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# PRODUCTIVITY AND UNEMPLOYMENT IN NIGERIA

by

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## I INTRODUCTION

Productivity and employment are issues that are central to the social and economic life of every country. The extant literature refers to productivity and unemployment as constituting a vicious circle that explains the endemic nature of poverty in developing countries. And it has been argued that continuous improvement in productivity is the surest way to breaking this vicious circle. Growth in productivity provides a significant basis for adequate supply of goods and services thereby improving the welfare of the people and enhancing social progress. As pointed out by Dernburg (1985:63), *"Without it there would be no growth in per capita income, and inflation control would be all the more difficult"*. In fact, the observation has been made that continuous enhancement of productivity has been very central to the brilliant performance of the Asian Tigers and Japan in recent years (Simbeye, 1992; World Bank 1993). Recent developments in the world economy have also shown that countries with high productivity are not only central to the determination of global balance of powers (e.g Japan and Germany), but also serve as centres of stimulus, where world resources (including labour) are redirected to, as opposed to countries with low or declining productivity. Recent studies, for example, Rensburg and Nande (1999) and Roberts and Tybout (1997) have also shown that high productivity increases competitiveness in terms of penetrating the world market. Thus, a country with high productivity is often characterized by a very high capacity utilization (optimal use of resources), high standard of living, low rate of unemployment and social progress.

Unemployment, on the other hand, has been categorized as one of the serious impediments to social progress. Apart from representing a colossal waste of a country's manpower resources, it generates welfare loss in terms of lower output thereby leading to lower income and well-being (Akinboyo, 1987; and Raheem, 1993). Unemployment is a very serious issue in Africa (Vandemoortele, 1991 and Rama, 1998) and particularly in Nigeria (Oladeji, 1994 and Umo, 1996).

The need to avert the negative effects of unemployment has made the tackling of unemployment problems to feature very prominently in the development objectives of many developing countries. Incidentally, most of these countries' economies are also characterized by low productivity. Thus, it seems obvious to many policy makers that there must be a straight forward connection between productivity and employment/unemployment. However, the theoretical linkage between productivity and unemployment is yet to be settled in the literature. While some researchers posit that higher productivity may increase unemployment (e.g. Diachavbre, 1991; Krugman, 1994), some others argue that it could increase employment (e.g Yesufu, 1984; Akerele, 1994; CEC, 1993).

In view of the unfolding reality coupled with the protracted debates this paper attempts to examine the linkage between productivity and unemployment. Specifically, it examines the dimensions of productivity and unemployment in Nigeria as well as the direction of causality between them. To this end, the rest of the paper is organized thus. Following this introduction is part II, which examines the conceptual and theoretical issues. Part III discusses the profile of productivity and unemployment in Nigeria while the empirical link between them is examined in part IV. The final part contains the policy implications and conclusions.

## II. CONCEPTUAL AND THEORETICAL ISSUES

The literature is replete with varied categorizations of productivity and unemployment in terms of their definitions, measurements and linkages. It is therefore important to make some clarifications on these issues.

### 2.1 Concept of Productivity

Productivity measures the relationship between the quantity and quality of goods and services produced and the quantity of resources needed to produce them (i.e factor inputs such as labour, capital and technology) (Simbeye, 1992; Okojie 1995; Roberts and Tybout, 1997). Mali (1978:6) defines it thus:

"The measure of how resources are being brought together in organizations and utilized for accomplishing a set of results. It is reaching the highest level of performance with the least expenditure of resources".

Productivity is viewed as the instrument for continuous progress, and of constant improvement of activities. It is often seen as output per unit of input. Hence, higher productivity connotes achieving the same volume of output with less factor inputs or more volume of output with the same amount of factor inputs. Thus, increased productivity could result from the reduction in the use of resources, reduction in cost, use of better methods or improvement in factor capabilities, particularly labour. Two variants of productivity measurements have been cited in the literature: total factor productivity (TFP), otherwise known as multifactor productivity, and partial productivity. Roberts and Tybout (1997) and Tybout (1992), assuming a neo-classical production function at the

sectoral or industry level, define total factor output to be a concave function of the vector of inputs and time (a proxy for shift in technological innovation). To them, the elasticity of output with respect to time is the total factor productivity. In a more general sense,

$$\text{TFP} = \frac{\text{Total Output}}{\text{Weighted Average of all inputs}} \dots\dots\dots(1)$$

Critical among these factor inputs are labour, capital, raw materials and purchase of spare parts, and other miscellaneous goods and services that serve as inputs in the production process. In a more practical sense, these factor inputs are reduced to the weighted average of labour and capital (Okojie, 1995; Roberts and Tybout, 1997).

The second variant, partial productivity (PP), is defined as:

$$\text{PP} = \frac{\text{Total Output}}{\text{Partial Input}} \dots\dots\dots(2)$$

The partial input could either be labour or capital. This can be measured at the national level, sectoral level, industry or factory level. Existing studies on productivity measurement show a predilection for productivity per labour input. Several reasons have been put forward for the choice of labour as against other factors of production. First, Ilyin and Motyler (1986) see labour as the "means and end of production". Labour is the only factor that creates value, influences its prices and those of other factors and sets the general level of productivity. Second, it is the most easily quantified factor of production (Okpechi, 1991). And finally, given the low technological base of developing countries' economies, the quest for improved managerial capability and effectiveness should give the human factor appropriate recognition and attention. While labour productivity seems to be the most convenient to use, it is however important to note that this approach has an important limitation. It treats labour as being homogenous instead of differentiating it according to age, sex, education, application of skills, aptitude, among others. Nevertheless, this study applies productivity per worker as opposed to per capital or total factor productivity.

## 2.2 Concept of Unemployment

There seems to be a consensus on the definition of unemployment. The International Labour Organization (ILO) defines the unemployed as numbers of the economically active population who are without work but available for and seeking work, including people who have lost their jobs and those who have voluntarily left work (World Bank, 1998:63). Although there seems to be convergence on this concept, its applications have been bedeviled with series of problems across countries. First, most published unemployment rates are recorded open unemployment. People's attitude on this varies from country to country. While this may be high in developed countries and where government is committed to resolving unemployment problems, it is likely to be very low in countries with the opposite attributes.

Okigbo (1991) also points out the problem arising from the concept of labour force. In most countries, particularly Nigeria, people below the age of 15 years and those above the age of 55, who are actively engaged in economic activities are usually excluded from labour statistical surveys. All these factors have the tendency to result in underestimation of unemployment thereby making international comparison very difficult. Factors such as

the preponderance of full housewives (but who are willing to be engaged in paid job) and unpaid family workers also contribute significantly to the underestimation of unemployment<sup>1</sup>.

### 2.3 Theoretical Linkage between Productivity and Employment/Unemployment

The relationship between productivity and employment/unemployment is a complex issue. Increased labour productivity connotes that the same volume of output can be produced with less labour. By implication, this tends to contract employment (an increase in unemployment rate). The theoretical perspectives on this relationship vary from one school of thought to another.

The classical economists hold the view that the relationship between employment and output is a one-way relationship that goes from the input of labour to output<sup>2</sup>. The classical growth theory, as reflected in aggregate production (mostly a variant of Cobb-Douglas function) derived essentially from the technical relations that make the level of output a function of production inputs such as labour, capital, land, technology, etc. In the classical model's steady state (conditions where the growth rate of capital stock and output are equal), the approach shows that the rate of growth of labour force and technical progress ultimately determine the growth rate of output. And as pointed out by McCombie and Thirlwall (1994) and Hussain and Nadol (1997), this model fails to explain the ultimate determinant of labour force and technical progress. The premise of the classical model therefore is that the growth rate of employment is exogenous to the growth rate of output.

