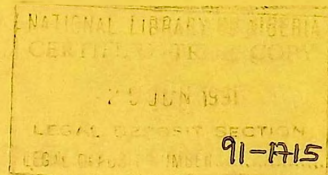


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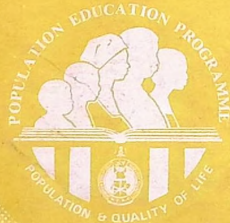
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Population and Economic Consequences



By M.K. Bolarinwa



*Population Education
Monograph*

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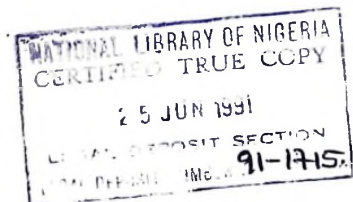
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THEME SIX

Population and Economic Consequences



M.K. Bolarinwa

National Manpower Board
Federal Ministry of Finance and Economic Development

Population Education Programme

POPULATION EDUCATION SOURCEBOOK

Nigerian Educational Research and Development Council,
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1987.

POPULATION EDUCATION MONOGRAPH SERIES

1. Nigerian Peoples and Population Issues
2. Sex Biology
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Preface

NIGERIA'S overriding concern, as can be gleaned from the different National Development Plans since Independence, has always been the improvement of the living conditions of its people through the use of resources, human and material, with which the country is so richly endowed.

Desirous to contribute to the process of achieving these objectives, the Federal Ministry of Education, through the Nigerian Educational Research Council (NERC), started in February 1981 to look into issues of the relationship between resources and population change in Nigeria, and how education can help address this relationship.

Between 1982 and 1983, the Council — in response to a perceived need — initiated moves to introduce population education into the Nigerian educational system. The need for population education in the country is as pronounced in 1985 as it was in 1983 when the Federal Government endorsed the implementation of the Population Education Programme for Nigeria, in view of the precarious state of the economy, the continuing food deficit situation, the increasing demand on national income for servicing external debts, the ever expanding school population, and the unprecedented rate of unemployment, among other problems. Moreover, in recent times, many Nigerians have begun to focus attention on the problems of population in general and family size in particular. The impact of population change was being felt more acutely by the average Nigerian family.

It was in recognition of this felt need that the Council embarked in 1983 on a course to bring the relationship between resources and population change to the consciousness of policy-makers, school administrators, teachers and students. Thus, population education, in the Council's view, is "an educational process which provides for a study of the population situation in the family, the community, the nation and the world with the purpose of developing in the citizens a rational and responsible attitude and behaviour towards improving the quality of life now and in the future."

The general goal of the population education programme in Nigeria is to involve citizens in a learning process and to make people aware of the interrelationships between population change and quality of life at all levels.

It is a recognised fact that there are national and international dimensions to population issues and that the individual, the family, and the nation are affected by and also contribute to population problems. Indeed, all development policies and programmes, politics, and planning are concerned with people and resources.

Initially, the focus of the population education programme in Nigeria is directed to students at the secondary school level. The decision to focus initially at this level is the assumption that students at this age group and above are presumably more mature emotionally and intellectually to understand the general objectives of the programme.

The population education objectives at the secondary school level in Nigeria seek to help students to:

1. recognise the implications of the increasing gap between birth and death rates for the provision of such basic facilities and services as schools, health institutions, water and housing;
2. relate growth and size of family to demand for available food and other facilities, health and productivity of members of the family;
3. explain how population structure at the household and national levels affects the patterns of demand for and consumption of goods and services;
4. recognise the various ways in which population growth, the constraints on resource development and the pattern of consumption at the family level, etc. have contributed to the present state of serious food deficit and quality of life situation in the country;
5. compare and contrast the population and resource situation in Nigeria with that in other countries so as to have an insight into the international dimensions of the population problem;
6. highlight the importance of self-sufficiency in food production and the dangers of dependence on food imports and food aids; and
7. identify the various uses to which population data are put and therefore develop an understanding of the importance of and a sense of responsibility towards population census enumerations and the registration of vital statistics.

