (2001) sees unemployment as the number of people who are unemployed in an economy, often expressed as a percentage of the labour force. The total labour force is the total number of people employed plus the number of people unemployed within the age bracket of 18-60 years. The definitions of Englama (2001), Jhingan (2001) and Gbosi (2005) are distinct but related. Similarly, Maqbool, Sattar and Bhalli, (2013), views unemployment as a situation in which individuals are actively searching for jobs and mentally prepare themselves to work at any level of wage which already exists in the competitive market. According to Chowdhury and Tanjil (2014) unemployment is the condition of being out of work or having no job or proportion of people which are able to work and actively searching for jobs but they are unable to find it.

In summary, unemployment is a situation where an individual is willing, able and wishes to work but unable to find job at the prevailing wage rate. Unemployment is a real matter of concern as it can yield devastating effect on economic welfare, crime, erosion of human capital, misery and social instability. For the purpose of this

study, we adopt the definition provided by Gbosi (2005) who defines unemployment as the percentage of the labour force that is without job but is able and willing to work at the prevailing wage rate.

Interactive Framework for Unemployment and its Macroeconomic Determinants

Unemployment is one of the key barometers for measuring the performance of an economy. Fundamentally, every economy strives to achieve three macroeconomic goals, namely price stabilization, full employment, and high rate of output growth. These economic aggregates are interconnected, so that a change in one of them will lead to a change in others. For example, during recession, output falls, unemployment rises and prices fall. Again, rising unemployment could lead to decline in productivity and output with rising or falling prices. If output decline signals supply shock such that demand exceeds supply, general price level will rise. If rising unemployment leads to decline in income and aggregate demand, prices will fall and business confidence may worsen. As a result, unemployment is a problem of great concern to policy makers of both developing and developed countries. This has led to several efforts to understand how interactions among macroeconomic variables influence the level of unemployment within the economy.

