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EMPLOYMENT OBJECTIVES AND ECONOMIC DEVELOPMENT IN AFRICA

(With Special Reference to Nigeria)*

Charles R. Frank, Jr.

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EMPLOYMENT OBJECTIVES AND ECONOMIC
GROWTH IN AFRICA WITH SPECIAL REFERENCE
TO NIGERIA

One of the characteristics of the less-developed economies of the world
is a rapidly growing urban population and urban work force combined with a
much slower increase in employment opportunities in the larger scale urban
establishments. The result has been either unemployment or underemployment
in small scale, often individual or family run, establishments. This phenomenon
has been noted in economies such as Puerto Rico and India with high population
densities as well as in the relatively under-populated countries of Africa.[1]
Those countries which are industrializing rapidly seem to suffer from this
phenomenon just as much, if not more, than those which are not industrializing
quickly.[2]

The growing mass of urban unemployed and under-employed is regarded by
many as a great social evil and a prime source of human tragedy.[3] Others, in-
cluding politicians in power, fear it as a source of political instability. The
presence of large numbers of poverty stricken and jobless people in the cities
puts a great deal of pressure on governments, national and local, to increase
current expenditures rapidly to provide civil service jobs for the unemployed.
At the same time governments are faced with demands on their capital budgets to
spend more for development purposes. In addition, increasing urban population
creates demands for urban services: housing, sewerage, lighting, roads, police
and fire portection and the like. A large mass of unemployed or underemployed
do not generate the output or tax revenues which are needed to provide these
services. For these and other reasons, the political concensus in most developing

countries is that the pressures of urban unemployment and underemployment have to be relieved.

How best can this be accomplished? One might say the solution is through high rates of investment and rapid growth. The history of fast growing countries and their continued inability to cope with the problem of unemployment indicate that something else besides rapid growth is required for a solution. One suggestion is that growth must occur by investing in relatively labor intensive activities rather than those which are capital intensive. The argument runs that not only will this result in more rapid growth because of the low opportunity cost of labor relative to capital, but will increase the rate of growth of employment for any given level of investment. Even in cases, however, when the labor intensive investment is less than optimal from the point of view of growth, it may be justified if a high enough priority is given to growth in employment and/or reduction in unemployment.

In this paper, we will attempt to show that for the typical African country[4] neither high rates of growth in the modern urban sector nor an attempt to resort to labor intensive techniques is likely to have much effect on the magnitude of the urban unemployment problem. Our analysis will indicate other ways of approaching the problem which must be pursued more vigorously. In particular, African rural development and attempts to improve the quality of life in the rural areas stand out as very high on the list of priorities. -

A. Composition of the Urban Labor Force

The urban labor force constitutes only a small fraction of the total working force of most African countries. In Nigeria, for example, one of the most urbanized of the African countries south of the Sahara, the urban population (in

cities having a population greater than 20,000) is only about 13 per cent of the total population. In Uganda, one of the least urbanized African countries, only about 2.5 per cent of the total population lives in cities and towns of 2,000 or more people, although many of those who work in the towns of Uganda live outside the urban areas and commute by foot or bicycle.

The working force in the urban areas may be divided into two groups, those in the modern sector and those in the traditional sector, although this distinction is somewhat arbitrary and the line between the modern sector and the traditional sector is often hard to draw. (We include government establishments in the modern sector). Basically, the difference is one of scale of operations. Throughout urban Africa there are numerous very small scale establishments often individually or family run. These include petty trading, individual craft activities (e.g., shoe making, wood carving, furniture making) and very small scale manufacturing and construction establishments (employing, say less than ten people.) Workers in the traditional sector typically use little capital, do not employ modern accounting and bookkeeping methods and receive little remuneration in the way of profits or wages. A great many of the employees in the traditional sector are unpaid apprentices or family labor. Many traditional sector workers are employed on a part-time or casual basis. Those employed part time or seasonally often maintain very close connections with the rural areas, spending a good part of the year in the countryside, especially during the harvesting or planting season. This kind of rural-urban seasonal migration is particularly prevalent in Nigeria where during the harvesting of tree crops, many farmers exit the cities to return to their farms. Because most tree crops require little care or supervising at other times, they can return to live in the city after harvesting and find whatever little employment is available.

TABLE I

SUB-SAHARAN AFRICA

URBAN POPULATION GROWTH

City	Year	Population ('000)	Year	Population ('000)	Annual Growth (per cent)
Salisbury	1946	69	1961	300	10.3
Dar-es-Salaam	1948	69	1957	129	7.2
Brazzaville	1955	76	1961	134	9.9
Dakar	1945	132	1960	383	7.4
Accra	1948	136	1960	491	11.3
Nairobi	1948	119	1962	315	7.2
Abidjan	1955	127	1960	180	7.2
Monrovia	1956	41	1962	81	12.0
Fort Lamay	1955	29	1963	92	15.5
Cotonou	1945	26	1960	113	10.3
Mombasa	1948	85	1962	180	5.5
Bamako	1945	37	1960	127	8.6
Bulawayo	1946	53	1964	214	8.1
Lusaka	1950	26	1964	122	11.7
Yaounde	1955	38	1962	93	13.8
Douala	1954	118	1964	187	4.7
Addis-Ababa	1951	400	1964	505	1.7
Khartoum-Omdurman	1948	210	1960	315	3.4
Luanda	1950	150	1960	220	3.9
Leopold-ville	1946	110	1961	420	9.3
Elisabeth-ville	1950	103	1961	190	5.7
Kumasi	1955	75	1960	190	20.4
Lourenco-Marques	1950	94	1961	184	6.3

Source: United Nations, Demographic Yearbook, New York, various issues, and William A. Hance, The Geography of Modern Africa.

Those employed in the modern or large scale sector are better paid and more productive because of a higher capital to labor ratio. Many of the modern establishments are run and/or owned by Europeans. They employ modern methods of accounting and generally keep better records than the traditional establishments.

Of that part of the total work force living in the cities, only a fraction are engaged in the modern sector. In Nigeria, for example, workers in the modern account for about one-half of the urban work force or a little over 5 per cent of the total labor force. The rest of the urban labor force is either engaged in the traditional, low productivity sector or is completely unemployed.

B. Growth in the Urban Labor Force in Africa

Little data are available on urban labor force participation rates in Africa. Growth in the urban labor force must be inferred from urban population data. Table 1 gives the rates of growth for some major cities of Africa. These vary considerably from 1.7 per cent per annum (Addis-Ababa) to more than 15 per cent (Fort Lamy). While the data on which these figures are based are very inadequate, the mean annual growth of 8.8 per cent and median of 8.4 per cent can be regarded as fairly typical. These differ considerably from the estimated growth of total population in the African countries which usually range between 2 and 3 per cent per annum, depending on the country. This means, of course, that the urban labor force is a growing percentage of the total labor force.

C. Growth in Demand for a Modern Urban Labor Force

These very high rates of growth of the urban labor force have not been matched by correspondingly high rates of growth of the quantity of urban labor demanded by the modern large scale establishments. Table 2 gives some representative

TABLE II

NON-AGRICULTURAL EMPLOYMENT INDICES IN SELECTED AFRICAN COUNTRIES

(1958=100)

	Cameroon	Ghana	Kenya	Malawi	Nigeria
1955	102	82	107	88	n.a.
1956	104	91	105	95	95
1957	100	95	105	98	100
1958	100	100	100	100	100
1959	95	106	100	99	99
1960	91	111	102	96	106
1961	94	122	98	93	89
1962	72	128	97	87	113
1963	91	132	91	87	94
1964	92	n.a.	111	n.a.	n.a.
Rate of Growth[*] (per cent)	-1.0	6.3	-0.5	-0.7	0.1

	Southern Rhodesia	Sierra Leone	Tanzania	Uganda	Zambia
1955	86	87	97	94	92
1956	92	87	104	93	100
1957	98	92	101	99	100
1958	100	100	100	100	100
1959	100	98	96	99	95
1960	101	101	98	99	93
1961	98	108	104	93	90
1962	95	112	101	93	88
1963	91	119	91	89	86
1964	90	125	95	89	91
Rate of Growth[*] (per cent)	0.2	3.0	-0.4	-0.1	-0.9

Source: United Nations, Statistical Yearbook, 1965, New York, 1966, pp. 109-110.

[*] Rates of growth calculated by fitting a logarithmic time trend.

Note: n.a. means not available

rates of growth of total non-agricultural employment. Note that many of these rates of growth are negative. Furthermore, the growth in the Kenya, non-agricultural labor force would be considerably more negative were it not for the extraordinary jump in employment between 1963 and 1964. This was most likely the result of a mild export boom in 1964 and, more importantly, the signing of the so-called Tripartite Agreement by government, private employers and the labor unions which called for employers to increase their employment by ten per cent and the unions to hold back on wage demands. The low rates of growth in Table II cannot be attributed to a low growth in output. Some representative annual rates of increase of non-agricultural output between 1954 and 1964 are:[5]

Kenya	6.5
Southern Rhodesia	6.7
Uganda	7.7

Non-agricultural output in Tanzania increased at a rate of 6.0 per cent between 1954 and 1958 and 9.1 per cent between 1960 and 1964.

The very high rate of growth of employment in Ghana is very atypical. The reason for this high growth, however, has been a very high growth in government employment brought about by very rapid growth in government expenditures. Given the current limitations on Ghana's ability to finance further increases in government expenditure and their move away from make-work projects such as workers brigades and pioneer youth, there should be little further growth in employment from this source.[6]

The low rates of growth of employment in Table II are on the whole considerably below the rates of growth of urban population in Table I. Thus, only a small portion of the annual increment in the urban labor force are being

absorbed by the modern urban sector. The residual (those either unemployed or engaged in the traditional sector) are an increasing proportion of the urban work force. It is difficult to say how many of those in the residual are either underemployed or unemployed, but it is unlikely that the demand for the goods and services from the traditional urban sector has been growing at anywhere near the rate to fully absorb the growth of the residual labor force. In Nigeria, the large supply of workers to the traditional sector has kept the real wage rate in the sector either constant or falling while real wages in the modern sector have risen considerably. (See Kilby[12]). The highly paid workers of the modern sector are becoming an increasingly smaller percentage of the urban work force while the wage differential seems to be widening.