This, however, does not preclude the classical economists' belief in the attainment of a full employment equilibrium. In this framework, the supply of labour is positively related to the level of real wage, while the demand exhibits a negative relationship with real wage, but a positive relationship with productivity (Fashola, 1983; Todaro, 1990). As pointed out by these authors, if there is some 'involuntary' unemployment at or below the current real wage, the real wage would fail to induce employers to take more labour until all involuntary unemployment is eliminated. However, if increases in labour productivity translate to increased wages and such increases induce the substitution of capital for labour the effect on unemployment will be positive (Fajana, 1983; Krugman, 1994). The policy implications of this have been viewed as misleading particularly, to developing countries (Todaro, 1990; Hussain and Nadol, 1997). Evidence from the economic recession of the 1980s in Africa and Latin America clearly show that real wages declined very sharply. This period of lower real wages coincided with high level of

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<sup>1</sup> ***We do not intend to do cross-country analysis, hence our unemployment data shall be restricted to the officially published data. We believe the effect of underestimation will be relatively minor.***

<sup>2</sup> By referring to output instead of productivity, we invoke the Verdoorn's Law as espoused in Kaldor (1967). The Law postulates that faster growth of output causes a faster growth of productivity. This positive relationship is further confirmed by Dernburg (1985:55) thus: "... a fall in output generally brings with it a very sharp decline in productivity ...". In line with the above, both output and productivity may be used interchangeable here.

unemployment than the available jobs (Todaro, 1990: 249). Also as argued by Hussain and Nadol (1997:3), the policy implication of the neoclassical approach to primary commodities-producing countries is that, given the existence of says Law, whatever that was produced is automatically sold irrespective of the characteristics of the goods produced and the demand for them. Recent developments in the world market for primary commodities has proved this to be wrong.

In contrast, Keynesian theory explains the determination of output or productivity and employment/unemployment in terms of aggregate demand. This approach sees demand for labour as a derived demand. Productivity growth (*a la* Verdoorn's Law), should increase the demand for labour thereby reducing unemployment. The Keynesian framework, as examined by Thirlwall (1979), Grill and Zanalda (1995) and Hussain and Nadol (1997), postulates that increases in employment, capital stock and technological change are largely endogenous. Thus, the growth of employment is demand determined and that the fundamental determinants of long term growth of output also influence the growth of employment.

Contrary to the strong belief of the neo-classicals that equilibrium wage rate, price, interest rate and real cash balances guarantee the quality of national output and full-employment level, the Keynesians strongly believe in the efficacy of aggregate demand. As shown in Figure 1, in the upper panel of the diagram,  $C+I+G$  yield a level of national output ( $Y_1$ ) that is less than the potential full-employment output level ( $Y_p$ ). Consequently, the level of unemployment will be given by the "gap" between  $N_f$  and  $N_1$  in the lower panel of the diagram. Rather than the workings of the real wage, price, interest rate and real cash balances, what could guarantee the attainment of full employment is additional government spending from  $G$  to  $G^1$ . The Keynesian prescription for reducing unemployment is increase in aggregate total demand through direct increases in government spending or policies that encourage more private investment. As argued by the Keynesians, as long as there is unemployment and excess capacity in the economy, the supply of goods and services will respond automatically to this higher demand. A new equilibrium will always be established with higher income and lower level of unemployment.

**Figure 1**

The extension of the Keynesian model dominated development theorizing in the 1950s and beyond. Such extensions could be found in Okun's Law and the Harrod-Domar model. For instance, Arthur Okun developed the relationship between the actual and potential output and between the actual and benchmark unemployment in an equation called the "Okun's Law" thus (Dernburg, 1985):

$$\frac{Q^* - Q}{Q} = \alpha (U - U^*) \dots\dots\dots(3)$$

where  $Q^*$  is potential output,  $Q$  is actual output,  $U$  is the unemployment rate,  $U^*$  is the benchmark unemployment rate, and  $\alpha$  is Okun's coefficient<sup>3</sup>. The implication of Okun's coefficient is that a 1 percentage rise in unemployment causes the economy to lose  $\alpha$  percent of its output. Okun's Law clearly gives a direct relationship between output and unemployment and indirectly between productivity and unemployment (*a la* Verdoorn Law).

In a similar vein, the neo-keynesians, in their efforts to provide reasons as to why employment growth lags behind growth of industrial output, came out with a typical variant of the Harrod-Domar unemployment equation

$$\left\{ \frac{\Delta Y}{Y} \right\} - \left\{ \frac{\Delta (Y/N)}{Y/N} \right\} = \left\{ \frac{\Delta N}{N} \right\} \dots\dots\dots(4)$$

thus,

The import of this equation is that the rate of output growth ( $Y$ ) minus the rate of growth in labour productivity ( $Y/N$ ) approximately equals the rate of growth of employment ( $N$ ). The implication is that the gap between growth rate of output and the growth of labour productivity accounts for the rate of labour absorption. As had been argued hypothetically by Todaro (1990), if output is growing by 8 percent per year while employment is expanding by only 3 percent, the difference is due to the rise in labour productivity, and vice versa. By implication, rapid economic growth could generate lagging employment creation. This tends to support Essenberg's (1996) argument that if the reduction in labour demand resulting from productivity increases is more than compensated by overall increases in output, then both productivity and employment can increase together. This is particularly so when higher productivity leads to increased profit and higher rate of investment, which in turn results in higher rate of growth.

In conclusion, the neo-classical approach posits that the rate of growth of employment (unemployment) is exogenous to the rate of growth of output (productivity). In contrast, the Keynesian argument is premised on the fact that it is the strength of demand that determines the amount of resources utilized. As such, employment is demand determined and the rate of output growth is itself an important determinant of the rate of growth of employment. Thus, output, productivity and employment are determined endogenously. This approach therefore suggests the possibility of a bi-causal relationship.

### III. PROFILE OF PRODUCTIVITY AND UNEMPLOYMENT IN NIGERIA

#### 3.1 Trends in Productivity

The centrality of continuous productivity improvement in advancing societal development has been well acknowledged in the literature. In spite of the general consensus on the importance of productivity, many countries

<sup>3</sup> Okun's coefficient ( $\alpha$ ) was estimated for the American economy between (1970-82) to be 3.2 percent.

have not paid serious attention to improving the level of productivity in their economies. Evidence from Nigeria has shown that both the national and sectoral productivity measures have generally reflected a declining trend over the past three decades.

Given the data limitation on total factor productivity in Nigeria, our analysis is restricted to labour productivity. As shown in Table 1, gross productivity (i.e. real GDP per worker) consistently rose between 1973 and 1977 as a result of the appreciable improvements in the level of economic activities immediately after the oil boom of 1973/74. The motivation associated with the Udoji salary award and the consequent spread to the private sector also contributed to productivity improvement during the period.

The sectoral analysis clearly shows that productivity in the industrial and service sectors are higher than in the agricultural sector (Table 2). The productivity in the former is more than three times higher than in the latter during this period. This finding conforms with the outcome of Dike and Ezenwe (1986) who also found that agricultural productivity was the least among the three sectors examined above. Phillips (1983) and Udokporo (1983) provided the reasons for low productivity in this sector. Critical among the factors are: subsistence production, prevalence of redundant labour, low income and lack of proper training on issues relating to agricultural activities.

Total labour productivity declined consecutively from 5.53 in 1977 to 3.36 in 1983 with the highest rate of decline experienced in 1982 (-29.53 percent) (Table 1). Meanwhile, the performance varied across the sectors. Though agricultural productivity was at its lowest ebb during the period, it, however, increased marginally from 2.02 to 2.11 in 1983, perhaps as a result of the implementation of the Green Revolution Programme during the period. Productivity in both the industrial and services sectors consistently declined during the period. For instance, they declined at an annual average of 8.02 and 2.40 percent for industry and services, respectively.