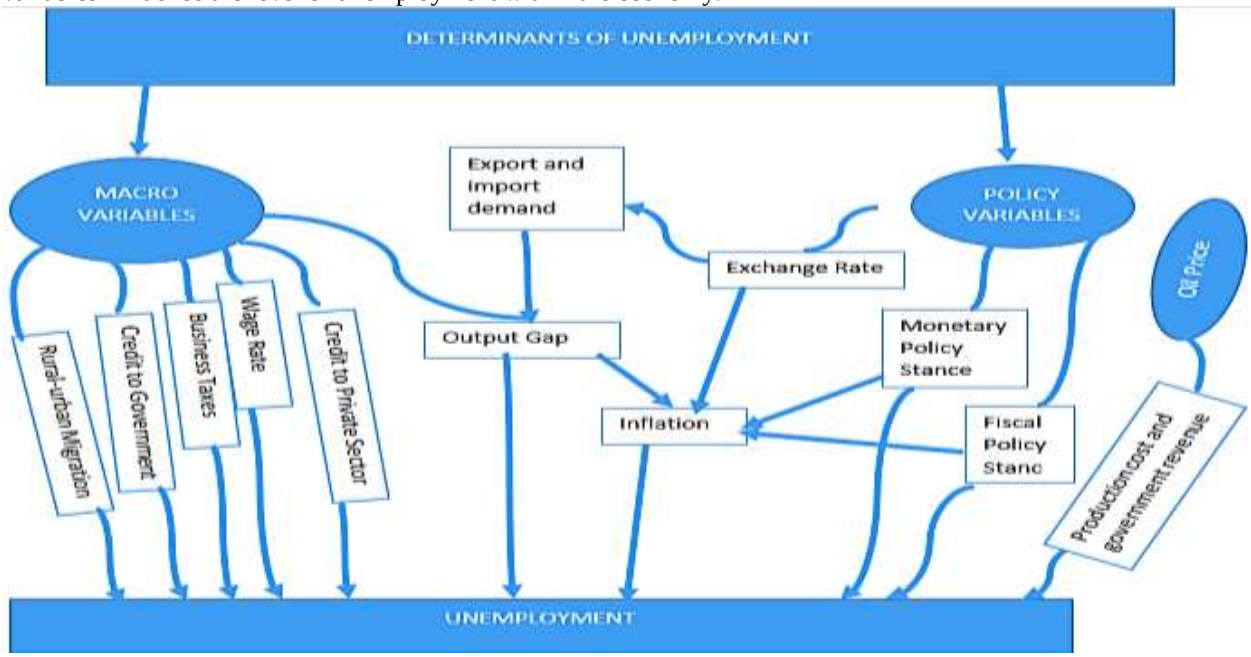


Figure 2.1 Conceptual Framework

Source: Researchers' Compilation (2018)

As shown in Figure 2.1, unemployment could be influenced by both policy and macroeconomic variables. Both fiscal and monetary policies are often designed to influence the level of unemployment in an economy. For example, contractionary fiscal policy aimed at reducing inflation could also worsen unemployment through job losses. Similarly, monetary policy that is aimed at increasing liquidity could also engender increase demand for labour thereby reducing the incidence of unemployment.

However, monetarists argue that increased liquidity would lead to inflationary pressures which could short-circuit the unemployment effect of such policy path. They argue that increased liquidity could lead to overshooting of the actual output thereby leading to positive output (or inflationary) gap. This view has been objected by the Keynesians, who believe that contrary to the classical and monetary doctrine, the supply curve is upward sloping rather than being vertical. In other words, expansionary monetary and fiscal policy could lead to increase in output (thereby closing the output gap) and decrease in unemployment. Although the Keynesians believe that fiscal policy is more efficacious than monetary policy in taking the economy to its full employment level, there is no doubt that monetary policy is a key variable for influencing the steady-state level of employment. Another policy variable of interest is exchange rate. Exchange changes have monetary and international trade consequences. When exchange rate depreciates, neoclassical tradition holds that export demand rises and import demand declines. If export demand rises, labour demand by export sectors would rise and unemployment would decline. However, Marshal-Lerner condition stipulates that neoclassical prediction may not be realized if export supply and import demand are inelastic. In this case, import prices (including the prices of imported intermediate goods) would rise and the cost of production would escalate. In this case, production declines, inflation worsens and unemployment rises.

Both private and public sector credits could have immediate effect on unemployment. Increased access to credit by the private sector could increase their investment and labour demand. As labour demand rises, unemployment falls. Public sector credit can also increase government capacity to create jobs as well as embark on capital projects that could also create jobs. However, classical economists believe that if government borrows

from the loanable fund market, such borrowing could crowd out funds for private sector utilization. This conclusion is predicated on the assumption that there are no idle funds: loanable funds are finite and can either be borrowed by the private sector or the public sector.

Similarly, business taxes and wage rates could have implications for unemployment. Sales and purchases taxes could discourage consumer demand thereby affecting firm productivity. Profit taxes may also act as disincentive to firms' expansion and investment demand and thus worsens unemployment situation. Similarly, tax reliefs and holidays could lead to decline in unemployment through increased demand for labour. In the same vein, neoclassical tradition posits that rising real wage could put a negative and positive pressure on labour demand and supply respectively. The inevitable outcome is rising excess supply of labour which tantamount rising unemployment.

Another determinant of unemployment that has been scarcely studied is rural-urban drift. The two-sector transfer model popularized by Lewis (1964) and Todaro (1989) predicts that in developing economies with predominantly rural sectors and emerging urban sectors, labour would tend to move from the rural to the urban sector of an economy. However, this movement could be problematic. If the population of labour force that migrated to the urban centres exceed available jobs in urban centres, unemployment would worsen. Todaro (1989) also contended that the structural shift created by rural-urban drift could linger for a longer time in developing economies characterized by poor labour statistics and poor labour market adjustments.