A study on curriculum contents conducted for the Council reveals that population education concepts already exist in many subjects taught in Nigerian secondary schools today. The same study also found that these concepts are, however, not organised or focused at a definite message to the students. Thus, there is need to emphasise some concepts, orientations, and arguments in a more orderly and logical manner to bring the relationship between resources and population change in sharper focus.

In an attempt to assist educators and policy-makers alike to acquire the necessary knowledge, the Council invited experts to write on various issues that impinge on population. Individual writers endeavoured to address the goals mentioned above, working on general outlines agreed upon at a planning workshop. The result was a collection of fifteen chapters that was intended to make up the sourcebook on population education. It might be worthwhile to mention that each chapter in the sourcebook in turn became a "theme" in the population education curriculum materials that were subsequently developed during the first quarter of 1985 and later approved by the National Council on Education (NCE), in July 1985.

The chapters in the sourcebook are preliminary studies that the Council hopes to update sometime in the future as more information is received or becomes available. As such, they do not pretend to be exhaustive. Overlaps in the treatment of subject matter are inevitable in an exercise such as this; however, care has been taken to reduce such overlaps, where they occur, to a minimum. These chapters are initially being printed singly, in monograph form, so as to make them easily accessible to specific types of audience that the Council intends to reach through its sensitisation

campaigns. Similar campaigns have recently been mounted by the Federal Ministry of Health through its Population Policy and Development project, in the implementation of which the Council has been requested to play a collaborative role. In the future, funds permitting, the revised versions will be published in a single volume for distribution to secondary school teachers who would have completed in-service training on population education organised by the Council. (A listing of chapter titles may be found in the first pages of this monograph.)

This particular monograph can stand by itself, but it is best to consider it in the context of other monographs in the series in order to get a fuller view of the population situation in the country. Serious effort went into making each monograph easily readable. Intelligibility was a primary consideration.

The Council takes this opportunity to thank the different authors of the fifteen monographs who responded to our invitation, gave freely of their time, and shared their expertise. Because of them, so much of our work has been facilitated. Their dedication is hereby recognised.

The publication of this monograph as well as others in the series has been made possible through the assistance of UNESCO and the United Nations Fund for Population Activities (UNFPA). The Council's thanks also go to them.

Director
N.E.R.D.C.



Population and Economic Consequences

INTRODUCTION

Increasing attention is being focused on the relationship between economic development and population growth in recent time. A number of economists and non-economists have spoken at length on the undesirable consequences of rapid population growth. While some attribute almost all the world's economic and social evils to excessive population growth, others feel that population growth is not a real problem. Whatever argument one holds will, however, depend on a nation's state of development. The earliest and probably the most significant contributor to population debate and whose argument still survives today was Reverend Thomas Malthus.

Writing about 186 years ago, Malthus put forward a theory of the relationship between population growth and economic development. In his essay on the Principle of Population written in 1798, Malthus postulated a universal tendency for the population of a country unless checked by dwindling food supplies, to grow at a geometric rate, doubling every 30 to 40 years. At the same time, because of diminishing returns to the fixed factor (land), food supplies could only expand roughly at an arithmetic rate. Malthus' basic argument was that the growth in food supplies could not keep pace with the burgeoning population. He contended that the only way to avoid the condition of chronic low levels of living was for people to engage in moral restraint and limit the number of their progeny. According to him, in the absence of such preventive checks, positive check (starvation, disease, wars, etc.) on population growth will inevitably provide the restraining force. Other neo-Malthusians have also contended that poor nations will never be able to rise much above their subsistence levels of *per capita* income unless they initiate preventive checks on their population growth.

WORLD POPULATION CHANGES THROUGH HISTORY

About 12,000 years ago, the world population was estimated at about five million. At the beginning of the christian era nearly 2,000 years ago, world population had grown to nearly 250 million, about the size of the United States of America today. From the year 1 A.D. to the beginning of the industrial revolution around 1750, it almost trebled to 728 million people - just a little over the population of India today. Between 1750 and 1950 (two hundred years) an additional 1.7 billion people were added to the world population. Astonishingly, about the same number of people was added between 1950 to 1975, a mere 25 years bringing the total world population to almost 4 billion people.