The institutionalization of the War Against Indiscipline (WAI) by the Buhari/Idiagbon administration in 1984/85 yielded some positive impacts on national productivity as it recorded the highest growth rate of 20.73 percent in 1985. The ouster of this regime weakened the implementation of WAI and hence ushered in a period of relatively low productivity. Thus, productivity dropped from 3.74 in 1985 to 3.22 in 1987 (the lowest ever). The introduction of the Structural Adjustment Programme (SAP) led to marginal improvement in national productivity during the period. Though the three sectors recorded some improvements, during this period, those of the industrial and services were more pronounced than the agricultural sector. While agricultural productivity fluctuated between 2.32 and 2.49 during 1987-1992, the industrial and services productivity fluctuated between 3.84-7.39 percent and 4.49-5.67 percent, respectively.

In spite of the improvement in real GDP between 1993 and 1996, the political upheavals experienced during the period seriously affected the overall productivity. Thus, the rate of productivity decline fluctuated between 0.24 and 2.03 during 1993-95 period. And as shown in Table 2, the rates of decline were much more pronounced in the industrial and services sectors than the agricultural sector. Evidence from the Central Bank of Nigeria's survey of industrial enterprises attributed the sector's dismal performance largely to low capacity



utilization and high cost of production<sup>4</sup>. For instance, capacity utilization fluctuated between 29.6 and 30.4 percent during the period. This was further compounded by the increasing cost of operation which rose by 75.6 percent in 1995. This arose largely from the continuous depreciation of the domestic currency during the period.

Consequently, the cost of

**Table 1: Labour Productivity in Nigeria (Gross)**

Year	Gross Productivity ('000)	Annual Growth Rate
1973	4.59	-
1975	4.69	-5.77
1977	5.53	-1.72
1979	4.88	-1.39
1981	3.54	-29.53
1983	3.36	-3.93
1985	3.74	20.73
1987	3.22	-3.12
1989	3.61	4.59
1990	3.79	5.26
1991	3.86	1.78
1992	3.87	0.08
1993	3.86	-0.24
1994	3.86	-0.05
1995	3.78	-2.03
1996	3.80	0.58
1974-80	5.09	1.71
1981-90	3.46	-1.91
1991-96	3.84	0.03
1974-96	4.01	-0.17

**Note:** The growth rate was computed on the basis of the immediate past year rather than the interval of two years given in the table.

**Sources:** Computed by the authors from CBN: Statistical Bulletin (various issues), Nigeria: Economic, Financial and Banking Indicators (various issues); National Planning Commission: National Development Plans (various issues); FOS: Annual Abstract of Statistics (various issues); ILO (1996) and World Bank: African Development Indicators (various issues) and World Tables (various issues).

<sup>4</sup>

See the details in CBN (1995): Annual Report and Statement of Accounts, December.

raw materials (mostly imported) accounted for 72.3 percent of the total cost of operation while salaries and wages accounted for only 6.6 percent (CBN, 1995). Besides the low value added that could result from these developments, the relatively low share of salaries and wages in the total cost of production is a reflection of low motivation in the sector. Low motivation, an important determinant of low productivity is also prevalent in the services sector, especially the public service. For instance the index of real wages for public officers on Grade Level 08 declined from 242 in 1980 to 107, 40 and 32 in 1986, 1990 and 1992, respectively (Oduola, 1997). The same rate of decline applied to other categories of workers in the public service.

The long-term productivity growth rate for Nigeria (1974-1996) is disappointing. It recorded an average growth rate of -0.17 percent during the period (Table 1). This is quite disheartening when compared with the 5.0 percent in Japan for the period 1960-1990. Other countries with remarkable performances include Italy (3.8%), France (3.5%) and Germany (2.8%) (Krugman, 1994:34).

Why is Nigeria's productivity performance so low relative to other countries? The issues raised above are quite germane for this performance. Besides the factors raised above, inadequate training has been a major productivity factor in Nigeria. As pointed out by the National Manpower Board (NMB) (1991), only 5.34 percent of the total employees were sent for training in 1991 in both the private and public sectors in Nigeria. This comprises: Federal Government Civil Service (2.60%), Federal Parastatals (5.32%), State Government Civil Service (3.94%), State Government Parastatals (3.65%), Local Government (3.20%), Joint Ownership by Federal and State (24.87%), Joint Ownership by Government and Private (4.26%), Purely Private Enterprises (5.14%) and Voluntary Agency (7.79%). Given the recent endogenous growth model, which sees continuous training (human capital investment) as a crucial factor in national productivity, then this proportion of trained staff to the total number of employees is too small for continuous productivity growth in Nigeria.

**Table 2: Sectoral Labour Productivity (Agriculture, Industrial and Services) ('000)**

Year	Agriculture		Industry		Services	
	Productivity	Annual Growth	Productivity	Annual Growth	Productivity	Annual Growth

1973	2.49	-	8.56	-	7.55	-
1975	2.44	14.86	6.23	-24.68	7.09	-7.37
1977	2.20	-9.67	6.31	-0.91	7.56	-7.75
1979	2.02	-7.52	5.87	-5.97	7.02	-5.50
1981	2.05	-2.15	5.82	-4.67	5.74	-0.43
1983	2.11	1.22	4.78	-13.41	5.61	-1.28
1985	2.61	33.81	5.00	8.11	5.54	11.22
1987	2.32	-5.75	3.84	-5.51	5.02	2.09
1989	2.49	0.57	6.72	63.35	4.49	-16.51
1990	2.44	-1.95	7.11	5.85	5.30	18.04
1991	2.47	1.12	7.39	3.88	5.32	0.23
1992	2.47	0.17	7.04	-4.70	5.67	6.76
1993	2.45	-1.16	6.69	-4.91	5.56	-1.88
1994	2.46	0.71	6.62	-1.15	5.59	0.49
1995	2.45	-0.57	6.34	-4.17	5.36	-4.14
1996	2.54	3.78	6.43	1.43	5.43	1.32
1974-80	2.21	-2.04	6.48	-4.32	7.24	-3.31
1981-90	2.29	2.01	5.16	3.37	5.27	-0.32
1991-96	2.47	0.68	6.75	-1.60	5.51	0.46
1974-96	2.31	0.41	5.73	-0.23	5.68	-1.02

**Note:** The growth rate was computed on the basis of the immediate past year rather than the interval of two years given in the table.

**Sources:** Computed by the authors from CBN: Statistical Bulletin (various issues), Nigeria: Economic, Financial and Banking Indicators (various issues); National Planning Commission: National Development Plans (various issues); FOS: Annual Abstract of Statistics (various issues); ILO (1996) and World Bank: African Development Indicators (various issues) and World Tables (various issues).

Evidence from NCEMA and ASCON (2000) also identified low labour compensation (remuneration and motivation), inadequate training, political interference, and inadequate provision of opportunity to use talents and initiatives effectively as the bane behind low productivity in the Nigerian public sector. In addition to some of these factors, Balogun (1983) and Oloko (1983) also identified lack of technical support staff and equipment, ineffective supervision and gross indiscipline as important constraints to civil service productivity. This clearly shows that factors militating against productivity growth in Nigeria are multi-dimensional.