In Nigeria, oil price is a key economic variable. Oil revenue constitutes over 90% of Nigeria's annual revenue (CBN, 2016). In other words, oil price rise tantamount to revenue windfall which could increase government spending. Increasing in government spending raises the national income as well as employment. Increased oil revenue could also lead to direct increase in labour demand by the public sector. However, oil is a raw material for the private sector. If oil price rise results in rise in production costs, firms may be forced to cut production or labour demand. Either of these actions would lead to rise in unemployment. However, the revenue windfall accompanying oil price rise may engender increased private consumption and investment demand. In this case, unemployment would decline. The overall effect is, however, an empirical issue.

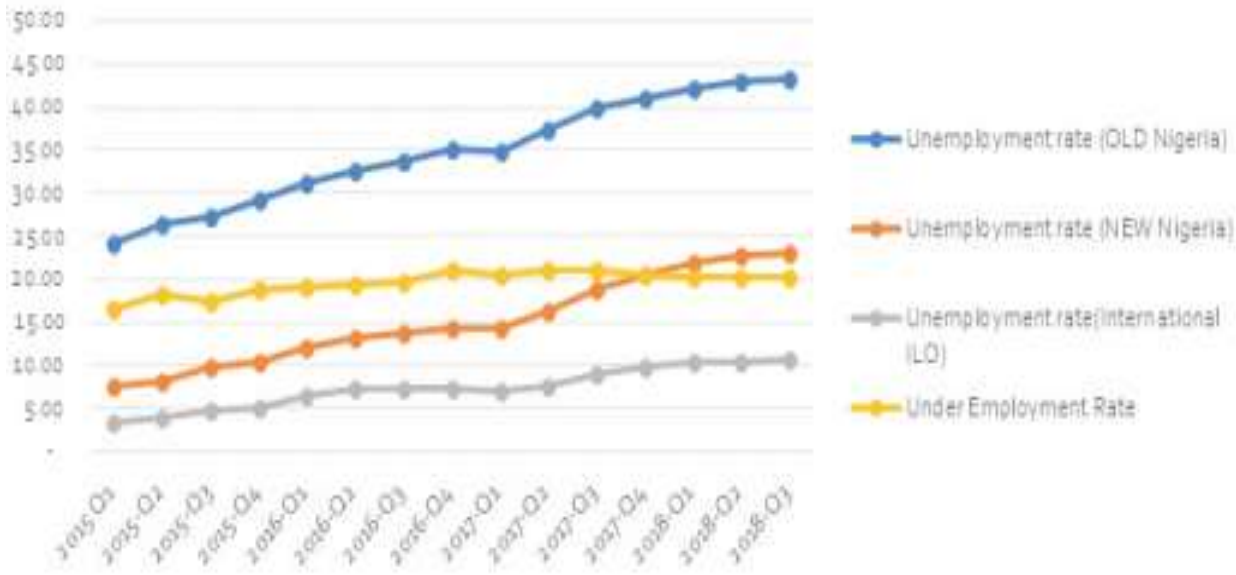
Overall, the efficacy of economic policies (whether monetary or fiscal) is contingent on institutional framework of an economy. According to Nwokoye, Igbanugo and Dimnwobi (2018), institutional frameworks that define the legal framework, regulatory framework, governance structure, property rights, labour market dynamics and enforcement of contractual obligations is critical in determining the outcome of the interaction among macroeconomic variables. This suggests that institutional framework is an unseen hand that impinges on the pattern of interaction between unemployment and its macroeconomic determinants.