Table 6.1

World Population Through History

Year	Estimated Population (Million)
10,000 B.C.	5
1 A.D.	250
1650	545
1750	728
1800	906
1900	1608
1950	2486
1970	3632
1975	3978

Source: Economic for a Developing World by M.P. Todaro, p.168.

The reason for sudden change in overall population trends, particularly in the 20th century, could be due to medical and technological developments, and the general improvement in the economic welfare of the people. In the past, the rate of population change has been strongly influenced by the combined effects of famine, disease, malnutrition, and war - conditions that resulted in high and fluctuating death rates. Population growth today is primarily the result of a rapid transition from a long historical era characterised by high birth and death rates to one in which death rates have fallen sharply while birth rates especially in developing countries have remained at or near their historical high levels (Todaro, p.169).

FERTILITY AND MORTALITY TRENDS

The rate of population increase is measured as the difference between fertility and mortality plus net international migration. Net international migration is said to be of negligible importance today, particularly in Africa South of the Sahara because reliable migration statistics are lacking and the dimension and determinants of population movements cannot be easily foreseen. But certain happenings today in some parts of Africa will force us to reckon with migration as an important aspect of population dynamics. For example, due to drought and economic depressions in some of these African countries, a large number of their nationals migrate to the economically stronger neighbouring countries. Nigeria for some time now has borne the burden of migrants from the drought and war-hit Chad and Niger Republics and economically depressed Ghana Republic. These movements, no doubt, affect the population movements in these countries.

Other factors which significantly affect population changes are fertility and mortality (birth and death rates) which are generally much higher in developing countries than in rich nations. Difference in death rate is substantially smaller than the difference in birth rates. As a result of this, the average rate of population growth in the developing countries is now about 2.5 - 3.5 percent per annum, whereas most of the economically developed countries have annual growth rates of about one percent per annum. Birth rates in developing countries are much higher than they were in pre-industrial Western Europe. For instance, data have even shown that at no time during their modern growth epoch did European and North American countries have natural population growth rates in excess of 2 percent per annum. High birth rates in the developing countries are due largely to the early marriages and other factors based on social considerations (beliefs and customs). These beliefs and customs are reinforced by the economic advantages said to accrue to a peasant family with large number of births. The burden of child care rests largely on women in a peasant society. An average home (a more affluent home) in such a society is saddled with the responsibility of taking care of a large number of its large and poor extended family. The cost of educating children is minimal because of the low level of education given. Children take part at their tender age in agrarian production and are regarded as traditional sources of security in the old age of parents.

Some writers contend that fertility would decline as a country progressed in economic and social development, and that the existing or anticipated family planning policies and programmes would facilitate the process of fertility decline. Recent developments have shown, however, that this assertion has limited application to Africa where economic and social settings as well as the spread of effective family planning programmes, is still at the infant stage. The speed and the timing pattern of future fertility decline may remain rather speculative. The fact that the decline in fertility typically occurs after a substantial time lag in comparison with the decline in mortality rates also compounds the problem of fertility decline in Africa and possibly other underdeveloped countries.

Today, there is a highly reduced gap in mortality rates between developed and the developing nations due primarily to health improvements in these nations. In the past, the theory of demographic transition presents an agrarian peasant economy as typically having high average death rates. These death rates are said to fluctuate in consequence of variations in crops, the varying incidence of epidemics, etc., resulting from poor diets, poor sanitation, and the absence of effective preventive and curative medical practices.

Like many other underdeveloped countries, Nigeria has a high fertility rate (about 2.5%) and moderately low mortality rate due to improved medical facilities and better control of nature. Nigeria has an estimated population of about 80 million in 1980 and it has been further estimated that by the year 2000 (in 20 years) the country's population would have doubled its present estimate.