### 3.2 Trends in Unemployment

The problem of unemployment has posed a great challenge to many countries (both developed and developing). In recent times, the incidence of unemployment in Nigeria has been deep and widespread, cutting

across all facets of age groups, educational strata and geographical entities. One peculiar feature of the unemployment problem in Nigeria is that it was more endemic in the early 1980s than any other period (*a la* official statistics). This is clearly evident in Table 3. For instance, the unemployment rate rose from 4.3 percent in 1976 to 6.4 percent in 1980. Though it recorded some marginal decline between 1981 and 1986, the rates were relatively higher than what obtained in the 1960s and 1970s. The unemployment rate oscillated between 5.3 and 6.4 percent during 1980 - 85 period. This development was as a result of the lull in the economy during the period. The economic down-turn did not only discourage new investment but also forced government to implement stabilization measures including restrictions on importation. Given the high import-dependency of most manufacturing enterprises, the import restriction forced many companies to operate below installed capacity, causing most of them to close down or retrench a significant proportion of their workforce. For instance, the survey of manufacturing companies undertaken by the Manufacturers Association of Nigeria (MAN) showed that 61.0 percent of the companies surveyed were shut down for different periods of not less than three months while between 62.0 and 63.9 percent of them disengaged over 100 workers (CBN; 1993). This development made job placement for fresh school leavers to be exceedingly difficult. In addition, the government also placed embargo on employment from September 1981, though relaxed in some periods (e.g. November 1982). This was implemented *pari-passu* with the public sector retrenchment. Accordingly, the total disengagement from

**Table 3: Nigeria: Unemployment Rates by Urban, Rural and National Classification (1976 - 1997)**

Year	Urban	Rural	National
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1976	-	-	4.3
1980	-	-	6.4
1984	7.9	4.4	6.2
1985	9.8	5.2	6.1
1986	9.1	4.6	5.3
1987	9.8	6.1	7.0
1988	7.8	4.8	5.3
1989	8.1	3.7	4.5
1990	5.9	3.0	3.5
1991	4.9	2.7	3.1
1992	4.6	3.2	3.4
1993	3.8	2.5	2.7
1994	3.2	1.7	2.0
1995	3.9	1.6	1.8
1996	3.9	2.8	3.4
1997	8.5	3.7	4.5

**Sources:** Data for 1976 and 1980 were obtained from FOS (1997:99) while the rest were compiled from: CBN - Nigeria: Major Economic, Financial and Banking Indicators, April 1998.

the federal civil service rose from 2,724 in 1980 to 6,294 in 1984<sup>5</sup>. The Structural Adjustment Programme (SAP), adopted in 1986, had serious implications for the short run unemployment problem. Contrary to the expectations of SAP, which was geared towards encouraging greater employment opportunities in the private sector (especially among the small-medium enterprises), the unemployment rate rose from 5.3 percent in 1986 to 7.0 percent in 1987. This was partly accounted for by the organizational down-sizing, re-engineering and rationalization policies which accompanied the introduction of SAP, especially in the private sector. This was further compounded by the continuation of staff retrenchment and placement of embargo on employment in the public sector. Besides, the new policy orientation brought about some structural changes within the Nigerian labour market. Sectors such as the oil, banking and the external sectors became the "blue chips" as against the public and industrial sectors which used to be the "prime" of the labour market prior to the adoption of SAP in 1986. This development consequently created some structural and frictional unemployment problems in the country. When this structural and frictional unemployment is considered along with the lack of job placement for fresh graduates, the situation becomes more precarious. As pointed out by Umo (1996), an annual average of about 2.8 million fresh graduates enter the

<sup>5</sup> *For details see the Annual Abstract of Statistics of the Federal Office of Statistics (various issues), Lagos*

Nigerian labour market, with only about 10 percent of them getting employment. This, no doubt, portrays unemployment as a very serious problem in the country.

Evidence from Table 3 shows that unemployment fell very significantly after 1987. It fell consistently from 7.0 percent in 1987 to 3.1 percent in 1991. Although it rose marginally to 3.4 percent in 1992, the unemployment rate, however, consistently declined appreciably to 1.8 percent in 1995 before rising to 3.4 and 4.5 percent in 1996 and 1997, respectively. However, the estimated unemployment gap for Nigeria, indicates that the unemployment rate varied between 7.27 and 8.0 between 1990 and 1998<sup>6</sup>. Why is the gap between the estimated and the actual unemployment rate as high like this? Raheem (1993) and Ohiorhenuan (1986) explained that only recorded open unemployment is published by the official statistics. Many people who felt disenchanting with searching for jobs refused to register thereby leading to gross under-estimation of the unemployed. Okigbo (1986, 1991) also pointed out that the concept of labour force adopted in the Nigerian Labour Force Statistical Survey, which excluded people that were less than 15 and above 55 years but actively working, is an important factor for gross underestimation of unemployment in the country. This is further compounded by gross inconsistency in government documents. For instance, all surveys prior 1983 used 55 years as the cut-off point for working age but in 1983, it was raised to 59 years which was later raised to 64 in 1997. Yet, some categories of people above the age of 64 still remain government employees e.g. Judges. This again gives room to underestimation. As argued by Okigbo (1991), it also excludes people who have been categorized as incapable of working but are willing to work (e.g. the handicapped). Also excluded from the labour force are the full housewives who are willing to be engaged in a paid job. The preponderance of unpaid family workers as a proportion of active workers, as presented by the World Bank (1999) is also a potential source of underestimation of unemployment or underemployment in the country. Thus, taking cognisance of the above, Okigbo (1991: 13), estimated the unemployment rate for 1986 to be 28 percent.

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<sup>6</sup> *For details see Federal Republic of Nigeria: Fourth National Development Plan (1981 - 1985), Federal Ministry of National Planning, Lagos, and Federal Republic of Nigeria: National Rolling Plan, Abuja (Various Issues).*

In spite of the differences, the official unemployment rate appears to be on a declining trend. The observed downward trend may be attributed partly to the intensification of the implementation of the Agricultural Development Programmes (ADPs) and the Accelerated Development Area Programmes (ADAPs). The latter was later transformed into the Directorate of Food, Roads and Rural Infrastructure (DFRRI). The activities of the National Directorate of Employment (launched in 1986), the Peoples Bank, Better Life for Rural Women Programme, among others, may have also accounted for the decline. The intensification and expansion of the informal sector activities could also be an important factor during this period. Besides the consistent view of the CBN's annual reports on this issue, the evidence from DPC (2000) also shows that the informal private sector expanded in scope of activities and in pattern of employment, with more graduates participating in the sector.

Available data also suggest that unemployment rates vary by rural-urban residence, education, age, professional classification and states. Evidence from Table 3 shows that the average annual rate of unemployment was higher in the urban areas than in the rural areas for each year between 1984 and 1997. The influx of rural dwellers into the urban centres in search of better employment opportunities could have accounted for the observed pattern.

The dynamics of the linkage between educational status and the unemployment rate in Nigeria is of crucial importance. In the 1970s, the people most seriously affected by unemployment were those with no schooling or those with primary education. As shown in Table 4, "no schooling" category accounted for 22.6 and 65.4 percent of the unemployed in 1974 and 1976, respectively, while the primary school leavers correspondingly accounted for 64.3 and 26.5 percent. The incidence of unemployment on these categories of people declined very significantly in the 1980s and 1990s. The severity of this problem varies according to

**Table 4: Composite, Urban and Rural Distribution of Unemployed by Educational Level December 1993 to December 1997 (Per Cent).**

Educational Level	No. Schooling	Primary	Secondary	Post Secondary	All Levels
<b>Composite</b>					
1974	22.6	64.3	11.8	0.3	100.0
1976	65.4	26.5	0.3	0.0	100.0
1983	7.1	43.5	48.7	0.2	100.0
1985	22.6	23.9	51.1	3.3	100.0
Dec. 1990	12.2	22.9	60.9	4.0	100.0
Dec. 1992	19.1	10.4	65.6	4.9	100.0