Unemployment in Nigeria; Trend and Pattern

Ascertaining the concept and computation of what constitutes unemployment differs across nations. The International Labor Organization's (ILO) however conceptualizes unemployment to include persons aged 15 to 64 who during the period under consideration (mostly weeks preceding the period of survey for a minimum of an hour) were available and wishes to work but were unable to find work. In Nigeria, the computation follows the ILO framework, which describes unemployment in terms of labour force proportion rather than the whole population of the country. That is, under this framework, a person is categorized as employed if he or she is engaged in the legitimate production of goods and services. Persons over the age of 65, full-time housewives and students, physically challenged and incapacitated persons, under-aged children and others who are not employable are not grouped under the labour force of the nation in unemployment computation (NBS, 2018). Implicitly, being unemployed is hinged on the percentage of the labor force that is ready and available to work, but unable to find a job for at least 20 hours during the reference period.

Related closely to unemployment is underemployment, which is inimical to growth. Underemployment is of more grave concern because human capital underutilization encourages higher job turnover, workplace frustration, poorer physical and mental health, lower job satisfaction and obstinately lower income. In Nigeria, underemployed persons are classified as follows: (i) Labour force proportion who work at least 20 hours but not more than 40 hours weekly (which is full time) and (ii) full-time workers who are employed in productive activities that underutilize their potentials, skills and educational qualifications (NBS, 2018).

Statistics from NBS in 2018 shows that persons in the labour force (i.e. people who are able and willing to work) in Nigeria increased from 75.94 million in Q3 2015 to 80.66 million in Q3 2016 to 85.1 million in Q3,2017 to 90.5million in Q3, 2018. Figure 2.2 depicts the unemployment rate and underemployment rate overtime. Nigeria employment situation has somewhat followed recent global trends. While employment rates globally seem to be stabilizing, there are however some concerns about jobs recovery. The modest growth rate recorded by the world economy is still insufficient to bridge the significant employment gaps that have emerged since the beginning of the global economic crisis in 2008. According to NBS (2018), Congo (46.1%), Bosnia and Herzegovinian (35.3%), Namibia (34. %), and Palestine (31.7%) has the highest unemployment rate in the world while Qatar (0.1%), Belarus (0.3%), Cambodia (0.3%), and Niger (0.4%) has the lowest rate of unemployment around the world.



Source: NBS (2018)

Figure 2.1: Unemployment and Underemployment Over time

Table 2.1 and 2.2 show unemployment and underemployment distribution (residential area, sex, and age) from 2015 quarter one to 2018 quarter three. Table 2.1 shows that unemployment and underemployment has been increasing the rural areas. Regardless of the high prevalence of subsistence farming, increasing rural unemployment is on the increase as opportunities continue to shift away from agriculture (Table 2.1). The main reasons for the large variations across the rural and urban labour groups are caused by stagnating production and low productivity in the sector where majority of the rural population are engaged and the high growth in the services sector (Ajakaiye, Jerome, Nabenna, & Alaba, 2016). World Bank (2015) notes that the unemployment rate is much higher in the northern part of Nigeria where majority of the population are engaged in subsistence agriculture and relatively lower in the southern part of the country where majority of the population are self-employed. In terms of gender, there is a higher incidence of unemployment for women than men, with their access to quality job opportunities declining even further in recent times.

Table 2.1: Unemployment and Underemployment by Resident and Sex

Unemployment rate					Underemployment rate			
Year	Urban	Rural	Male	Female	Urban	Rural	Male	Female
2015q1	8.8	7.0	6.3	8.9	8.6	20.0	13.9	19.6
2015q2	10.1	7.4	6.9	9.6	9.6	23.8	15.4	21.6
2015q3	12.1	9.0	8.3	11.6	9.0	21.0	14.6	20.4
2015q4	12.8	9.5	8.8	12.3	9.7	22.6	15.7	22.0
2016q1	15.0	10.8	10.3	14.0	9.5	23.5	16.2	22.2
2016q2	17.8	11.3	11.5	15.3	9.6	23.8	16.4	22.4
2016q3	18.3	11.8	12.0	15.9	9.8	24.4	16.7	22.9
2016q4	18.4	12.3	12.3	16.3	10.5	25.8	17.9	24.2
2017q1	17.1	13.2	12.7	16.2	10.2	25.0	17.7	23.2
2017q2	20.3	14.4	14.0	18.2	8.8	26.4	20.4	22.0
2017q3	23.4	16.4	16.5	21.2	9.0	26.9	20.5	21.8
2017q4	18.7	21.1	19.3	21.6	13.8	23.2	19.2	21.8
2018q1	20.2	22.7	20.8	23.0	14.5	23.0	18.2	22.5
2018q2	21.5	23.3	20.0	26.1	15.5	22.3	15.4	25.9
2018q3	21.2	23.9	20.3	26.6	13.7	22.8	15.4	25.9