D. Composition of Labor Demand

There are several striking aspects concerning the composition of labor demand in Africa. First, the role played by government is very large. Government non-agricultural employment as a percentage of total non-agricultural employment for selected countries is given in Table III. It ranges from 37.6 to 52.1 per cent. Second, employment in trade commerce, and miscellaneous services is the most important component of non-agricultural employment in most African countries, ranging from 45 to 65 per cent for those countries in Table IV. Finally, manufacturing and public utilities accounts for a relatively small portion of non-agricultural employment, roughly between 15 and 20 per cent (See Table IV). These characteristics of the composition of labor demand have very important policy implications as will be shown below.

TABLE III

DISTRIBUTION OF NON-AGRICULTURAL EMPLOYMENT
BY TYPE OF EMPLOYER

	Year	Government (Per Cent)	Non-Government[*] (Per Cent)
Uganda	1964	52.1	47.9
Kenya	1964	41.4	58.6
Tanzania	1963	48.9	51.1
Nigeria	1962	37.6	62.4
Ghana	1961	45.6	54.4

Sources: Uganda Statistical Abstract, 1965, Entebbe, 1966, p. 93;

Kenya Statistical Abstract, 1965, Nairobi, 1966, p. 122;

Tanzania Statistical Abstract, 1964, Dar Es Salaam, 1965, p. 142;

Nigeria Report on Earnings and Employment Enquiry, 1962, Lagos, 1964, p. 12; and

Ghana Quarterly Digest of Statistics, Accra, December, 1962, p. 2.

[*]Includes Government Corporations except for Uganda.

TABLE IV

DISTRIBUTION OF NON-AGRICULTURAL
EMPLOYMENT BY SECTOR

	Manufacturing and Public Utilities	Commerce and Services	Construction	Mining	Transport and Communi-cations
Uganda (1964)	20.2	56.2	15.0	3.0	5.6
Kenya (1965)	19.2	65.0	5.6	0.6	9.4
Tanzania (1963)	15.2	50.5	16.2	4.2	13.9
Nigeria (1962)	14.4	45.0	20.7	9.8	10.2
Ghana (1964)	13.9	47.6	19.3	8.6	10.2

Sources: Same as Table III except for Kenya and Ghana data which were obtained from
International Labor Office, Yearbook of Statistics, 1966, Geneva, p. 268;
and Ghana Economic Survey, 1964, Accra, 1965, p. 105.

E. The Main Factors in the Growth of Demand for Urban Labor

In this section we discuss the factors which are most important in the growth of the demand for labor. The emphasis will be on a consideration of the problem of estimating growth in demand. The factors stressed are very much dependent on the source of demand. We will separate our discussion of government and non-government labor demand. The private or non-government labor demand will be subdivided into a discussion of trade, commerce and miscellaneous services sectors on the one hand and manufacturing, public utilities, mining, construction and transport on the other.

1. Government Demand for Labor

The growth in government demand for labor is largely a function of the growth of government current expenditure. The major component of government current expenditure is wages and salaries which typically account for 60 to 80 per cent of the total. This ratio tends to change very little through time for any given country. Thus, the rate of growth of government employment (r_g) is approximately given by the formula

$$r_g = r_e - r_w$$

where r_e is the rate of growth of government current expenditure and r_w is the rate of growth of the average government wage or salary. The average government wage may rise either because of an increase in government salary scales, increased promotions within the existing scale or an increase in the number of people hired at the higher scales.

2. Non-government Demand for Labor in Commerce, Trade, and Miscellaneous Services

Value added in commerce, trade, and miscellaneous services, while it includes some profits and depreciation is largely composed of wages and salaries (explicitly or implicitly). Thus, as is the case with government, employment tends to grow roughly the same as value added (in money terms) with an adjustment for increased average employee remuneration, i.e., employment tends to grow about the same as real value added.

3. Demand for Labor in Mining, Manufacturing Transport, Construction, and Public Utilities

The demand for labor by the private sector other than in commerce, trade, and miscellaneous services is very much influenced by the fact that a large share of value added can be attributed to the capital stock employed in these industries. The rate of growth of employment (r) is given approximately by

$$r = r_v - r_p$$

where r_v is the rate of growth of value added and r_p is the rate of growth of labor productivity. Productivity growth over time may occur for several reasons:

    (1)   An increase in the average capital/labor ratio either within firms or because firms with high capital/labor ratios increase their share of the market;

    (2)   Increasing quality of the labor force, particularly through on-the-job training and increased experience in a factory environment;

    (3)   Disembodied technical change resulting from better management, organization and work procedures;

(4) An increase in the share of the market for those firms which have achieved higher labor productivity because of better management or better labor quality;

(5) Economies of scale;

(6) Increasing capacity utilization resulting in increased productivity of maintenance and administration personnel;[7]

(7) Embodied technological change.

Of course, productivity may decrease through time if the labor force is deteriorating, management control of operations becomes lax, or the capital intensity of production becomes greater, but the main direction of change in Africa has been substantial increases in labor productivity.

The first four of these factors, an increase in the average capital/labor ratio, disembodied technological change, increasing quality of the labor force, and the increase in the share of the market by firms with higher labor productivity, operate independently of increases in output or value added. Thus, there is a tendency for some gain in productivity even though output is falling, stagnant, or growing slowly. Part of the gains in labor productivity at low or negative rates of growth, however, are concealed by the fact that many employers are hesitant to fire or lay off workers in the short run, even though they are redundant, in order to avoid problems of rehiring, retraining, and poor worker morale. At higher rates of growth of output, productivity growth tends to look more impressive both because a backlog of redundant workers may have built up during previously occurring slack periods and because of real productivity growth spurred by scale effects, increasing capacity utilization, and embodied technological change. In addition, at high rates of growth of output there is more scope for market shares of various firms to change. Increases in output

which begin to put a strain on the existing capital stock capacity may, however, cause the growth in productivity to fall off for very high rates of growth of output.

The curve ABEH in Figure 1 shows relationships involved between output growth, productivity growth, and growth in employment. The vertical axis is the rate of growth of employment, and the horizontal axis is the rate of growth of output (value added). At zero rates of growth of output the growth in employment is negative and equal to minus the distance OA. The rate of growth of output must be greater than OB in order for there to be any positive increase in employment at all.

The growth in productivity is approximately given by the distance between the 45 degree line OCG which emanates from the origin. For example, when the rate of growth of employment is zero, the rate of growth of productivity is equal to OA (the rate of decrease of employment). When the rate of growth of output is OB, the growth in productivity is approximately given by BC. If the growth in output is OF, the growth of productivity equals zero. Whenever the slope of the curve ABEH is equal to unity (at the point E in Figure 1), there is no change in the rate of growth of productivity. Below the point E, the rate of growth of productivity is increasing and above the point E, productivity growth decreases.

We place no great faith in the particular form of the curve ABEH shown in Figure 1 other than the fact that (a) for most relevant rates of growth of output, it probably lies below the 45 degree line (on the average, at any relevant rate of growth of output there is a net increase in productivity and (b)
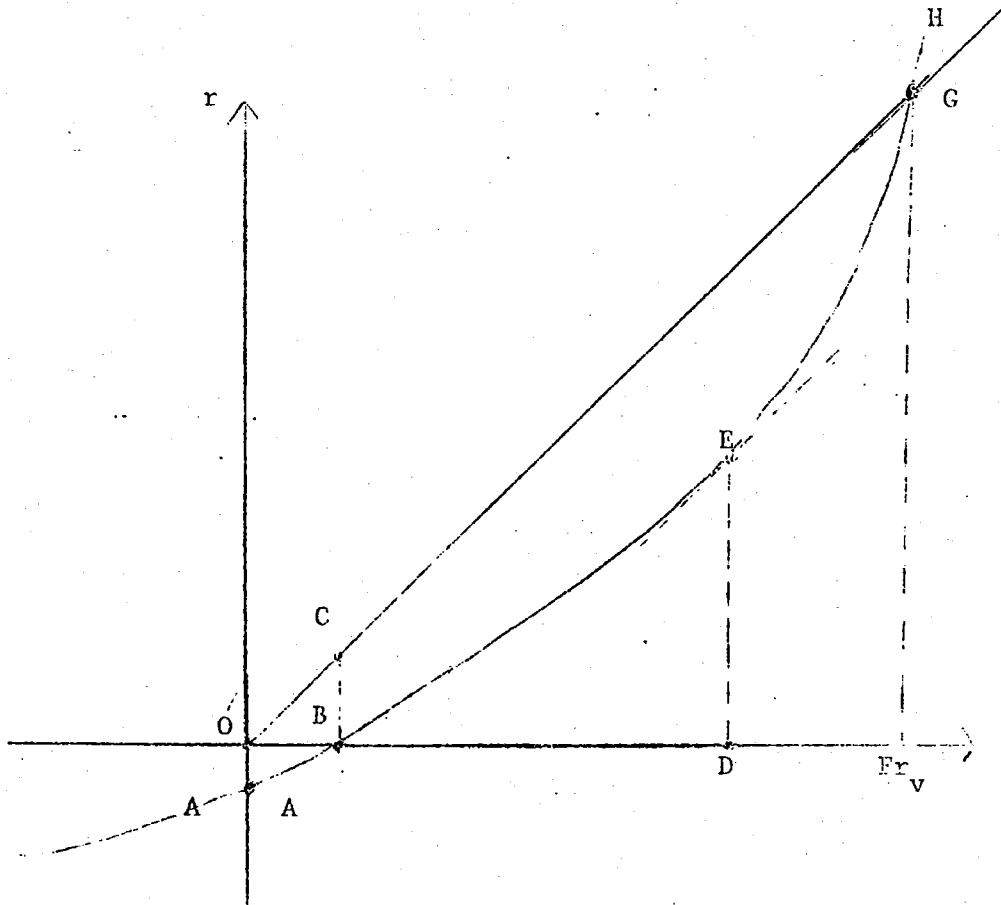
FIGURE 1

only for very high rates of growth of output would there be a tendency for productivity to decline, i.e., for a wide range in the growth of output there is a tendency for the curve to have less than unitary slope.