Dec. 1993	17.2	17.9	60.9	4.0	100.0
Dec. 1994	13.3	13.2	68.7	4.8	100.0
June 1995	16.2	13.4	59.5	5.8	100.0
Dec. 1996	48.0	10.8	52.8	18.4	100.0
Dec. 1997	21.1	11.8	46.2	20.9	100.0
<b>Urban</b>					
Dec. 1993	15.3	17.7	60.0	7.6	100.0
Dec. 1994	16.3	17.2	71.8	4.7	100.0
June 1995	17.7	18.8	58.3	5.2	100.0
Dec. 1996	6.8	11.9	62.7	18.6	100.0
Dec. 1997	13.4	16.8	48.3	21.5	100.0
<b>Rural</b>					
Dec. 1993	17.6	17.9	61.1	3.4	100.0
Dec. 1994	14.8	12.3	68.0	14.9	100.0
June 1995	9.4	16.8	65.4	8.4	100.0
Dec. 1996	20.4	10.6	50.7	18.3	100.0
Dec. 1997	22.8	10.7	45.7	20.8	100.0

**Note:** The Data for Primary for the period 1974 - 1985 contained below primary and primary education levels.

**Sources:** The figures for 1974 - 1985 were compiled from Ige, C. S. (1986:20) "Unemployment in Nigeria: Spatial and Sectoral Patterns and Trends," Annual Conference of the Nigerian Economic Society 1986, Kaduna, May 13 - 16, pp. 20, while those for 1990 and 1992 were obtained from FOS (1997:101). The data for 1993 - 1997 were compiled from Federal Republic of Nigeria: The Economic and Statistical Review, The National Planning Commission, Abuja (1996 - 1998 issues)

residential classification. For instance, while the problem was more severe for the "no schooling" rural dwellers, the primary school leavers residing in urban centres had a greater burden than their rural counterparts. In contrast, the incidence of unemployment on secondary school and post secondary school leavers increased very substantially during the period.

The evidence from the educational classification is further reinforced by the evidence from the registered unemployed. As shown in CBN (1997: 170 and 171), more than 90.0 percent of the registered unemployed belong to the lower level workers. The number of this category of people registered with the Ministry of Employment, Labour and Productivity rose from 11,732 in 1970 to 23,239 in 1975 and 256,623 in 1980. The figure however declined thereafter. In contrast, the number of registered unemployed professionals which dropped from 518 in 1970, to a mere 135 in 1978, rose very remarkably from 1984. It rose from 2,514 in 1984 to 16,293, 22,206 and 32,942 in 1988, 1992 and 1995, respectively. This represents 1.8, 12.3, 19.7 and 28.7 percent of the total registered unemployed people, as opposed to an annual average of 1.7 percent between 1970 and 1978.



The demographics of unemployment is shown in Table 5. Unemployment has been unevenly distributed across the age groups with young people bearing the burden of unemployment. As shown in the table, the unemployed persons are mostly youths aged 15 - 24 years. The proportion of this category of unemployed fluctuated between 41.6 and 70.4 percent during 1993 - 1997 period. It recorded an annual average of 56.3 percent during the period. This observation is a reconfirmation of the dominance of secondary school leavers among the unemployed, since most of them fall into this age group. Another prominent age group is 25 -44. It is worrisome to observe that while the percentages of other groups unemployed have been declining consistently over time, those of this group have been on the upward trend. This perhaps portends the widening gap between the output produced by the tertiary institutions and the skill requirements of the labour market. The rising trend of graduate unemployment, as observed by many analysts, may have contributed very significantly to the rising wave and sophistication of crime in the country (e.g. Albert, 2000). As also shown in Table 5, an inverted U-shaped trend is observed for the age group 45 - 59, with 1995 recording the peak of 13.8 percent. The current wave of self-employed activities may have partly accounted for this observation. The inclusion of age group 60 - 64 in the current labour force statistical survey

**Table 5: Unemployment by Age Groups (1993 - 97)  
(Per Cent)**

	15-24	25-44	45-49	60-64
1993	69.0	25.2	5.8	N.A
1994	70.4	21.0	8.6	N.A
1995	57.5	28.7	13.8	N.A
1996	42.9	46.0	11.1	N.A
1997	41.6	49.7	6.0	2.7
Annual Average 1993-97	56.3	34.1	9.1	-

**Source:** Compiled and Calculated from FOS: Annual Abstract of Statistics 1998.

is an advancement on the previous exercises. The inclusion of this set of people will reduce, to some extent, the wide gap between the published unemployment rate and the actual one. The exclusion of this group in the past led to serious underestimation of unemployment.

In recent times, attempts have been made to characterize unemployment by its duration (long and short term unemployment). The increase in duration of unemployment represents the most serious labour market development. Long term unemployment has become a chronic problem in Nigeria (Okigbo, 1986; Oladeji, 1994).

As pointed out by Oladeji (1994), 75.5 and 13.61 percent of those sampled in the Graduate Employment Tracer Study of the Manpower Board in 1986 has been unemployed for 13 - 34 and 25 - 30 months, respectively. Only 10.8 percent were unemployed for the duration of 1 - 12 months. This type of unemployment has been linked to job transition patterns. This approach emphasizes hiring people from the public sector by the private sector, or between firms, than from the unemployed people. It thereby makes the pool of the unemployed to be increasingly homogenous. The risk attached to long- term unemployment has been well acknowledged in the literature (e.g. Okigbo, 1986; Alhson and Ringold, 1996). The longer an individual is unemployed, the more difficult it is to find work. It is therefore important to put up active labour market programmes for this category of people.

The national unemployment rates mask the peculiarities of the states. For instance, states such as the Old Bendel, Imo, Rivers and Cross Rivers generally experienced very high unemployment rates as opposed to the low rates experienced in Niger, Katsina, Kwara and Kano. Rural unemployment was common in Borno and Kwara States while Anambra, Lagos, Plateau, Sokoto, Ogun and Oyo mostly experienced high urban unemployment rates. (See FOS (1985:112-123) and FOS (1990:269-270) for details). An important feature of this approach is the gender structure of unemployment. As shown in Table 6, about 19 states (including Abuja) of the Federation clearly indicate higher female unemployment rates, with twelve of them from the northern part of the country. This perhaps indicates that more females are now interested in paid employment. An important feature of female unemployment is that, this period coincided with the time of high female criminality. As pointed out by Oloruntimehin (2000), since 1980s, female criminality has not only increased in number but has also become more serious and significant over the years. The existence of this linkage therefore calls for an urgent attention to female unemployment in the country.

The incidence of underemployment or disguised unemployment has been acknowledged in the literature as a serious constraint to economic progress. In fact, its effects could be worse than those of open unemployment (Raheem, 1993). FOS (1997) considers underemployment as a reflection of the extent to which some human resources are rendered potentially idle.

This problem has contributed significantly to the widening gap between the reported and actual unemployment in Nigeria. Underemployment has been particularly high in the country. In 1984, 7.1 and 21.1 percent was recorded for the urban and rural areas, respectively. This later rose to 11.2 (urban) and 28.7 (rural) percent in 1992. As shown in Table 7, underemployment rates were higher in the rural areas than the urban centres. In almost all the cases, the rural underemployment rate is twice the rate of urban

underemployment. Besides, irrespective of the place of residence, female underemployment has been higher than that of their male counterparts. The predominance of full housewives in the labour force may partly account