Source: NBS (Various Years)

Table 2.2 shows there is a high rate of youth unemployment and underemployment in Nigeria. Having this type of employment crisis attributed to these related significant economic groups is very dangerous and it could to the erosion of human capital, misery, family tension, mental health issues, deskilling, rise in the risk of poverty, loss of motivation and social exclusion (Nedeljkovic, 2014). Similarly, youth unemployment can result in some psychological problems of hopelessness, frustration, loss of confidence and self-esteem, hostility and gradual drift of some visible unemployed youth into all manner of criminal behaviour (Bakare, 2011).

Table 2.2: Unemployment and Underemployment by Age Distribution

	Unemployment					Underemployment				
Year	15-24	25-34	35-44	45-54	55-64	15-24	25-34	35-44	45-54	55-64
2015q1	13.7	8.2	4.9	4.7	5.2	30.6	17.7	11.0	10.4	11.5
2015q2	14.9	8.9	5.4	5.1	5.6	33.8	19.5	12.1	11.5	12.7
2015q3	17.8	10.8	6.5	6.2	6.8	31.8	18.5	11.5	10.9	12.1
2015q4	19.0	11.4	6.9	6.5	7.1	34.5	19.9	12.3	11.7	13
2016q1	21.5	12.9	8.1	7.6	8.5	34.6	19.9	12.8	12.2	13.6
2016q2	24.0	14.5	8.1	8.3	9.1	34.2	20.5	13.2	11.3	13.8
2016q3	25.0	15.0	8.5	8.6	9.5	34.9	20.8	13.5	11.5	14.1
2016q4	25.2	15.4	8.8	8.9	9.8	36.5	22.1	14.5	12.4	15.1
2017q1	25.3	15.0	9.8	9.3	10.3	34.8	21.6	13.9	13.3	14.7
2017q2	29.5	17.4	9.9	10.1	10.8	35.1	22.2	16.6	11.7	15.4
2017q3	33.1	20.2	11.7	12.0	12.7	34.2	22.3	17.0	12.0	15.7
2017q4	32.8	22.2	14.8	14.1	14.1	34.8	20.5	16.1	11.9	15.7
2018q1	36.0	23.9	15.5	14.2	14.2	33.4	20.6	16.0	11.5	16.2
2018q2	38.0	24.8	15.9	14.4	14.8	32.4	20.4	16.7	11.3	16.0
2018q3	36.5	24.4	16.1	16.5	19.1	32.1	20.7	17.0	11.4	15.5

Source: NBS (Various Years)

III. EMPIRICAL FRAMEWORK

Theoretical Framework

The theoretical framework is anchored on Keynesian economics. Before the emergence of Keynesian economics, the classists contend that unemployment is a transient phenomenon that does not require any intervention: as soon as the market clears the economy will be at full employment. John Maynard Keynes offered new thinking on income and employment theory with the publication of general theory of employment, interest and money in (1936). John Maynard Keynes set his position in contrast with that of the classical economics at every opportunity. In his book published in 1936, he began with an introductory chapter which criticized the classical economics for dealing with a "special case," the characteristics of which "happen not to be those of the economic society we actually live in". Keynes then followed with a lengthy chapter entitled "The Postulates of Classical Economics" (Knights, 2011). Keynes consequently attempted to cultivate a theory that would be relevant to the capitalist economics of his day (Asimakopulos, 1991).