If data are available on output growth and productivity growth, a curve such as ABEH can be fitted to the data and the result used for projection purposes.

4. The Role of Wage Rates

The role that wage rates play in the growth in the demand for labor depends again on the particular sector of the economy. Government current expenditure is probably relatively insensitive to wage changes. Expenditure is much more influenced by the overall and limited taxing capability of the countries of Africa. Only through an increase in tax revenue which might conceivably (but not always) result from increased wages is government likely to increase expenditure in response to wage changes. Thus, any wage increase, whether because of a change in government pay scales or through a moving up in the existing scales, will tend to result in a corresponding reduction in employment. For example, suppose government expenditures are expected to increase 5 per cent from one year to the next. If the average government wage also increases by 5 per cent, the increase in employment will be nil. If government wage increases are held to only 2 per cent and there is no change in the revenue and expenditure picture, the increase in employment will be about 2.9 per cent.

With regard to trade, commerce, and miscellaneous services, wage increases are almost wholly reflected in the price of the service being performed. Thus, whether a wage increase will reduce employment in these sectors depends very much on the elasticity of demand for their services. If the wage increase affects

all sectors, price increases in these other sectors will probably also result, but the trade and commerce sectors will be affected more severely. A rise in the relative price of the trade and commerce sectors is unlikely, however, to cause any large decline in demand. These services are needed in relatively fixed proportions by the other activities in the economy and are relatively price insensitive.

The mining industry (including petroleum extraction) and the manufacturing activities associated with them (petroleum refining and copper and tin smelting is done mostly by foreign owned, large scale enterprises which use very capital intensive methods of production. Wage costs are small relative to value added and wage changes have very little effect on output decisions and the technology used.

In the construction, transport, manufacturing, and public utilities sectors wage rate changes can more significantly affect labor demand. Higher wage rates may affect capital/labor ratios in each establishment. More importantly, perhaps is the fact that higher wages raise costs more than proportionately in the more labor intensive establishments and for the more labor intensive commodities or services. The result may be a shift in the pattern of demand and output favoring the less labor intensive activities. One exception here is probably the construction industry. Construction is a major component of investment demand and the demand for construction services is probably much more dependent on investment demand and not very sensitive to wage rate changes.

Wage changes tend to have less effect on the labor intensity of the already existing capacity than on the labor intensity of new investment. When new investment plans are made, the current wage structure can be taken into account by

choosing the appropriate technology. Past investments may involve a given commitment to particular products and particular technologies, embodied, for example, in the type of equipment and plant layout used. Expected _future_ wage changes will also tend to have more of an impact on new investment and the degree of labor intensity.

Often it is not just the average wage which has the most importance for the labor intensity of economic activities but also the wage structure and the relative scarcity of different types of skills. In the construction industry, for example, very labor intensive methods of construction often involve close supervision and the need for large numbers of trained supervisory personnel. If the wages of skilled supervisors is increased, this may have a more potent effect in reducing labor demand for unskilled workers than for the skilled workers themselves. Scarcity of supervisory personnel, whether or not it is reflected in wage differentials may make capital intensive operations more profitable because of the low productivity of unskilled labor without supervision.

Finally, wage scales and their rate of increase may have stimulative effect on labor productivity if it induces management to upgrade the labor force through on-the-job training provides a rationale for getting rid of already redundant labor or induces efforts to manage and organize labor more effectively.

To summarize, the wage elasticity of labor demand depends very much on the particular sector of the economy. Government demand for labor is probably close to unit elastic, wage changes tending to result in equal percentage changes in the quantity of labor demanded because of the constraints on government current expenditure. Labor demand in the trade, commerce, and services

sectors is probably very inelastic due to an inelastic demand for such services and the difficulty of changing the capital/labor ratio in these sectors. The wage elasticity in mining and related manufacturing activities is very low due to the capital intensive technology. Labor demand is more elastic in the transport, construction, manufacturing and public utilities sectors mainly because wage rate changes will affect the labor intensity of new investment projects and change demand for labor intensive products relative to those which are capital intensive.

F. Estimation of Growth for Labor Demand in Nigeria

In this section we will estimate projected modern sector labor demand for Nigeria over the first and second five year development plans, 1962/63 to 1967/68 (Plan I) and 1967/68 to 1972/73 (Plan II). The second plan has not yet been formulated but its assumed basic assumptions are laid out in a separate document Guideposts for a Second National Development Plan. The current state of uncertainty with regard to future political arrangements among the regions of Nigeria makes any prognostication very tenuous. This exercise should therefore be regarded purely as an illustrative example.

1. Sectoral GDP Projections

The labor demand projections will be made on a sector by sector basis. In order to make such projections, the first requirement is a sector by sector projection of Gross Domestic Product. This was done using a very crude sectoral model of the Nigerian economy (see the Appendix of this paper for a full disucssion of the model). Four sets of projections were made all in constant (1957) prices.

The four sets are dependent on:

(1) Low GDP growth assumptions (explained below) and high growth in government current expenditure;

(2) High GDP growth assumptions and high growth in government expenditure;

(3) Low GDP growth and low growth in government current expenditure; and

(4) High GDP growth and low growth in government current expenditure.

Government current expenditure in money terms projected at both 5 and 10 per cent per annum. The ten per cent growth is very close to the historical growth in government expenditure over the last five years. A five per cent growth in current expenditure may be achieved if more effort is made by the current government to increase governmental development expenditures at the expense of current expenditures or if tax revenues do not rise as rapidly as in the past.

The low GDP projections are based on the following assumptions concerning sectoral behavior and overall performance:

(1) the capital/output ratio is 3.75 during Plan I and 3.0 during Plan II (as assumed in the above cited planning Documents).

(2) the rate of growth of GDP will be 4 per cent during Plan I and 6 per cent during Plan II;

(3) agriculture will continue to grow at 3.0 per cent (the average rate of growth from 1950/51 to 1963/64) over both planning periods;

(4) the growth of Transport, Commerce, and Services is a function of the growth of GDP as determined by the past relationship between these sectors and GDP;

(5) construction is assumed to be a function of investment;

(6) craft activities and ownership of buildings is assumed to grow at the same rate as in the past, an average of 1.5 per cent between 1950/51 and 1963/64; and

(7) manufacturing value added will grow at a rate of 10 per cent over both plan periods. The historical average growth of manufacturing value added (in constant prices) for the years 1958/59 to 1963/64 was about 15 per cent, but we postulate a falling off of this rate because of the increasing difficulty of achieving rapid growth through import substitution. In the first stages of import substitution the easily produced items are produced at home rather than imported. The technology and skilled labor requirements of further import substitution increase, and the rate of substitution must inevitably slow down.

The results of these projections are shown in Table V. They indicate that the fastest growing sectors are expected to be mining, manufacturing, construction and transport. The high rate of growth of construction is the result of the increasing importance of investment in total GDP. The relatively slow growing sectors are expected to be agriculture, commerce and services. The growth of mining is particularly high, increasing from Ł18.2 million in 1962/63 to Ł52.8 million in 1968/69 and Ł201.5 million in 1972/73. In 1972/73 mining represents nearly a quarter of total non-agricultural output and about 11 per cent of a total GDP of Ł1755.7 million. Nonagricultural GDP rises from 32 per cent of GDP in 1962/63 to 47 per cent in 1972/73.

The low growth projections appear to be conservative for several reasons. First, agricultural output has been growing at a faster rate over recent years than was the case over the whole period 1950/51 to 1963/64. From 1959/60 to 1963/64 agricultural output has grown at an average rate of 4.1 per cent. Secondly, the average performance of the economy over the first two years of the first plan, 1962/63 and 1963/64 has been better than the plan targets. The actual rates of growth were 5.7 and 4.6 per cent. Third, the prospects for oil production may be even more impressive than those implied by the low growth projections over the first and second plans. The main limitations to increased oil

production seem to be the difficulties involved in getting permits to import expatriate technicians who are needed for exploration and drilling and the political instability with its uncertainties regarding treatment in taxation and in obtaining licenses of various sorts. If expatriate allowances are issued more liberally and political stability attained oil could conceivably grow even faster.

In view of these considerations, an alternative set of high growth pro-jections was made. We assumed that:

1. agricultural output will grow at 3.5 per cent per annum;

2. mining value added will increase to ₺300 million; and

3. the capital/output ratio is 3.0 over both plans.

All assumptions pertaining to the sectors of the economy other than mining and agriculture are the same as those in the low growth projections. The rate of growth of total GDP is no longer assumed at 4 and 6 per cent over the first and second plans, respectively. With the high growth projections, the overall rate of growth of the economy is implied in the assumptions regarding the growth of the individual sectors.