**Table 6: Unemployment Rates By States in Nigeria (1991 and 1993)**

States	1991						1993
	Both Male and Female		Male		Female		Male and Female
	Unemployed Population	Unemployed Rate	Unemployed Population	Unemployed Rate	Unemployment Population	Unemployment Rate	Unemployment Rate
	Abia	79,335	9.0	37,856	8.3	41,479	9.7
Akwa-Ibom	76,021	9.2	40,999	9.9	35,022	8.5	5.4
Adamawa	31,589	5.1	21,522	5.0	10,067	5.3	1.5
Anambra	49,322	4.8	21,778	3.8	27,544	6.0	2.8
Bauchi	32,425	3.2	21,413	2.5	11,012	7.5	1.0
Benue	30,129	3.6	21,506	4.3	8,623	2.5	1.2
Borno	23,526	3.1	15,197	2.7	8,329	4.5	0.5
Cross Rivers	50,534	7.8	29,680	8.4	20,854	7.0	3.4
Delta	64,824	7.2	38,992	8.5	25,832	5.9	5.9
Edo	56,030	7.6	35,592	8.8	20,434	6.2	5.1
Enugu	77,707	7.0	34,828	6.1	42,879	7.7	3.5
Imo	92,792	11.8	42,663	10.3	50,129	13.4	9.1
Jigawa	18,772	3.1	14,023	2.6	4,749	6.9	0.2
Kaduna	46,331	5.0	30,400	4.1	15,931	9.4	3.6
Kano	39,580	3.0	28,799	2.5	10,981	5.8	1.3
Katsina	21,734	2.8	16,074	2.3	5,660	7.0	0.5
Kebbi	8,160	1.7	5,841	1.5	2,319	3.3	0.6
Kogi	47,655	6.6	27,323	7.3	20,332	5.8	2.8
Kwara	11,135	1.8	5,718	1.8	5,417	1.8	0.7
Lagos	92,825	3.7	53,171	3.6	39,654	3.8	2.8
Niger	16,622	2.5	11,522	2.2	5,100	3.4	0.5
Ogun	15,053	1.4	8,067	1.5	6,986	1.3	1.7
Ondo	42,086	2.9	23,246	3.3	18,840	2.5	1.1
Osun	13,728	1.6	7,255	1.8	6,473	1.3	1.6
Oyo	20,208	1.3	11,122	1.5	9,086	1.2	1.3
Plateau	33,500	3.9	22,236	3.6	11,324	4.9	1.4
Rivers	176,214	12.6	102,529	13.1	73,685	12.0	7.4
Sokoto	11,401	1.1	7,611	0.9	3,790	2.8	0.1
Taraba	13,861	3.2	10,249	3.2	3,612	3.1	0.9
Yobe	9,544	2.7	6,693	2.3	2,851	5.0	0.2
Abuja	8,900	6.8	5,910	5.6	2,990	11.3	4.2
<b>Nigeria</b>	<b>1,311,603</b>	<b>4.7</b>	<b>753,909</b>	<b>3.4</b>	<b>548,794</b>	<b>5.3</b>	-

**Source:** National Population Commission (1998): 1991 Population Census of the Federal Republic of Nigeria: Analytical Report at the National Level, Abuja. The figures for 1993 were obtained from FOS (1997): Socio-Economic Profile of Nigeria 1996, Lagos, p. 102.

**Table 7: Under-employment Rates in Nigeria (1984 - 1996)**

Year	Urban			Rural		
	Male	Female	Total	Male	Female	Total
December 1984	7.1	8.1	7.1	21.1	25.3	21.1
December 1992	9.5	14.3	11.2	27.8	30.4	28.7
September 1993	17.3	18.0	16.4	20.0	24.9	21.8
June 1996	8.9	14.1	11.2	20.0	20.6	20.6
1997	NA	NA	9.8	NA	NA	10.7

**Source:** Compiled from FOS (1997: 103). The data for 1997 were sourced from CBN: Annual Report and Statement of Accounts, 1997.

for the higher rate of female underemployment. A large proportion of unpaid family workers as a share of active workers which was estimated by the World Bank (1999: 285) at 23.5 percent could also be a factor contributing to the burgeoning rate of underemployment in Nigeria. To further reinforce the reason for higher female under-employment, we decompose the unpaid family workers-active workforce ratio into gender classification. The females constituted 14.9 percent as opposed to 8.6 percent for male.

The rates of underemployment also vary across the states. For instance, in 1993 high rates of underemployment featured in Enugu (5.74%), Ondo (3.50%), Sokoto (5.12%), Adamawa (4.80%) and Taraba (4.61%). States with less than 1 percent underemployment rate were Delta, Abia, Cross Rivers, Oyo, Kaduna, Kogi and Niger. Female underemployment was also serious in the following states. Jigawa (10.4%), Sokoto (10.13%), Taraba (7.5%), Adamawa (7.13%) Enugu (5.4%) and Bauchi (5.15%) (FOS, 1997).

The seriousness of the unemployment problem has attracted government attention over the years. Employment generation featured prominently in the past medium-term National Development Plans (1962 - 1985). This led to the establishment of several government parastatals (whose primary objective was to create employment opportunities) in addition to the creation of institutions such as the Industrial Training Fund (ITF), to drastically reduce the problem of underemployment. The adoption of Structural Adjustment Programme also ushered in the National Directorate of Employment (NDE) whose primary responsibility was to generate employment opportunities with emphasis on the development of entrepreneurship and self employment. Besides NDE, other programmes, with employment implications, established by the government include: the Directorate of Food, Roads and Rural Infrastructure; the Better Life for Rural Women/Family Support Programme; the Development of Small-Medium Scale Enterprises; the Raw Materials Research and Development Council; the Peoples' Bank of Nigeria and the Community Banks. The current poverty alleviation programme also focuses on the unemployed. In spite of these efforts, unemployment remains a grave problem in Nigeria.

### **3.3 Trend Analysis of Productivity and Unemployment**

A review of the existing descriptive analysis of the linkage between productivity and unemployment shows some degree of variations. Maddison (1982) showed that the growth of total employment since 1970 paralleled that of real GDP in industrial countries. They both accelerated and decelerated in the same direction. By implication, productivity and unemployment are inversely related. Schaik and Groot (1997) also presented the European countries' experience of high growth of industrial productivity with unprecedented low rates of unemployment in the

1950s and 1960s. Grilli and Zanalda (1995) also observed that growth of total employment maintained a positive relationship with real GDP in developing countries between 1960s and 1980s. In contrast, Krugman (1994) found no visible pattern among some developed countries between productivity and unemployment. Some countries with the best unemployment performances turned out to be the worst productivity performances. What is the pattern of relationship between productivity and unemployment in Nigeria? A brief highlight of the stylized facts is provided below.

A cursory look at Figure 2, shows that for most part of the period of analysis, unemployment and productivity moved in opposite direction. For instance, between 1981 and 1990, periods of high rate of unemployment were associated with period of declining/low productivity. Labour productivity was relatively higher between 1990 and 1996 than what obtained in the 1980s, and the unemployment rate declined up to 1995. The wide gap between unemployment and productivity between 1991 and 1996 tends to suggest that productivity and employment were correlated during the period.

The trend analysis seems to suggest an inverse relationship between unemployment and productivity, thus supporting a positive linkage between employment growth and higher productivity. However, it is difficult to use this type of analysis to determine the direction of causality between the variables, hence one cannot clearly show which of the theoretical postulates holds in the Nigerian situation. This, therefore, informs the use of causality tests as is done in the next section.

#### **IV. EMPIRICAL LINK BETWEEN PRODUCTIVITY AND UNEMPLOYMENT IN NIGERIA**

##### **4.1 Methodology**

The existence of correlations in descriptive analysis may not necessarily imply causality as two variables may show some correlations even when they are not directly related. It might be possible that they share the same trend from a third variable i.e. an external factor may influence the two variables in the same way. The use of causality tests, therefore provides the opportunity to carry out a more scientific analysis of the issues in question. As argued in the literature, the use of causal hypotheses makes scientific analysis more determinate and the resulting conclusions more specific.



**Figure 2**



The commonly used causality tests in econometric modelling are Granger and Sims tests. While the former uses the lagged values of a particular variable to explain the behaviour of another variable, the latter uses lead values. The loss of degrees of freedom often associated with the use of the Sims approach makes its application restricted in econometric analysis. Hence this study employs the Granger causality test.