Keynes theory assumes that the nominal wage was constant as means of trying to simplify his argument. Keynes stated that the essence of his argument was precisely the same whether or not money wages were susceptible to change. Under the Keynesian theory, nominal wages were seen as a rule, a function of activity fluctuating with the level of output and employment. Keynes further argued that a nominal wage reduction would probably not decrease real wages as neoclassical economists predicted. Regarding the entire economy, nominal wage reduction that is not followed by a drop in price implies a 'fallacy of composition.' In this case, nominal wage reductions would not result in reduced unemployment since the level of wages would largely remain unaffected. In broad-spectrum, nominal wage changes can yield compound influences on output and employment which are difficult to generate (Meccheri, 2005).

Further, Keynes argues that the main cause of unemployment was the deficiency of aggregate demand. Keynes therefore, suggested that unemployment could be removed by increasing the aggregated demand. The three components of aggregate demand are: a) demand for consumption goods, b) demand for investment goods and c) government expenditure. Keynes was of the opinion that government interference was the key to combating unemployment and attaining the objective of full employment (Jain & Khanna, 201 0).

Keynes theory has been condemned for undertaking only cyclical redundancy and abandoning other kinds of redundancies to be found in the capitalist economies. He did not proffer any solution to frictional redundancy and technological redundancy. The difficulty of technological redundancy had been disregarded by Keynes for the reason that he was unsuccessful in visualizing the hasty technological unearthing which took place in the advanced capitalist nations.

Econometric Procedure

The thrust of this work is to ascertain the determinants of unemployment in Nigeria. To achieve this end, we utilized Generalized Linear Model (GLM) methodology. The GLM unlike the ordinary least square model (OLS), corrects for heteroscedasticity and serial correlation. It also allows for response variables that have error distribution models other than a normal distribution. In addition, since the models are fitted via maximum likelihood estimation, optimal properties of the estimates are more guaranteed. The econometric model to be estimated is specified as follows:

$$uemr = \alpha_0 + \alpha_1 rud_t + \alpha_2 rewa_t + \alpha_3 prib_t + \alpha_4 gobb_t + \alpha_5 fips_t + \alpha_6 mops_t + \alpha_7 inf_t + \alpha_8 er_t + \varepsilon_{1t} \quad 3.10$$

Where α_0 is the intercept$\alpha_1, \alpha_2 \ldots \alpha_8$ are slope parameters. ε is the stochastic error term or innovation. uemr = unemployment rate, Prib = DMBs private sector borrowing, gobb = DMBs government borrowing from bank, fips= fiscal policy stance, mops = monetary policy stance, rud = rural-urban drift, rewa = real wage rate, inf = inflation rate, er = exchange rate and

The data are sourced from different databases. Private borrowing, which measures the ease of access to finance by firms, is sourced from the central bank of Nigeria (CBN). Government borrowing from bank (GOBB) measures deposit money banks credit to the public sector. It is also sourced from the CBN. Fiscal Policy Stance (FIPS) measured as the ratio of government spending to nominal GDP is sourced from the CBN. Other data sourced from the CBN include MOPS and ER. Monetary Policy Stance (MOPS) is proxied using monetary policy rate (MPR). REWA is the inflation-adjusted minimum wage sourced from Federal government of Nigerian Gazettes. Rural-Urban Drift (RUD) refers to movement from rural to urban centres within the same country. Admittedly, computing rural-urban drift, especially in developing countries, is an arduous task. This is because records of inter-spatial movements are hardly kept. However, following Tacoli, McGranahan, and Satterthwaite (2015), RUD is computed using available population data as follows:

$rurb = \Delta\text{pop} - \text{birth rate} - \text{net migration} + \text{death rate}$ Where $\Delta\text{pop} = \text{pop}_{t+1} - \text{pop}_t$ and pop = population.