The results of the high growth projections are also shown in Table V. The rate of growth of GDP implied by the high growth projections is 4.9 per cent over the first plan and 7.8 per cent over the second plan. The 4.9 per cent rate of growth is consistent with the performance of the economy over the first two years of the plan. The 7.8 per cent rate of growth is very' high and depends very much on the high rate of growth of oil production. As oil becomes more important as a proportion of total GDP, its influence on the over-all rate of growth increases. In fact, mining value added increases from ₺18.2

TABLE V

Nigeria

Projections of Gross Domestic Product

	1962/63 (£ million)	Low Growth Plan I 1967/68 (£ million)	Low Growth Plan II 1972/73 (£ million)	High Growth Plan I 1967/68 (£ million)	High Growth Plan II 1972/73 (£ million)	Growth Rates Low Growth Plan I (Per cent)	Growth Rates Low Growth Plan II (Per cent)	Growth Rates High Growth Plan I (Per cent)	Growth Rates High Growth Plan II (Per cent)
Agriculture	694.1	804.6	932.7	824.4	979.1	3.0	3.0	3.5	3.5
Mining	18.2	52.8	201.5	70.7	300.0	24.0	31.0	31.5	33.5
Manufacturing and Public Utilities	42.2	68.3	110.5	68.3	110.5	10.0	10.0	10.0	10.0
Construction	29.2	41.1	59.2	41.3	85.5	7.1	7.6	7.2	15.7
Transport	46.5	61.6	88.5	64.1	103.6	5.8	7.5	5.6	10.0
Commerce	131.9	156.2	204.2	161.5	230.6	3.4	5.5	4.1	7.4
Services	79.1	93.7	122.6	96.9	138.4	3.4	5.6	4.1	7.4
Other	31.1	33.7	36.5	33.7	36.5	1.6	1.6	1.6	1.6
Total GDP excluding Agriculture and other	347.1	507.4	823.9	536.4	1005.1	7.9	10.1	9.1	13.4
Total GDP	1072.3	1312.0	1755.7	1360.8	1984.2	4.0	6.0	4.9	7.8

million or less than 2 per cent of GDP in 1962/63 to £300.0 million in

1972/73 or about 16 per cent of total GDP and 31 per cent of non-agricultural

GDP. Non-agricultural GDP grows from 32 per cent of GDP in 1962/63 to

more than 50 per cent of GDP in 1972/73. Construction grows especially fast

during the second plan. This result is implied by the high rate of investment

during the second plan required to maintain close to an 8 per cent rate of

growth of GDP. Investment rises to 24 per cent of GDP during the second

plan.

One of the difficultires with these projections is that they are

based on Gross Domestic Product and not Gross National Product which means that

net factor payments abroad are not included. This has particular relevance

because of the increasing importance of oil which is financed by foreign

investment. In the present stage of development of the oil industry much of

the value added in the oil industry is for exploration purposes and drilling

of test wells (this is not counted as investment in the current accounts)

which consists almost entirely of wages and salaries which are paid either

to Nigerians and resident expatriates. The expenditure of these wages and

salaries has an indirect multiplier effect on the commerce, services, transport,

manufacturing and public utilities sectors. Furthermore, test drilling and

exploration involves more purchases of intermediate goods and services domesti-

cally produced than does the subsequent oil production from wells already sunk.

Thus, as the oil industry grows and production from wells increases as a

component of value added, not only will repatriated profits grow but the indirect

effect of wages, salaries and purchases of intermediate goods and services will

lessen. The projection model does not fully take this into account, but

exploration and drilling will probably continue for at least a decade on a fairly

large scale. Projection beyond this point, however, might be vastly different.

2.   Projecting Government Labor Demand

Total estimated employment by the Federal and Regional Governments of Nigeria has grown at an average annual rate of 8.6 per cent between 1956 and 1962 (see Table 6).   During that same period, Federal and Regional Government current expenditure as given in Table 6 has grown at 11.7 per cent.   This implies a rate of growth of the average government employee remuneration of about three per cent.

If the past patterns of growth in government employment continues, the rate of growth of Federal and Regional Government employment should be about three per cent less than the rate of growth of government expenditure because of the tendency for the average wage to rise.   Thus, federal and regional government employment should grow at about a rate of 2 or 7 per cent depending on the assumption of a 5 or 10 per cent growth in government current expenditure.

Local government employment has been virtually stagnant between 1956 and 1962 as shown in Table VI.   This lack of growth in employment occurred in spite of a 7.7 per cent growth in current expenditure between 1958/59 and 1961/62. The slow growth in employment may be attributed to a shift in local government expenditure patterns with increased emphasis on social services (health and education) and general administration and less emphasis on recurrent works. The local governments have continued to employ more qualified and highly paid personnel and the proportion of general unskilled laborers in total employment has dropped.   For example, between 1959 and 1961 alone, the number of general unskilled workers dropped from 49 per cent to 41 per cent of total employment reported by local governments.   The number of employees classed as technical

TABLE VI

GOVERNMENT EMPLOYMENT AND EXPENDITURE

Year [*]	Federal and Regional Government		Local Government	
	Estimated Employment (thousands)	Current Expenditure (£ million)	Estimated Employment (thousands)	Current Expenditure (£ million)
1956/57	96.7	65.6	93.9	n.a.
1957/58	116.1	69.6	93.3	n.a.
1958/59	120.9	73.4	92.2	15.1
1959/60	128.6	89.9	97.7	16.6
1960/61	138.6	95.5	95.1	17.9
1961/62	128.0	117.0	88.0	20.3
1962/63	159.4	127.7	92.2	n.a.
1963/64	n.a.	142.4	n.a.	n.a.
1964/65	n.a.	152.1	n.a.	n.a.

Sources: Nigeria: Economic and Functional Analysis of Government Accounts 1958/59 - 1961/62, Lagos, 1964, pp. 88-91.

Nigeria: Economic Indicators, March 1966, pp. 18 and 31-33.

Nigeria Statistical Abstract 1963, Lagos, 1964, pp. 32, 33 and 62; and

Nigeria Report on Earnings and Employment Enquiry, 1958-62, Lagos

[*] Employment figures refer to September of fiscal year before 1961 and December of fiscal year thereafter.

professional, managerial, executive, and administrative jumped from 19 per cent to 30 per cent of reported employment.[8]

The shift toward social services and administration is unlikely to continue as rapidly in the future as it has occurred in the past. If local government current expenditures increase at about 7 per cent per annum, somewhat less than for the period 1958/59 - 1961/62, the growth in employment might conceivably be about 3 per cent.

3. Commerce and Services

The value added projections in Table V for commerce and services include both value added by the government and by the private sector. Currently, the breakdown is about half and half. If government grows at 10 per cent, the governments share will tend to increase fairly rapidly. Thus, this fact must be taken into account in projecting the growth of private value added. Taking this into account we obtain the following estimated rates of growth of private sector employment in commerce and services which are based on the rates of growth of real value added in Table V.

Growth in Government Current Expenditure	High GDP Growth		Low GDP Growth	
	Plan I	Plan II	Plan I	Plan II
5 per cent	4.1	7.4	3.4	5.5
10 per cent	2.7	3.8	2.5	3.2

4. Mining

Most of the employment in the mining sector can be attributed to tin mining at Jos in the Northern Region and coal mining near Enugu in the Eastern Region. Employment and output and output data are contained in Table VII. The most striking feature of these dat are the very large increases in productivity per man. In

TABLE VII

EMPLOYMENT AND OUTPUT IN MINING

Year	Employment (thousands)				Average Monthly Output	
	Coal	Tin	Other	Total	Coal ('000 tons)	Tin (tons)
1950	6.0	58.2	1.2	65.4	48.7	949
1951	5.9	65.3	0.7	71.9	45.9	982
1952	7.5	63.8	0.8	72.1	48.4	957
1953	7.3	59.8	0.6	67.7	58.3	946
1954	7.2	59.4	0.4	67.0	53.0	911
1955	7.0	60.8	0.3	68.2	62.4	938
1956	7.8	58.4	0.4	66.6	65.6	1042
1957	8.1	55.5	0.5	64.1	67.9	1096
1958	7.6	33.5	0.4	41.5	77.0	701
1959	5.7	29.3	0.4	35.5	61.8	623
1960	3.3	36.6	0.3	40.2	46.8	865
1961	3.3	40.1	0.3	43.7	49.8	876
1962	3.2	43.8	0.2	47.7	52.0	925
1963	3.1	45.4	0.1	48.6	47.3	975
1964	3.2	44.1	0.1	47.4	57.4	982

Source: Nigeria Quarterly Digest of Statistics, various issues.

tin between 1950 and 1957, despite an increase in output from 949 tons to 1096 tons per month or 15.6 per cent, employment _dropped_ from 58.2 to 55.5 thousand or 4.6 per cent implying an increase in productivity of 20.9 per cent or an average increase of 2.8 per cent per annum. Between 1950 and 1964 tin output hardly increased but tin employment fell by 24.2 per cent, an increase of productivity of 36.8 per cent or 2.3 per cent per annum. Between 1950 and 1957, there was virtually no increase in labor productivity in coal, but between 1959 and 1964 coal output fell by 15.5 per cent and employment fell by 60.5 per cent, an increase in productivity of 113 per cent or 11.4 per cent per annum.

Using the tin and coal data, we regressed percentage increase in employment (Y) on percentage increase in output (X) to obtain the following results:

Coal: $Y = -7.1 + 1.704 X$ $(R^2 = .28)$

Tin: $Y = -1.5 + .875 X$ $(R^2 = .90)$

These results imply that when output does not grow at all, coal employment drops off at a rate of 7.1 per cent per annum and tin employment drops off at 1.5 per cent per annum (the coal results are suspect because of the poor fit and the presence of auto correlated error terms). They also imply that coal output must be growing at least at 4.2 per cent and tin at 1.7 per cent per annum for there to be any increase at all in employment in these sectors. With increasing dieselization of the railways, however, and the introduction of local oil refining, petroleum products should continue to be substituted for coal as a power source.

During the 1960/64 period, tin production rallied (from its 1959 low of 623 tons per month) due to favorable prices, but failed to attain the performance of 1957 (1,096 tons per month). The recent fall in tin prices does not bode well for the immediate future. A very optimistic appraisal of the possibilities for employment opportunities in coal and tin would be to suggest that perhaps employment will not fall, but remain steady over the planning horizon.

Despite the fact that petroleum production and exploration accounts for most of the value added in the mining sector, employment is rather small. A private survey of the oil industry and its contractors and suppliers for the year 1965 revealed that 8,439 workers (Nigerian) were employed by the oil industry itself. The projected employment for the industry by 1970 was 10,642 an average increase of 4.9 per cent per annum. Compared with the projected rate of growth of this industry, the employment increase is miniscule.

From this analysis, it appears that through the second plan, the only significant increases in employment will occur in the oil industry. Since oil industry employment, however, was only about one-seventh of total employment in the mining industry in 1965, the increase in total employment for mining will average less than one per cent per annum (about 0.8 per cent).