POPULATION CHANGES AND HUMAN WELFARE

The average rate of population growth in the developing countries is now put at about 2.5 percent per annum whereas in the developed countries, the rate is about 1 percent. These rates of growth, particularly in the developing countries, have always been a concern to the world. It has been estimated that if the population is growing at the rate of 2 percent per annum, it will double itself in approximately 35 years. (See Table 6.2)

Table 6.2

Population Growth Rates and Estimated Doubling Time

Period	Approximate Growth Rate (%)	Estimated Doubling Time (Years)
Appearance of man to Early Historical Times	0.002	35,000
1650 - 1750	0.3	240
1850 - 1900	0.6	115
1930 - 1940	1.0	70
Present	2.0	35

Source: Todaro, *op. cit.*, p.169.

With the average growth rate of 2.5 percent in the developing countries, the population will be doubling itself in every 28 years. This is quite alarming considering that the doubling period among developed countries is 70 years.

It has been argued that rapid population growth has serious potential consequences for the well-being of mankind throughout the world. This becomes more serious in the Third World where in general critical resources for development are grossly inadequate. In Nigeria, for example, the population estimate for 1980 was 80 million and it has now been estimated (World Development Report 1984) that the population will be about 169 million in the year 2000. According to the 1984 bulletin of the United Nations Food and Agricultural Organisation (FAO), Nigeria's wheat imports have almost doubled in eight years (1.4 million tonnes in 1976 to 2.4 million tonnes in 1984). At present, resources at the disposal of the country fall short of demand. There is shortage of food, raw materials, machines and spare parts. Unemployment rate is at the highest level. Educational institutions admit far less number of qualified applicants. In fact, it has been observed that a very small percentage of Nigeria's population lives comfortably.

A number of pertinent questions has, therefore, been asked following the danger posed by rapid population growth in the Third World: Will Third World countries be capable of improving the standard of living for the people with current and anticipated levels of population growth? How will the Third World countries be able to cope with the vast increases in their labour forces over the coming decade? How will the developing countries overcome human misery of absolute poverty in the face of the rising population?

The questions above are pertinent because they touch on the totality of human welfare. For example, provision of essential social services like housing, transport, sanitation, and social security will be a herculean task in the face of rapid population increase. Unemployment and underemployment will continue to rise because employment opportunities can never keep pace with the rising population. It requires adequate level of investment to generate such opportunities and there is no visible way in such areas by which more rapid population growth can evoke a significantly greater flow of invested resources. World food supply and its distribution may not be sufficient to feed the growing population.

AGE STRUCTURE AND WELFARE

The age structure of a population is a product of its past history of fertility, mortality and migrations but the principal determinant is the rate of fertility. Persistently high levels of fertility give a broad based distribution that tapers rapidly with age, while persistently low levels of fertility give a narrow based age distribution. If fertility is low enough, the age distribution may be broader in the shoulder than at the base. Conversely, mortality changes of a sort usually have only slight effects on the age distribution. The net implication of these facts is that a change in the growth rate caused by a change in fertility will generally be accompanied by a large change in the percentage distribution, while a change in the growth rate brought about by a change in mortality will generally be accompanied by only a slight effect on the percentage distribution. All underdeveloped countries with high birth rates have, no matter what their mortality levels, a broad base and sharply tapering age distribution with a large fraction of the population under 15, thus having very high dependency ratios.

Dependency ratio is the ratio of the population considered ineligible for productive activity to the population that is considered to be in the prime working ages. The productive years vary according to societies but are commonly considered to be ages 15-65. The higher the dependency ratio, the greater the burden on the society. The working force in developing countries must support almost twice as many children as they do in the developed countries because youthful dependents in the latter amount to less than 25 percent, whereas they account for about 50 percent in the former. For example, in Sweden and the Soviet Union the working force age group (15-64) has to support only 21 and 27 percent of the population who represent the youthful dependents respectively. But in countries like Nigeria and Ghana, working forces must support almost 50% of their youthful dependent population. In these countries, a large proportion of the national budgets must be diverted for the provi-

sion of essential social services for the youthful dependents, such as education (provision of schools, learning aids, books, etc.), health (children hospitals and clinics), and there must be adequate provision for food. The situation will be a reverse in the developed countries where the percentage of the youthful dependents is very much lower.