The standard Granger causality test examines whether past changes in one variable, X (say, productivity) help to explain the current changes in another variable Y (e.g. employment/unemployment), over and above the explanation provided by past changes in Y. If, otherwise, then one concludes that X (productivity) does not Granger cause Y (employment/unemployment). To determine whether causality runs in the other direction, from Y to X (or employment/unemployment to productivity), one simply repeats the experiment, but with X and Y interchanged.

$$y_t = \sum_{i=1}^k \alpha_i Y_{t-i} + \sum_{i=1}^k \beta_i X_{t-i} + \epsilon_t \quad \dots(5)$$

$$X_t = \sum_{i=1}^k \gamma_i X_{t-i} + \sum_{i=1}^k \delta_i Y_{t-i} + V_t \quad \dots(6)$$

The above scenario may be given in a Granger causality sense thus:

where y and x could stand for either of the variables under consideration (productivity, employment/unemployment). If  $\beta_1 = \beta_2 = \dots = \beta_k = 0$  then, x does not Granger cause y, hence, we accept the null hypothesis. The same applies to equation 6.

The use of Granger causality test is an important scientific way of determining the direction of causation. However, determining the nature of the relationship is outside its scope. This, therefore, informs the fitting of simple regression equations, with a view to making the conclusions and policy deductions more determinate and focussed. Depending on the outcome of the Granger causality tests, a bivariate model is fitted with any of the variables (productivity or unemployment) serving as the dependent variable and the other serving as the explanatory variable, with an adjustment mechanism of one lag and a disequilibrium term. The simplicity of this model does not warrant an explicit specification here.

The data for this analysis were obtained from many sources: FOS, Annual Abstract of Statistics (various issues) and Social Statistics in Nigeria (various issues); CBN, Statistical Bulletin (various issues) and Nigeria: Major Economic, Financial and Banking Indicators, April 1997; ILO, Employment Policy Strategy Formulation Mission to

Nigeria, 1996, and International Labour Statistics and World Bank: African Development Indicators, World Development Indicators (various issues) and World Tables (various issues).

## 4.2 Empirical Results

The Granger Causality tests carried out examine the direction of relationships between productivity and employment, and productivity and unemployment. In order to get a clearer picture of the structure of production and employment, the economy is divided into three sectors: agriculture, industry and services. However, the non-availability of public data on the services sector unemployment could not allow us to consider the services sector in the analysis. The results of the Granger Tests are in Table 8.

Evidence from productivity and employment linkage shows bi-causal relationships in all the cases except in the agricultural sector. This evidence tends to reject the neoclassical framework for productivity and employment linkage, which proposes a unidirectional relationship running from employment to output. As shown in Table 8, bi-causal relationships exist between industrial employment and industrial productivity. However, this could not be established in the agricultural sector. The rejection of the existence of a feedback relationship running from the sector's employment to productivity could be due to the prevalence of redundant workers in the sector. The historical antecedent of the sector tends to support the result. For instance, the sector constituted the largest sectoral employment in the country. As pointed out by ILO (1996), the sector employed 71.7, 60.0, 60.7 and 59.8 percent of the total workforce in 1960, 1980, 1990 and 1996, respectively. Thus, given the subsistent nature of the sector's production, the tendency of diminishing marginal productivity seems operative. Thus, increased productivity in the sector may not require additional employment but rather an optimal utilization of the existing underutilized resources such as labour and land.

Evidence from productivity and unemployment linkage shows that a unidirectional relationship exists between national labour productivity and national unemployment. The direction of causation runs from total productivity to unemployment (Table 8). By implication, historical and current level of labour productivity clearly predict the level of national unemployment in Nigeria. The Granger causality test however shows the direction of causation but not the nature of the relationship. This is, however, remedied with the regression results in Table 9. This Table shows that higher current national labour productivity tends to result in the absorption of more workers,

thereby reducing the level of unemployment. The relationship is established at 5.0 percent significance level. However, arising from additional labour absorption that accompanied increased labour productivity, the law of marginal productivity, ensues, hence the level of labour absorption declined in the next quarter. Albeit, this relationship is not statistically significant. Expectedly, the cummulation of unemployed people over time tends to exert some positive influence on the current level of unemployment.

**Table 8: GRANGER CAUSALITY TESTS**

<b>Productivity and Employment</b>	F-Statistic	Probability	Remark
Total Employment (TE) ----> Total Productivity (TP)	9.44	0.00	Accept
Total Productivity (TP)----> Total Employment (TE)	7.08	0.00	Accept
Agricultural Productivity(AP) ----> Agricultural Employment (AE)	5.45	0.00	Accept
Agricultural Employment(AE) ----> Agricultural Productivity (AP)	2.20	0.12	Reject
Industrial Productivity (IP) ----> Industrial Employment (IE)	5.25	0.00	Accept
Industrial Employment (IE) ----> Industrial Productivity (IP)	19.68	0.00	Accept
<b>Productivity and Unemployment</b>			
Total Productivity (TP) ---> National Unemployment (NU)	4.19	0.02	Accept
National Unemployment (NU) ----> Total Productivity (TP)	1.81	0.17	Reject
Industrial Productivity (IP) ----> Urban Unemployment (UU)	3.79	0.02	Accept
Urban Unemployment (UU) ----> Industrial Productivity (IP)	12.67	0.03	Accept
Agricultural Productivity (AP) ----> Rural Unemployment (RU)	1.19	0.02	Reject
Rural Unemployment (RU) ----> Agricultural Productivity (AP)	0.43	0.08	Reject

The direction of causation between industrial labour productivity and urban unemployment is established to be bi-directional (Table 8). In contrast with what obtained under national labour productivity, evidence from the industrial sector tends to imply the use of less labour for producing the same volume of output. For instance, one percent increase in labour productivity raises the unemployment rate by 0.8 percent (Table 9). This relationship is established at 1.0 percent level of significance. Perhaps resulting from the lower labour cost, the consequent reduction in commodity price generates an increase in demand. Thus, following the accelerator principle, additional

labour is employed in the next quarter. This is evident in the relationship between current level of urban unemployment and the last quarter productivity level<sup>7</sup>.

The relationship between agricultural productivity and rural unemployment could not be clearly established. This finding suggests that the rural unemployment problem has a life of its own and is not simply part of a generalized deterioration in agricultural performance. Besides, **Table 9: Regression Results**

Variables	Total Unemployment ( ) TU)	Urban Unemployment ( ) UU)	Rural Unemployment ( ) RU)
Constant	0.01 (0.25)	-0.02 (-2.58)*	0.01 (1.82)***
Total Productivity ( ) TP)	-0.56 (-1.92)**		
) TP <sub>t-1</sub>	0.28 (1.05)		
) TU <sub>t-1</sub>	0.89 (13.07)*		
Industrial Productivity ( ) IP)		0.82 (3.33)	
) IP <sub>t-1</sub>		-0.62 (-2.64)	
) UU <sub>t-1</sub>		-0.35 (-1.24)	
Agricultural Productivity ( ) AP)			-1.85 (-3.49)*
) AP <sub>t-1</sub>			3.05 (4.22)*
) UR <sub>t-1</sub>			2.89 (3.26)*
ECM <sup>(-1)</sup>	-0.02 (-3.97)*	0.16 (3.24)*	-2.08 (-2.35)*

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*The existence of bi-causal relationship between industrial labour productivity and urban unemployment suggests the existence of simultaneity bias. Thus, using instrumental variable estimation technique, we regressed urban unemployment rate on industrial productivity. The unemployment rate is positively related to productivity. However, the relationship is not statistically significant.*

Adj. R <sup>2</sup>	0.77	0.35	0.61
F-Statistic	70.52*	9.09*	24.92*
D.W.	1.75	2.01	2.43

**Note:** TP = Total Productivity; IP = Industrial Productivity; AP = Agricultural Productivity;  $ECM_{(-1)}$  = Error Correlation Factor; Adj. R<sup>2</sup> = Adjusted R<sup>2</sup> and D. W. = Durbin-Watson Statistic. Also, \*, \*\* and \*\*\* indicate that the variables are significant at 1, 5 and 10 percent, respectively.

the evidence also tends to suggest that rural underemployment may be more important to agricultural production than rural unemployment. In spite of this, we fitted an equation to examine the impact of agricultural productivity on rural unemployment. Evidence from Table 12 shows that higher labour productivity results in more employment. The labour intensive nature of this sector gives more credence to this relationship. And following the cobb-web theory, an increase in agricultural production in excess of demand creates a glut in the subsequent year thereby resulting in laying-off of workers in the subsequent period. Thus, the lagged value of labour productivity raises the unemployment rate in the subsequent period.