5. Manufacturing and Public Utilities

The data relating to output and employment in the manufacturing and public utilities sector is rather sketchy. Between 1958/59 and 1961/62 value added in the manufacturing and utilities sector increased at a rate of 15.8 per cent per annum. Estimated employment increased at an annual rate of 10.1 per cent implying an increase of over 5 per cent in value added per worker. The 1962 and 1963 industrial censuses reported the following data for manufacturing:

Year	Employment	Value Added	Value Added Per Worker (£ million)
1962	58,277	41,845	718
1963	66,798	54,653	817

The percentage increase in value added per worker is 13.8 per cent. This very high figure, however, may be due to the exceptionally large increase in value added (coverage is estimated to be about equal for both industrial censuses) between 1962 and 1963 and a more normal growth year would probably yield a lower figure. Differences in firms covered may also account for the large increase.

Other research on a more disaggregated basis and elsewhere in Africa reveals a pattern of large increase in productivity in manufacturing activities. A study by Azarias Baryaruha of three firms in Uganda, Nyanza Textiles, Uganda Breweries, and British-American Tobacco Company, revealed average annual increases in physical labor productivity of 12.2, 6.6 and 3.4 per cent respectively over the 1960-64 period. The increase in productivity of the tobacco firm occurred despite a more than 10 per cent decline in production over the period. Using employment figures from the annual enumeration of employees and gross domestic product data, Baryaruha also revealed the following increases in labor productivity in Uganda over the period 1960-64:[9]

Cotton, Coffee and Sugar Processing	6.9%
Manufacture of Food Products	2.7%
Miscellaneous Manufacturing	6.2%

In a study of the sugar industry in East Africa, the present author concluded that productivity in sugar processing in Kenya increased 52 per cent between 1958 and 1962 or an average of more than 10 per cent per annum.[10]

Although the evidence is not as complete as one might like, we will base our employment projections in manufacturing on a 6 per cent growth in productivity. This seems to be, if anything, a rather conservative estimate. The assumption of a 10 per cent rate of growth in value added in manufacturing and public utilities for both the high and low GDP projections above, implies then a 3.8% rate of growth of employment in this sector.

6. Transport

By far the majority of wage earners in transport establishments of more than 10 are employed by the Nigerian Railways Corporation, Table VIII gives output in ton miles, workers and ton-miles per worker for 16 years. The pattern of growth of output, employment and output per worker does not follow any consistent year to year pattern (all regressions produced very low R^2).[11] The long run trend toward increasing productivity is readily apparent, however. The average gain in productivity between 1948 and 1963 is about 5 per cent per annum. Besides the growth in productivity, there is a noticeable persistent downward trend in employment since 1959 despite large fluctuations in output. Given the projections of the transport sector in Table V, the following conservative estimates of employment growth are based on a continued 5 per cent per annum growth in productivity: give the following projected rates of growth.

	High Growth	Low Growth
Plan I	1.6	0.8
Plan II	5.0	2.5

TABLE VIII

EMPLOYMENT, OUTPUT, AND PRODUCTIVITY OF NIGERIAN RAILWAYS CORPORATION

Year	Employment* (1000)	Ton Miles (1000)	Ton Miles/Worker
1948	22.1	554	25.1
1949	23.2	658	28.4
1950	24.3	711	29.3
1951	23.4	672	28.7
1952	27.0	663	24.6
1953	28.7	829	28.8
1954	26.5	909	34.3
1955	30.1	1079	35.7
1956	29.3	1162	39.7
1957	28.2	1294	45.8
1958	29.3	1232	42.0
1959	30.2	1381	45.7
1960	29.6	1249	42.2
1961	29.3	1181	40.3
1962	28.0	1412	50.4
1963	27.4	1410	51.5

* Exclusive of employees assigned to works projects.

Source: Federal Republic of Nigeria, _Quarterly Digest of Statistics_, Lagos, Federal Office of Statistics, Various issues.

7. Construction

About one-half of the total employment in construction can be attributed
to government. Unfortunately, the national accounts do not provide a break-
down of value added by government and non-government for the construction sec-
tor. We will make a very crude projection here by assuming the difference be-
tween the annual rates of growth of output and of private employment will re-
main roughly the same as for the period 1956 to 1962 (exclusive of the growth
between the years 1957/58 and 1958/59 which are not comparable). The growth
of value added was about 10 per cent per annum and of private employment about
4 per cent per annum. Projecting the difference of 6 per cent, we arrive at
the following projected rates of growth:

	High Growth	Low Growth
Plan I	1.2	1.1
Plan II	9.7	1.6

8. Overall Employment Projections

The overall employment projections based on a 5 per cent growth in govern-
ment expenditure are shown in Table IX. These are only very rough estimates,
but they probably do indicate rough orders of magnitude. .If anything, these
are overestimated projections because of our conservative assumptions concerning
productivity growth.

The projections of non-agricultural employment are considerably below the
growth in non-agricultural value added (see Table V) and considerably below the
current rate of urban population and urban labor force increase in Nigeria which
is generally assumed to be about 6 per cent. The rates of growth of urban em-
ployment are roughly consistent with the current rate of overall population

TABLE IX

NIGERIA

PROJECTED NON-AGRICULTURAL EMPLOYMENT BY SECTOR

LOW GROWTH GDP PROJECTIONS

	1963/64* ('000)	1967/68 ('000)	1972/73 ('000)	Rates of Growth During Plan I	Plan II
NON-GOVERNMENT					
Mining	54.9	56.8	59.1	0.8	0.8
Manufacturing and Public Utilities	74.0	85.9	103.5	3.8	3.8
Construction	76.0	79.4	86.0	1.1	1.6
Transport	45.0	46.5	52.6	0.8	2.5
Commerce and Services	129.0	147.5	192.8	3.4	5.5
Total Non-Government	378.9	416.1	494.0	2.2	3.5
GOVERNMENT					
Federal and Regional	173.0	187.6	207.1	2.0	2.0
Local	93.0	104.7	121.4	3.0	3.0
Total Government	266.0	292.3	328.5	2.4	2.4
Total Government and Non-Government	644.9	708.4	822.5	2.4	3.0

HIGH GROWTH GDP PROJECTIONS

NON-GOVERNMENT					
Mining	54.9	56.8	59.1	0.8	0.8
Manufacturing and Public Utilities	74.0	85.9	103.5	3.8	3.8
Construction	76.0	79.7	126.6	1.2	9.7
Transport	45.0	48.0	61.3	1.6	5.0
Commerce and Services	129.0	151.5	216.5	4.1	7.4
Total Non-Government	378.9	421.9	567.0	2.7	6.1
GOVERNMENT					
Federal and Regional	173.0	187.6	207.1	2.0	2.0
Local	93.0	104.7	121.4	3.0	3.0
Total Government	266.0	292.3	328.5	2.4	2.4
Total Government and Non-Government	644.9	714.2	895.5	2.8	4.6

* Estimated by author

increase in Nigeria (generally held to be about 2.5 per cent), but as long as current rates of rural-urban migration are maintained, the growth in urban employment in the modern establishments will not absorb the labor force supply. The traditional sector will continue to absorb increasing numbers, and open and disguised unemployment will become increasingly serious.

The effect of the different assumptions concerning government expenditure are shown in Table X. The effect of doubling the rate of growth of government current expenditure from 5 per cent to 10 per cent is to add about one percentage point to the rate of growth in all cases.

9. Increasing the Labor Intensity in Manufacturing

Let us assume that the labor intensity of manufacturing is increased in such a manner that the rate of growth of employment in that industry is doubled. Let all the other assumptions used in the projections remain the same. The resulting rates of growth of employment given a 5 per cent growth in government current expenditure are as follows:

	Plan I	Plan II
Low Growth	2.8	3.6
High Growth	3.1	5.1

The increase in the rate of growth of employment caused by a 100 per cent increase in the growth of manufacturing employment (an increase of 3.8 percentage points) is 11 to 20 per cent (or 0.3 to 0.16 percentage points).

TABLE X

PROJECTED ANNUAL PERCENTAGE GROWTH OF
NON-AGRICULTURAL EMPLOYMENT UNDER ALTERNATIVE
GOVERNMENT CURRENT EXPENDITURE ASSUMPTIONS

LOW GROWTH GDP PROJECTION

	5 Per Cent Growth of Government Current Expenditure		10 Per Cent Growth of Government Current Expenditure	
	Plan I	Plan II	Plan I	Plan II
Government	2.4	2.4	5.7	6.0
Non-Government	2.2	3.5	2.1	2.6
Total	2.4	3.0	3.6	4.2

HIGH GROWTH OF GDP PROJECTION

	5 Per Cent Growth of Government Current Expenditure		10 Per Cent Growth of Government Current Expenditure	
	Plan I	Plan II	Plan I	Plan II
Government	2.4	2.4	5.7	6.0
Non-Government	2.7	6.1	2.2	4.8
Total	2.8	4.6	3.7	5.4

G. Urban Wage Determination

Urban wage determination in Africa is very complex and depends on the distinction between the modern, large scale sector and the traditional small scale sector. The forces which predominate are different in each sector, although it must be emphasized that the distinction is not abrupt and there are many cases which defy classification. In the traditional sector, the market forces of supply and demand tend to determine the prevailing wage. There is probably some minimum wage at which labor supply becomes very elastic. Below this minimum rate, little labor is forthcoming since self-employment in petty trading, migration back to the rural areas, begging, or living off friends and relatives becomes more attractive.