IV. PRESENTATION AND DISCUSSION OF RESULTS

Pre-estimation Evaluation of Time Series Properties of the Data

Prior to estimation of the generalized regression model of unemployment, the time series properties of the series such as stationarity and cointegration were investigated. The study conducted stationarity test to investigate the presence of unit root in the time series using Augmented Dicker Fuller test and Philip-Perron test. The summary of the result is presented in Table 4.1.

Table 4.1: Summary statistics for unit root test

	ADF Test		Philip-Perron Test	
Variable	ADF statistics	Order of Integration	PP statistics	Order of Integration
ER	-4.548***	I(1)	-4.380***	I(1)
PRIB	- 8.578***	I(1)	-4.554***	I(1)
GOBB	-5.463***	I(0)	-9.619***	I(0)
RUD	-4.929***	I(1)	-4.929***	I(1)
REWA	-8.671***	I(1)	-8.452	I(1)
FIPS	-6.837***	I(0)	-3.425**	I(0)
MOPS	-4.278***	I(1)	-16.479***	I(1)
INF	-3.976**	1(0)	-3.633**	1(0)
UEMR	-4.599	I(1)	-5.139***	I(1)

Source: Estimated Using Eview 10.1

The result shows that exchange rate (ER), Private borrowing (PRIB), rural-urban drift (RUD), real minimum wage (REWA), monetary policy stance (MOPS) and unemployment (UEMR) are integrated of order one (I(1)). This means that they become stationary at the first difference order. Other series including inflation (INF), fiscal policy stance (FIPS) and government borrowing from bank (GOBB) are integrated at level (I(0)). This result corroborates Clement & Hendry (1999) conclusion that financial time series are integrated processes or realization of nonstationary processes. Since the time series are realisation of nonstationary processes, we proceed to test for cointegration.

Table 4.2 Summary of Philip-Quliaris Cointegration Test

Dependent	tau-statistic	Prob.*	z-statistic	Prob.*
GOBB	-16.21856	0.0088	-45.62870	0.0000
PRIB	-16.97623	0.0025	-49.01857	0.0000
ER	-20.55028	0.0001	-27.1289	0.0492
FIPS	-11.13635	0.0517	-39.0052	0.0011
INF	-18.97623	0.0016	-52.0186	0.0000
MOPS	-12.01704	0.0498	-32.6775	0.0012
OILP	-18.4274	0.0018	-32.3362	0.0013
REWA	-6.096862	0.7434	-23.7391	0.9512
RUD	-23.21356	0.0011	-52.6535	0.0000
Y	-48.00987	0.0000	-67.9178	0.0000
UEMR	-17.21356	0.0021	-46.65354	0.0000

Source: Estimated Using Eview 10.1

Phillip-Quliaris cointegration framework was utilised to investigate existence of long-run equilibrium relationship among the model variables. The result shown on Table 4.2 indicates that almost all the equations are cointegrated including the unemployment relation. Thus, the null hypothesis of no cointegration is rejected at 5% level of significance. This indicates that there is long run relationship among the variables in the unemployment model. This also shows that the regression of unemployment on its explanatory variables is not spurious.

4.2. Determinants of Unemployment

The unemployment model was estimated using generalized linear model (GLM) estimation procedure. GLM uses iteratively reweighted least squares method for maximum likelihood estimation of the model parameters. We employed Newton-Raphson / Marquardt steps and convergence was achieved after 9 iterations. Also, the coefficient covariance was computed using observed Hessian. The result is as shown on Table 4.3.