The statistics associated with the models (e.g. adjusted R<sup>2</sup>, F-statistic and D. W.) are well behaved.

## V. POLICY IMPLICATIONS OF THE FINDINGS AND CONCLUSIONS

The analysis presented above established some stylized facts about productivity and unemployment in Nigeria. It is clearly evident that productivity is low in Nigeria. Unemployment, on the other hand (when combined with underemployment) is very high. Evidence from the analysis of productivity and employment linkage shows bi-causal relationships in all the cases, except in the agricultural sector. The evidence therefore rejects the neo-classical framework for productivity and employment linkage. The results of the relationship between productivity and unemployment are mixed. The results show that bi-causal relationships exist in the industrial sector while a unidirectional relationship (running from productivity to unemployment) is established at the national level. However, no linkage is established in the agricultural sector, thereby suggesting that rural unemployment, in most cases, may not arise from the generalized deterioration in agricultural performance.

The results also show that contrary to the general expectation that an increase in productivity leads to a reduction in employment (particularly, where there is no compensating increase in overall demand), labour productivity is followed by labour absorption at the current level, at both the national level and agricultural sector. This relationship, particularly in the agricultural sector follows the traditional cobb-web theory. The opposite however exists when a lagged value is incorporated. The evidence from the industrial sector supports the general notion, where employers use less labour to accomplish the same volume of output as productivity rises. Meanwhile, following the accelerator principle, additional labour is absorbed in the next period.

Some policy implications are discernible from the findings. Since more employment means more income for the poor, which in turn implies a greater demand for locally produced basic consumption goods, it is imperative for government to ensure growth and development of the rural and small-scale urban sectors. This should consider, very seriously, encouraging people to establish more labour-intensive small scale enterprises which have the propensity to create more jobs and higher incomes. This programme, if well implemented, could reverse the rural-urban drift which has seriously affected the urban employment. However, in order to achieve this goal, a complementary policy of removing factor-price distortions and promoting labour-intensive technologies of production may be required. As a corollary to this, industrial policy can be directed at supporting industries with high growth potential in order to combine the benefits of rising productivity with the net generation of new jobs. Appropriate incentive structures should be designed for investors participating in this programme.

In line with our finding from the industrial sector, while acknowledging the benefits of economic competition, it should however be confined to relative productivity rather than be allowed to spread into destructive wages and cost cutting exercises. While this is a sacrifice from the part of the private sector, public investment should also be directed at improving productivity and supporting job creation. This involves programmes to raise workers' skills and investment to improve infrastructure as well as create the enabling environment for enterprises to thrive.

One major finding is that productivity and unemployment are inversely related. This suggests the need for policies to enhance productivity. Critical among these include:

recent developments have shown that human investment is an important factor in any country's productiveness. In fact, there exists a level of human investment at which the productivity rate attains its

minimum. Thus, the need to put in place a systematic manpower development programme (especially the skill acquisition type) both in the public and private sectors is imperative; the institutionalization of adequate penal and reward system is a sine-qua-non to improved productivity. Sequel to this is the need to adopt a satisfactory income policy. This income policy should meet certain requirements deemed commensurate with the levels of maximum utilization of labour input; and government should create appropriate enabling environment to promote a sustained effective aggregate demand in order to maintain the required level of domestic production.

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**Figure 1: Keynesian Model of Output-Employment Relationship**

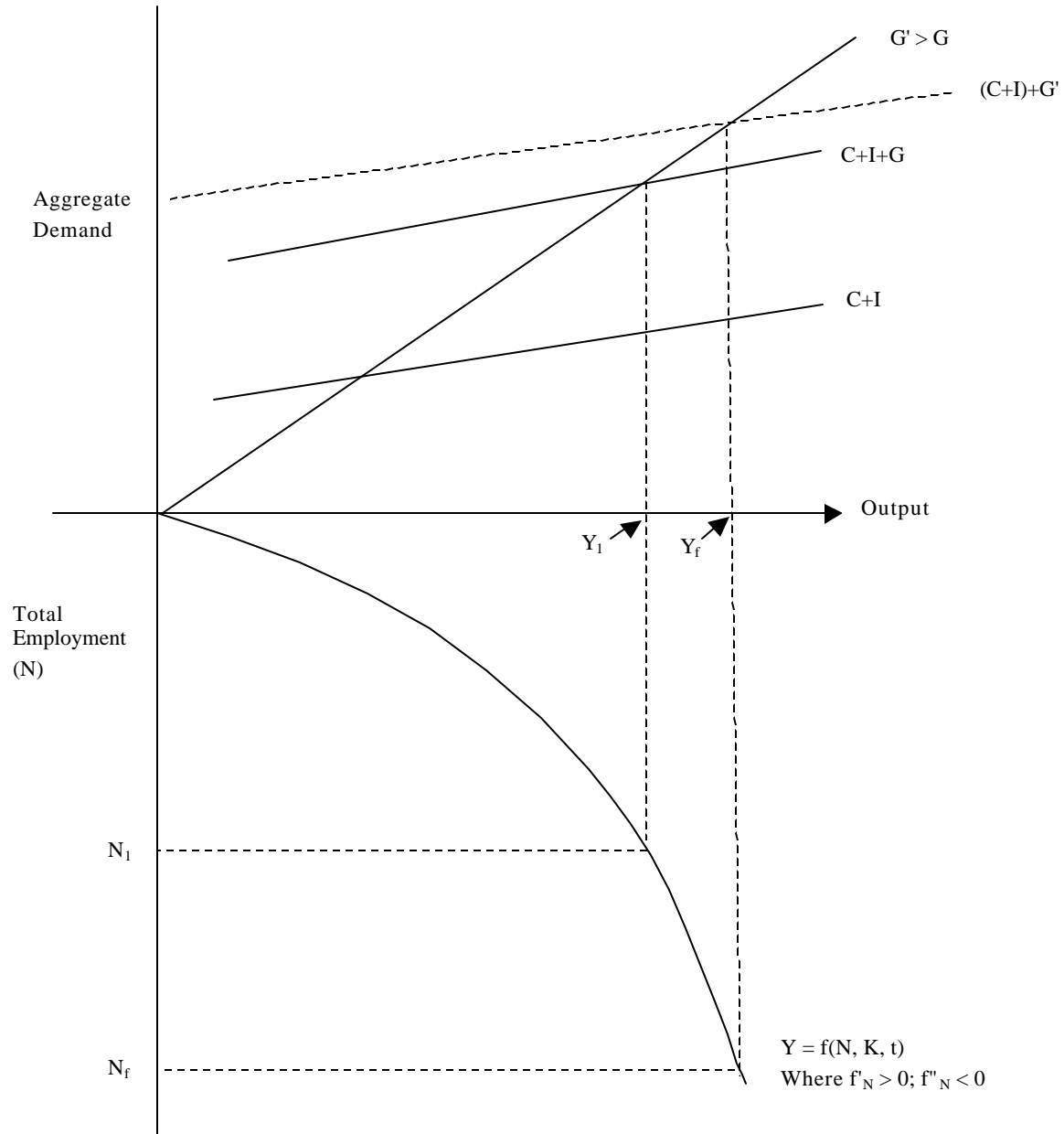


Figure 2: Productivity and Unemployment (1981-1996)