In the modern sector, the central government usually sets the pace in one way or another. In some areas such as in East Africa, British Central Africa and Ghana minimum wage legislation, unlike in the developed western countries, essentially determines the whole wage scale. Minimum wages are periodically adjusted upwards usually as the result of recommendations of minimum wages advisory boards which are appointed every few years. The increase in the minimum wage is very effective in raising the whole wage scale since the wages of most unskilled workers are at or near the current minimum wage. Recent increments in the minimum wage in many African countries have been very substantial. In Uganda, for example; minimum wages in the urban areas were adjusted in 1959, in 1962, and 1964. The minimum wage was set at Shs. 75.4, Shs. 120.0 and Shs. 152.0, respectively, implying more than a doubling of the money wage in 5 years.[12]

The real minimum wage increased almost as much since there was little price inflation during those years.[13] In Ghana, minimum wage legislation was introduced in 1960. The result was a sharp shift upwards in wage rates. The numbered of registered unemployed increased sharply. The government was forced to take over the gold mines because the private owners claimed the sharp wage increases made further profitable production impossible.[14]

In those countries where minimum wage legislation is not the major factor in setting wage rates, the government wage scales have a substantial impact on wage scales throughout the modern sector of the economy. Such is the case in Nigeria today and Ghana before 1960.[15] There are two reasons why government scales set the pace for the rest of the modern sector. First, the preponderance of government as the single largest employer means that other employers set their scales at or near those of the government in order to hold their own labor force and to be a competitive position to attract better quality workers at all levels. Secondly, the larger private employers, for political reasons, want to achieve and maintain a reputation as "progressive employers." In some instances the private employers pay substantially above government rates for these reasons.[16]

The central government often raises its wage scales in large and discrete jumps. In Nigeria, for example, the traditional mechanism for raising government wage scales is to appoint a commission of enquiry into wages and conditions of employment every few years. The commission's recommendations are usually adopted for the most part, resulting in a discrete jump in wage scales which is

or changed only slightly until the next commission of enquiry is appointed.
Government wage scales in Nigeria were adjusted upwards in 1954-55, 1959, and
1964 upon recommendations of the Gorsuch Commission in 1954, the Mbanefo and
Morgan Commissions in 1959 and a second Morgan Commission in 1964. The minimum
wage for general labor increased from 4 shillings 8 pence in 1955 to 5 shillings,
10 pence in 1959 to 7 shillings, 8 pence in 1964. The increase of 67 per cent
in the money wage of general labor was accompanied by only small changes in
the price level.[17]

The sharp increases in real wage rates brought about by changes in mini-
mum wage legislation or changes in government wage scales, accompanied by in-
creasing urban unemployment, indicate that the wage in the modern sector tends
to be set institutionally and politically without great regard for achieving
balance between the demand and supply of labor. An examination of available re-
cent government documents which deal with the policy issue of wages confirm
this fact. These are two main arguments used to justify the usual recommenda-
tion of a substantial increase in the wages paid to general unskilled laborers.
The first is that a stable, modern, urban labor force requires that the lowest
paid workers be able to maintain themselves and their families at a "living
wage" or what is necessary to provide a man and his family "at a minimum stan-
dard of health and decency."[18] A good statement of this philosophy is contained
in the Uganda Government's Report of the Minimum Wages Advisory Board [16], p. 5.

> "The wages of unskilled workers in Uganda, in common with
> many other developing countries, are so low in many cases that
> they live in a state of permanent poverty and are generally 'underfed,
> underhoused and underclothed'. We feel, therefore, that until such
> time as they achieve a minimum wage which will enable them to live
> as decent human beings equipped, at least, with the basic necessities
> of life we cannot allow our consideration for any increase to be deter-
> mined solely by the so-called 'economic laws', even though this may be

contrary to the economist's usual ideas of how wage levels should
be determined. It is of paramount importance to the country's future
stability and prosperity that we achieve, as rapidly as possible, a
wage structure based on the needs of the family unit. The realisation
of this objective should receive top priority and the full co-operation
of both the Government and of the business community."

In practical terms, a minimum monthly wage of 240 shillings was deemed

a living wage by the 1964 Uganda Minimum Wages Advisory Board which they felt

ought to be achieved in a few years, implying a 58 per cent increase over and

above their current recommendations.[19] Since the concept of a living wage is

ephemeral, to say the least, once a wage of 240 shillings a month is achieved

this will no doubt be regarded as inadequate.

The second argument most often used relates to the very substantial differ-

ences in pay scales between the various labor categories. In Nigeria, for example,

a young university graduate entering the civil service typically has a starting

salary of ₤600 or ₤700 per annum with more or less guaranteed raises up to a

maximum level of ₤1400 or ₤1500 a year. If he is lucky enough to be promoted

to the so-called super-scales, he can earn close to ₤4000 a year. A typical

unskilled laborer will start at about ₤100 per annum and, unless he is able to

qualify as an artisan by further training, cannot hope to rise much above

₤150 a year.

These large income disparities result in significant pressures and senti-

ment in favor of forcing a more equitable income distribution by raising the lower

wage scales. The alternative policy of lowering the higher wage and salary

scales has been attempted by Nkrumah and Nyrere with significant political

repercussions. Few other African political leaders would probably attempt such

a solution.

|Granted that the African governments cannot set wage scales which are completely devoid of any considerations of demand and supply, but within a very large range they have the power and the apparent determination not to let "economic forces" determine employee remuneration.

H.   Interactions Between Demand and Supply of Urban Labor

Very little is known of the factors which seem to cause increasing migration to the cities despite the lack of a commensurate growth in job opportunities in the modern sector. Some such as Calloway [2] emphasize the effects of education, others the urban rural real income differentials (Kilby [12]), and still others emphasize psychological factors such as the excitement and adventure of city life compared to rural life. All of these hypotheses probably have some validity. Much more empirical work needs to be done before any one or several can be isolated as the most important.

One factor which is not often mentioned and which may be important because of its policy implications is the possibility of interaction between quantity demanded and quantity supplied of labor.[20] At any given wage rate and at any given point in time, the number of entrants into the urban labor force is not only a function of the prevailing wage rate, rural-urban real income differentials, etc., but probably also a function of the assessment of individuals of the subjective probability of getting a job. Prior to entering the urban labor force, a prospective entrant's assessment of the probability of getting a job is likely to be very crude but nevertheless proportionately related to the ratio of the current stock of unemployed to the current number of persons gainfully employed.

Once a person has entered the labor force, any decision to later with-draw from the labor force depends on whether he is gainfully employed or not. If he is not employed, his decision to withdraw like his decision to enter, depends both on the wage rate and on his subjective assessment of the probability of getting a job which will change through time as the amount of his information increases through experience. Furthermore, the average length of time a labor force participant goes without a job is dependent on the ratio of those unemployed to those employed. The longer the labor force participant remains without a job the more likely he is to leave the labor force both because his assessed probability of getting a job decreases the longer he remains unsuccessful in be-coming employed and because his financial and intangible assets decrease. By intangible assets we refer to his ability to live off relatives, friends, and tribesmen during his period of seeking work.

Once a person becomes employed the likelihood of his exiting the labor force is reduced.

If the quantity of labor demanded increases autonomously, in the first instance, the ratio of unemployed to those employed increases as the number of employed increases. The fall in this ratio induces: (a) a greater flow of entrants into the labor force because of the increase in the subjective probability of obtaining a job and (b) reduces the flow of withdrawals from the labor force because of the increase in subjective probabilities, because of the reduction in average length of time a participant goes without a job and because those who become gainfully employed are less likely to leave the labor force.

Thus, the quantity of labor demanded and quantity supplied to the labor force are not independent. An increase in quantity demanded brings forth an increase in the quantity supplied through a reduction in the flow out of the labor force and an increase in the number of new entrants. If the increase in the quantity supplied is greater than the increase in the quantity demanded, the net result will be an increase in the number unemployed.[21]

This analysis of interactions between supply and demand also indicates that the current rates of rural-urban migration may not be maintained for very long in the future. As the ratio of those not employed in the modern sector to those employed becomes very large, the subjective probability of obtaining a job will decrease. People are unlikely to continue to flock to the cities at current rates if there are so few jobs available. In the meantime the stock of unemployed and underemployed is building up very rapidly and may be quite large before some sort of equilibrium is reached.

I. Population Growth and Urban Employment

Although rates of urban population growth are typically about 6 to 8

per cent in Africa, the growth of total population for most African countries

is generally assumed to be somewhere between 2 and 3 per cent (in some cases,

such as Kenya, there is reason to believe that population is growing even faster

than 3 per cent[22]). This implies a rate of increase in the ratio of urban to rural

population somewhere between 3 and 6 per cent. Since there has been very little

increase in the numbers employed by the modern sector, however, the ratio of

those employed in the modern sector to those not employed in the modern sector

has been declining.

The rapid rates of overall population growth tend to aggravate the urban

unemployment problem for a number of reasons. First, the rapid growth of popu-

lation means an increasing supply of potential entrants into the labor force.

Second, the rapid growth in population has been accompanied by a fall in the

death rates. The current age structure of the African population is such that

almost 50 per cent are probably less than age 16. A falling death rate generally

tends to increase the proportion of people over age 16, so that the rate of

growth of the work force age 16 and over tends to increase even more rapidly

than the growth of overall population. Finally, while Africa is generally

considered to be a land surplus area, there are certain regions of Africa where

overpopulation is becoming an increasing problem. In other areas, a continued

rapid growth in population will begin to result in pressures on the land in a

few years.[23] The increasing scarcity of land means that everything else being

equal, the rate of rural-urban migration will increase.

J. Policy Implications

Our main concern is with government policies which seek to alleviate the growing disparity between both the numbers employed and the numbers underemployed or unemployed. The main thrust of our argument will be that those policies which operate on the supply side are more likely to be successful than any policies designed to stimulate the demand for labor.

1. Some minimum growth in output is necessary if the number of urban employed is to grow at all. At low rates of growth of output, the natural increase in labor productivity combined, perhaps, with a systematic shift toward more capital intensity will result in stagnant or falling employment. Above this minimum growth in output, the growth in employment tends to increase rapidly both because the natural increase in labor productivity is more than overcome and because the construction industry, a relatively labor intensive industry becomes more important as the ratio of investment to Gross Domestic Product rises.

2. The growth in employment arising from any given growth in output depends very much on the sectoral composition of that growth. The most important component of employment is government and its relative growth can swamp all other influences. If growth occurs mainly as the result of an expansion in non-labor intensive activities or in sectors where labor productivity is increasing very rapidly, the effect on employment can be substantially lower.[24] Thus in Nigeria, a more rapid growth of the oil industry produces mainly indirect employment effects whereas the same growth generated in labor intensive manufacturing would have significant direct employment generating effects as well as the indirect effects. The importance of construction activity in investment also may have a considerable effect on the relation between growth in output and growth in employment.