Table 4.3 Unemployment Model Estimates

Variable	Coefficient	Std. Error	z-Statistic
GOBB	0.067240***	0.004261	15.78071
PRIB	-0.176585***	0.045188	-3.907766
ER	0.050932***	0.006060	8.404410
FIPS	-0.003234	0.009064	-0.356788
INF	-0.032127	0.118590	-0.270910
MOPS	0.199633***	0.034514	5.784026
REWA	-0.471436**	0.191400	-2.463090
RUD	0.232927***	0.073281	3.178528
Method: Generalized Linear Model (Newton-Raphson / Marquardt steps)			
Included observations: 38			
Convergence achieved after 9 iteration			
Coefficient covariance computed using observed Hessian			

Source: Estimated Using Eview 10.1

The result shown on Table 4.3 indicates that GOBB, PRIB, ER, MOPS, REWA and RUD are key drivers of unemployment. GOBB has a coefficient of 0.067 which is highly significant. However, contrary to expectation, GOBB accentuates unemployment rather than reduce it. Contrarily, PRIB has a significant negative impact on unemployment. Again, exchange rate coefficient of 0.0509 (which is also highly significant) shows that exchange rate depreciation worsens unemployment crisis. Monetary policy stance appears to also reinforce unemployment. The coefficient is 0.1996 with standard error of 0.0345. Real minimum wage entered the model with a coefficient of -0.471 which is significant at 5% significance level. This suggests that raising the real minimum wage will not reinforce unemployment. Contrarily, rural urban drift exerts positive effect on unemployment.

V. POLICY IMPLICATION AND CONCLUSION

5.1 Policy Implication

The findings of this study have numerous policy implications. First, the findings suggest the prevalence of crowding out syndrome. Although the monetarists argue that government borrowing leads to reduction in unemployment through the crowing-in effect, the empirical evidence cannot corroborate the crowding-in hypothesis. In capital-scarce countries, increase in government borrowing may lead to shortage of loanable fund. Crowing out effect can also be transmitted through price effect. Thus, policies that encourage government to compete with the private sector in access to loanable fund may complicate unemployment crisis.

Second, contrary to expectation, the result shows that monetary policy stance of the CBN accentuates unemployment in the economy. For over two decades, the CBN has continued to raise the monetary policy rate in a bid to contain inflationary pressures. However, this stance could precipitate unemployment through its impact on investment and economic growth. In other words, monetary policy design to control inflation may not simultaneously reduce unemployment.

Third, the result shows that fiscal policy could be a veritable tool for unemployment reduction. However, the fiscal policy effect on unemployment appears to be short circuited. Economic theory predicts that expansionary fiscal policy would lead to decline in unemployment. However, the result shows that this effect is not significant. This suggests that explanatory fiscal policy may not have the expected effect in the real sector. This is likely to occur if there is diversion of the budget or borrowed spending.

Fourth, contrary to popular opinion (Sargent, 2013; Pencavel, 2015), real minimum wage rate appears to reduce unemployment. At low wage rate, many unemployed may chose to remain unemployed rather than being paid wage rate that is below their reservation wage. However, as the wage rate increases above the reservation wage, more unemployed persons may accept the prevailing jobs.

Fifth, rural-urban drift has positive effect on unemployment in Nigeria. Although the first concern of city immigrants (or rural-urban drifters) when arriving in a city is often to secure a job, they more often than not find

it difficult to secure a job as soon as they arrive, especially in developing economies. Immigrants are likely to have only imperfect information about the type or quality of job opportunities they face. Again, the job opportunities may be limited and very competitive. Most times, the drifters may not possess the requisite skills to secure an already competitive job opening. The drifters may also have to undergo some job trainings or further education in other to secure job placements. This scenario which Banerjee and Bucci (1995) agree may last for several months increases the rate of unemployment.

5.2 Conclusion

This study focused on the macroeconomic determinants of unemployment in developing countries. The result obtained in Nigeria indicates that surging internal migration or rual-urban migration is a key driver of unemployment. Similarly, CBN monetary stance that encourages relatively high bank rate precipitates unemployment. Again, minimum wage increase may not reinforce unemployment. However, it may stimulate re-entrant into the labour market. Again, the findings suggest that fiscal spending may be short-circuted in Nigeria, perhaps due to corruption.

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