3. <u>The growth in urban employment is unlikely to ever equal current rates</u>
<u>of growth of the urban labor force.</u>   Although the rate of growth of employment
may rise rapidly after some minimum growth in output is achieved it is unlikely
to ever be equal to the rate of growth of output.   For example, a 7.8 per cent
projected growth in output in Nigeria produces at most a projected 4.6 per cent/ growth in
employment and this is largely due to a very rapid increase (10 per cent) in
current government expenditure.   Rates of growth beyond 7.8 per cent are unlikely
to ever be achieved over a long period of time in Nigeria or elsewhere in Africa
unless export prices turn very favorable.   Given rates of growth of the urban
labor force of about 6 per cent, full absorption is not possible.

4. <u>Stimulation of urban labor demand by a slowing down of wage increases</u>
<u>would have a limited impact on employment and is politically difficult to</u>
<u>implement.</u>   The major impact of a slowdown in wage increases on employment would
operate through the government sector for which the wage elasticity of employment
is near unity.   A lowering of the average wage would increase the level of
employment at existing levels of government current expenditure and increase the
additional numbers employed for a given growth in government expenditure.   In
fact, however, recent government wage increments have been mostly confined to the
lower wage scales.   Given the large income disparities, the proportion of the
total government wage bill affected by these wage increases has been small so that
the percentage increase in the average wage has been considerably less than the
increase in the lower wage scales.   For example, in the <u>1959 Nigeria Report on</u>
<u>Earnings and Employment Enquiry</u>, 11.7 per cent of those employed by the Federal
and Regional governments together were classified as either professional, technical,
administrative, executive, or managerial.   The cash earnings of these senior

employees comprised 41.5 per cent of the total wage and salary bill. At the other end of the scale, general unskilled labor accounted for 36.6 per cent of employment but received only 13.9 per cent of total earnings. Thus a ten per cent increase in wages paid to general unskilled laborers would require only a 1.4 per cent increase in government expenditure on wages and salaries (and even less of an increase in total current expenditure) to keep employment at the same level.

The impact of a policy of wage restraint on the private sector is likely to be considerably smaller than is the case with government. The main increase in employment opportunities would occur as output increased through new investment. Employment at current output levels is less wage elastic. Furthermore, factors other than wages may be a large contributor to labor costs. The tendency toward provision of increased fringe benefits such as the National Provident Fund scheme in Nigeria, the introduction of pay as you earn systems of taxation and check-off of union dues, and the growing strength of labor unions have raised the effective wage, increased administrative costs of using labor inputs, have subjected employers to the ever closer scrutiny of government officials, and have forced closer compliance with laws pertaining to wages and conditions of employment.

Finally, a policy of wage restraint is extremely difficult to implement given the political pressures for a narrowing of wage and salary differentials.

5. <u>Stimulation of urban labor demand by increasing government current expenditure might be quite effective but the impact on investment activity unfortunate.</u> One way to boost employment quickly is through a rapid expansion of government services. Sooner or later, however, someone must pay the cost of such a "cheap" method of boosting employment. Either government capital expenditures must suffer or tax revenue raised which is likely to reduce private capital

expenditures. Furthermore, an increase in labor demand, particularly when it is generated by government may substantially increase urban labor force participation.

6. <u>Increasing the labor intensity of investment through tax and subsidy incentives would have limited-impact.</u> This kind of policy will operate on the private sector which accounts for only about half of all modern sector employment and within the private sector the policy will only affect those industries for which a wide range of choice of technologies is available. Thus commerce and services and the mining sector and related activities will be little affected. If a tax and subsidy scheme were able to raise the rate of growth of employment in manufacturing it would be considered enormously successful. In our projections of Nigerian employment, however, we saw that a doubling of the growth in manufacturing employment through the use of more labor intensive techniques had a considerably smaller impact (about a 20 per cent increase) in the growth in overall employment.

In addition, tax and subsidy schemes which favor labor intensive investment, might also reduce the total level of investment because of the relative increase in the price of capital. Depending on the specific shape of the production a net reduction in the growth of output may occur.

Finally, because such a tax and subsidy scheme would operate mainly on the demand for labor, again the increase in labor force participation may reduce or negate its effectiveness.

7. <u>The rural-urban wage differential is a more important policy variable than urban wage rates considered alone.</u> A reduction in the growth of urban wage rates is likely to be more effective than any policy specifically aimed at

increasing urban labor demand. The reason for this, of course, is that a reduction in the urban wage will tend to reduce also the quantity of labor supplied to the urban areas through a reduction in the rural-urban income differential. Unless, however, reduced growth in the urban wage is accompanied by no change or increased growth in rural incomes. the net effect of a policy of wage restraint may be negative as far as unemployment is concerned. Furthermore, a policy of wage restraint is likely to be more palatable politically if accompanied by a stated policy of attempting to increase rural incomes.

8. The most successful policy is likely to be one aimed at increasing rural income and raising the quality of rural life. The pattern of development in many African countries has been one in which rural incomes have provided much of the surplus which has been used to finance expansion of social overhead facilities and modern sector development in the urban areas. The mechanism for providing this transfer has been agricultural marketing board policies (see Helleiner [24]), export taxes and import duties on consumption goods. Direct income taxes on rural incomes and the channeling of savings through financial intermediaries has not been used to such a large extent. Two questions arise with regard to this policy. First, has the resulting reduction of peasant incomes been wise given the rapid increase in real incomes of those employed in the modern sector. The transferring of the agricultural surplus probably has reduced peasant investment and contributed to the excessive draining off of workers to the city. Secondly, what has been the net impact on the rural sector of the investment financed through agricultural surpluses. Investment in urban construction, manufacturing, public utilities and urban social overheads has often had little positive impact on the rural sector, especially when manufacturing of import substitutes involves

higher prices to the rural consumers because of increased tariffs and monopoly protection. Investment in roads, rail, air travel and port facilities have to some extent facilitated the movement of goods and services to and from and within the rural sector. All too often, however, a large proportion of the investment in roads is for widening, improving, and paving the connections between main urban centers, and very little has been spent on agricultural and feeder roads. Most of the investment in air travel has been for improving the main international airports and purchasing aircraft for international service rather than for improving connections between rural centers.

More important, perhaps, than the bias of investment activity toward provision of services for the urban areas has been the bias of administrative and political effort towards satisfying the needs of urban areas. Improvement in the quality of rural life, say through increased activities of the departments and ministries concerned with rural community development, may not require so much increased investment in the rural areas as a direction of thought, effort, and research towards that end and a political reform which gives rural interests a stronger voice in formulating government policy.

Our main concern here has been the impact of various policy alternatives on reducing the disparity between demand and supply of urban labor. This does not imply, of course, that certain policies may be desirable for other reasons. For example, an argument for stimulating labor intensive activity may be justified wholly on grounds of efficient resource allocation, although there is considerable debate over the question of labor intensive versus capital intensive techniques with regard to the ultimate impact on the growth of the economy. The only policy which can hope to solve the problem of urban unemployment, however, is one which focuses on conditions in the rural sector.

Appendix

GDP Projections for Nigeria

The sector by sector projections of GDP were done with a very crude model containing the following variables.

A: Agriculture

M: Mining (including oil extraction and exploration).

T: Transport   C: Construction

CS: Commerce and Services

MP: Manufacturing and Public Utilities

O: Other

Y: Gross Domestic Product

I: Investment

All of the variables except investment (an expenditure aggregate) are in terms of value added. The model consisted of the following equations:

(1) $A = A_o (1 + r_A)^t$

(2) $O = O_o(1 + r_o)^t$

(3) $MP = MP_o (1 + r_{MP})^t$

(4) $C = 8.5 + .1604\ I$

(5) $T = -20.3 + .0620Y$

(6) $CS = 22.4 + .1734Y$

(7) $Y = A + O + MP + C + T + CS + M$

(8) $I = a \cdot Y$

(9) (a) $Y = Y_o(1 + r_Y)^t$

(b) $M = M_o(1 + r_M)^t$

Equation (9a) was used for the low growth projections and (9b) was used instead for the high growth projections. Equations (4), (5), and (6) are based on regressions using national accounts data for previous years.[1] A zero subscript e.g., A_o, O_o, MP_o, refers to the initial value of the variable which is subscripted.

There are nine variables and nine equations. For the low growth projections the parameters r_A, r_o, r_{MP}, and r_Y were given by assumption (see section F) and the parameter $\underline{a}$ was determined according to the Harrod-Domar growth equation.

$$(10) \quad a = r_Y \cdot k$$

where k is the assumed capital/output ratio. The equations are then solved by substituting the parameters in the reduced form. The reduced form consistsd of equations (1) through (3) and

$$(4^*) \quad C = 8.5 + .1604 Y_o (1 + r_Y)^t$$

$$(5^*) \quad T = -20.3 + .0620 \, Y_o (1 + r_Y)^t$$

$$(6^*) \quad CS = 22.4 + .1734 \, Y_o (1 + r_Y)^t$$

$$(7^*) \quad M = -A_o (1 + r_A)^t - O_o (1 + r_o)^t - MP_o (1 + r_{MP})^t + (1 - .1604 - .2354)$$
$$Y_o (1 + r_Y)^t$$

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[1] The commerce and services regression equation was based on the national accounts data (constant prices 1957) for 1950/51 to 1963/64, for transport 1958/59 to 1963/64 and for construction 1958/59 to 1963/64. These particular regression results were picked because of the goodness of fit. Various other regressions were tried using data in current prices data covering longer and shorter spans of years, and different forms of the regression equation. The data source was Nigeria Economic Indicators, various issues.

$$(8^*) \quad I = aY_o (1 + r_Y)^t$$

$$(9^*) \quad Y = Y_o (1 + r_Y)^t$$

For the high growth projections, specific assumptions were made about r_A, r_o, r_{MP} and r_M. The values of a and r_Y were determined by solving equation (10) and

$$(11) \quad Y_o(1 + r_Y)^T (1 - .1604a - .2354) = M_o(1 + r_M)^T + A_o(1 + r_A)^T$$
$$+ O_o(1 + r_o)^T + MP_o(1 + r_{MP})^T$$

where T is the terminal year of the projection period, i.e., the end of Plan I and the end of Plan II. Equation (11) ensures that the rate of growth of Y implied by the model is consistent with the proportion of GDP which is invested and the assumed capital/output ratio. The solution to (10) and (11) was approximated by successive substitutions. Having determined r_Y and a, these parameters were substituted in the reduced form along with r_A, r_o, r_M, and r_{MP} to make the projections.

Bibliography

[1] Reynolds, L.G., and P. Gregory - Wages, Productivity and Industrialization in Puerto Rico, Homewood, Illinois, Irwin, 1965.

[2] Calloway, A. - "Unemployment Among African School Leavers," Journal of Modern African Studies, Vol. I, No. 3, (1963), pp. 351-371.

[3] Pearson, D.S., - "Employment Trends in a Developing Economy - The Case of Southern Rhodesia," The East African Economics Review, Vol. II, No. 1 (June 1964), pp. 59-77.

[4] Doctor, K.C., and H. Gallis - "Modern Sector Employment in Asian Countries: Some Empirical Estimates," International Labor Review, Vol. 89, No. 12 (December 1964), pp. 558.

[5] Baer, W. and M.E. Herve - "Employment and Industrialization in Developing Countries," Quarterly Journal of Economics, Vol. 80, No. 1 (February 1966), pp. 88-107.

[6] International Labor Office, Employment Objectives in Economic Development, Report of a Meeting of Experts, Geneva, 1961.

[7] Galenson, W. - "Economic Development and the Sectoral Expansion of Employment," International Labor Review, Vol. 88, No. 6, pp.

[8] Calloway, A. - "School Leavers and the Developing Economy in Nigeria," Nigerian Institute of Social and Economic Research Conference Proceedings, 1960, Ibadan.

[9] United Nations, Statistical Yearbook 1965, New York, 1966.

[10] Ghana, Quarterly Digest of Statistics, Accra, December 1962.

[11] Ghana Economic Survey 1964, Accra, 1965.

[12] Kilby, P., "Industrial Relations and Wage Determination in Nigeria," mimeographed.

[13] Okigbo, P.N.C., Nigerian Public Finance, Evanston, Illinois, Northwestern University Press, 1965.

[14] Frank, C. R., Jr., - The Sugar Industry in East Africa, Nairobi, East
        African Publishing House, 1965.

[15] Baryaruha, A., - "Productivity Analysis and an Attempt at Employment
        Projection," Kampala, East African Institute of Social Research,
        EDRP No. 76, July 1965.

[16] Uganda Government, Report of the Minimum Wages Advisory Board, Entebbe; 1964.

[17] Nigeria, Federal Republic, Report of the Commission on the Review of Wages,
        Salary, and Conditions of Service of the Junior Employees of the
        Government of the Federation and in Private Establishments, Lagos,
        1964, (The Morgan Commission 1964 Report.)

[18] Birmingham, W., I. Neustadt, and E.N. Omaboe, - A Study of Contemporary
        Ghana, Vol. I, London, Allen and Unwin, 1966.

[19] Ghana, Seven Year Development Plan

[20] Nigeria, Federal Republic, Quarterly Digest of Statistics, Vol. 14, Nos. 3
        and 4, July and October 1965.

[21] Mooney, J.D., - "Urban Poverty and Labor Force Participation ," The
        American Economic Review, Vol. 42, No. 1, March 1967, pp. 104-119.

[22] Blacker, J.G.C. - "Population Growth in East Africa," East African Economic
        and Statistical Review, No. 8, September 1963, pp. viii - xii.

[23] Etherington, D.M., - "Projected Changes in Urban and Rural Population
        in Kenya and the Implications for Development Policy, " The East
        African Economic Review, Vol. 1 (new Series), No. 2, June 1965,
        pp. 65-84.

[24] Helleiner, G., - "The Fiscal Role of Marketing Boards in Nigerian Economic
        Development," Economic Journal, September, 1964.

Footnotes

[1]See Reynolds and Gregory [1]: Pearson [3]; Calloway [2]; and Doctor and Gallis [4]

[2]See Baer and Herve [5].

[3]For example, Calloway [2], (p. 60) asserts that "...no social and economic problem in Nigeria is so urgent as that of finding employment for the ever increasing number of school leavers. Nor is there any major policy issue of which the meanings and implications are so little understood."

[4]In referring to Africa in this paper, we generally mean Africa south of the Sahara exclusive of South Africa.

[5]These growth rates were calculated from data in United National [9], pp.

[6] . Between 1961 and 1964, private enterprise employment in Ghana fell from 138 thousand to 115 thousand while public sector employment increased from 212 thousand to 262 thousand, a net increase of 27 thousand. Employment in the services sector increased by 30 thousand, thus accounting for all of the increase in employment and then some. See Ghana [10], p. 2 and [11], p. 105.

[7]This cause of increased labor productivity is somewhat peculiar to the smaller size, less developed economies. In most African countries there is usually only one railway company, for example. Maintenance of the right of way and administrative and clerical operations require some minimum number of workers. The need for these kinds of workers does not expand nearly as rapidly as output expands. In most African countries, the railway accounts for a considerable portion of the labor force, and as the railways are used to fuller capacity, workers per unit of output falls rapidly. There is also a tendency to build certain manufacturing plants substantially ahead of demand or to build a large enough size to handle demands during export booms (e.g., cement). As the average capacity utilization increases, maintenance and administrative personnel increase their productivity.

[8]See Okigbo [13], pp. 125-130 and Nigeria Reports on Earnings and Employment Enquiries 1959 and 1961, Lagos.

[9]See Baryaruha [15].

[10]See Frank [14], p. 92.

[11] The reason for the lack of year to year correlation between employment and output is probably due primarily to two factors:
(1) the fluctuations in ton-miles carried are difficult to predict and abrupt increases in output are probably accompanied by deteriorating quality of service provided (longer turn around times, more frequent breakdowns in equipment, delays in repairing equipment, billing, routing, clearing, etc.) while abrupt falls in output result in redundant labor; and
(2) The railways are government run which means that they are probably used as an institution for doling out patronage and hiring relatives and clients and that in periods of declining output there is a tendency to avoid laying off workers. This suggests that employment is probably more a function of a weighted average of output in recent years with the restriction that employment cannot fall by more than a certain percentage in any given year.

[12] See Uganda Government [16], pp. 9 and 18.

[13] The index of retail prices in African Markets in Kampala was 102 in June of 1959 and 102 in June of 1964. The cost of living index (based on expenditure patterns of middle income civil servants) in Kampala was 138 in June of 1959 and 157 in June of 1964, an increase of about 14 per cent over five years.

[14] See Birmingham, Neustadt, and Omaboe [18], p. 137.

[15] See Kilby [12], pp. 13-20 and Ghana [19].

[16] See Kilby [12], p. 20.

[17] Changes in the Consumer Price Index for various Nigerian cities are as follows:
    Lagos: 1953 = 100; 1964 = 112
    Ibadan: 1953 = 100; 1964 = 127
    Enugu: 1953 = 100: 1964 = 147
    Kaduna: 1957 = 100; 1964 = 118
    Port Harcourt: 1957 = 100; 1964 = 118
These indices are based on expenditure patterns of employees earning Ł 350 - 400 per annum. See Nigeria [20].

[18] See Nigeria [17], pp. 11-12.

[19] See Uganda Government [16], p. 15.

[20] The relationship between quantity supplied of labor (labor force participation) and the nubmers employed and unemployed has long been recognized with regard to the U.S. economy and recently has been the subject of intense empirical research. See Mooney [21] which contains a bibliography on studies of this nature. This kind of analysis has particular relevance for urban labor force participation rates in African countries because of the large stock of potential entrants into the urban labor force viz those residing in the rural areas.

[21] In terms of a mathematical model, let w be the wage rate, Q_d be the quantity of labor demanded and Q_s be the quantity of labor supplied.
Then

$$Q_d = f_d(w; a)$$

$$Q_s = f_s(w, \frac{Q_s - Q_d}{Q_d})$$

where a is an autonomous shift parameter. Equilibrium occurs when $Q_d = Q_s$ but the existence of equilibrium is not assured unless, among other things, there is some upper bound on Q_s, the total labor supply. For African countries, there is almost no effective upper bound on the numbers which can be supplied to the urban work force since it is such a small fraction of the total work force. A shift in demand (a change in a) results in the following change in quantity supplied if the wage rate is held constant:

$$\frac{\partial Q_s}{\partial a} = \frac{-Q_s}{Q_d^2} \cdot \frac{\partial f_s}{\partial e} \cdot \frac{\partial Q_d}{\partial a}$$

where $e = (Q_s - Q_d)/Q_d$ is the unemployment ratio. The sign of $\partial f_s/\partial e$ is negative for reasons discussed above. Thus the increase in demand at a given wage results in an even larger increase in supply if

$$\frac{-Q_s}{Q_d^2} \cdot \frac{\partial f_s}{\partial e} > 1$$

With this kind of model an increase in demand can actually lower the equilibrium wage even if the slopes of the demand and supply curve ($\partial f_d/\partial w$ and $\partial f_s/\partial w$) are negative and positive, respectively.

[22] See Blacker [22].

[23] See Etherington [23].

[24]The growth of employment generated by an autonomous increase in the growth of any one sector, of course, has both its direct and indirect effects. An increase in the growth of manufacturing, for example, may have an impact on the rate of investment and therefore on the level of construction activity, and on the rate of increase in the production of intermediate goods and services. These indirect effects will also have an employment impact in addition to that generated in the manufacturing industry alone. Everything else being equal, however, the total employment impact will be a function of the labor intensity of the sector in which autonomous growth occurs. Galenson [.7] emphasizes the indirect effects of employment generation and is critical of those who lament the poor employment generation from growth in manufacturing.