RURAL/URBAN MIGRATION AND POPULATION DISTRIBUTION

Distribution of population varies considerably among developing countries. While some see the rural area as over populated in relation to its resources, others complain of labour shortages in remote but resources-rich areas. It is a fact that over urbanisation caused by excessive migration is a problem. In Nigeria, for example, the cities are overcrowded due to unchecked migration from the rural areas. The agriculturally rich countrysides have been abandoned by the able bodied men for the large urban cities in search of jobs. The rapid urban growth has undoubtedly caused serious administrative difficulties. Housing, transport, water, sewerage, etc. which cannot easily be scaled up as population growth become difficult to provide as urban cities become overcrowded. This situation inevitably leads to unemployment, sub-standard housing, deteriorating public services, congestion, pollution, crime, etc.

SOCIAL CONSEQUENCES OF RAPID POPULATION GROWTH

Educational Requirements

In industrial countries, school-age population are expected to grow slowly, if at all, over the next two decades (World Development Report, 1984). The situation is, however, different in high fertility countries, such as Nigeria, Ghana, Kenya, etc. where school-age population may likely triple by the end of the century. Just to maintain the present unsatisfactory standards of education in developing countries, the number of teachers and schools must be tripled (Coale & Hoover). As most developing countries want to improve their school qualitatively, they will have to generate more national savings or curtail other investments.

Over the past twenty years, enrolment rates have increased at the primary, secondary and university levels in almost all developing countries. For example, in Nigeria, the number of primary school pupils rose from 3,515,820 in 1970 to 12,749,403 in 1980 (four-fold increase). Within the same period, the number of primary schools rose from 14,901 to 36,683 (i.e. about tripled). Also enrolment in Secondary Grammar Schools and Commercial Schools rose from 310,054 in 1970 to 746,369 in 1981. Population of students in the Polytechnic rose from 11,993 in 1975 to 41,097 in 1981. Enrolment in Universities grew from 31,511 in 1975 to 57,772 in 1980 (Statistics Unit, Federal Ministry of Education, Lagos, Nigeria).

The rapid growth of population in schools has no doubt reduced the quality of

education in poor and developing nations. The growth of schools and facilities cannot keep pace with the enrolment of school children in the face of reduced budgetary allocation to education coupled with low economic growth. It has been argued that developing countries have little scope to reduce educational quality any further because of the problem of poverty and rapid population growth. The quality gap between low and high income countries is said to be enormous already. Bolivia, El Salvador, Malawi and Ivory Coast, for instance, spend less than N1.5 million a year on classroom materials for each child at primary school compared with more than N400 per student in Scandinavian countries (World Development Report, 1984).

The differences in educational quality between the developed countries and the less developed countries affect students adversely in their academic pursuits, particularly in the sciences in the less developed countries. In Nigeria, for example, schools are hurriedly built to meet the growing student population with little or no consideration for science laboratories. The reason is that it takes time and huge sum of money to build schools with adequate laboratories.

In spite of the impressive quantitative advances in school enrolment, literacy levels remain strikingly low compared with the developed nations. Not only is the goal of functional universal education out of reach for this century in most developing countries, but also the absolute number of illiterates is expected to increase even if enrolment continues to make rapid progress. G.W. Jones in "Demographic Obstacles to the Attainment of Educational Goals in Tropical Africa" said that it would take decades to provide universal education, even under optimistic assumptions on the course of fertility. It is however, right to say that as lower fertility slows the growth of the school-age population, it can ease the pressures on the education system.

Health Requirements

Many of the same factors that put pressure on education could be said to affect health services. Current medical facilities are not adequate to meet the requirements of the growing population in the developing countries. Despite huge expenditure on health care facilities in many developing countries, demands for medical services are yet to be met by these countries.

In Nigeria, it is recognised that health services must expand to maintain the current inadequate ratios of the health services to population. It is also recognised that high fertility population with a large proportion of infants require increased medical facilities. It is on the basis of these shortcomings that the government set aside large proportion of the national budget yearly for the provision of medical facilities and the training of health personnels. It is regrettable to note, however, that no matter how much the government has done, it is by no means adequate for the large and growing population of Nigeria. There are shortages of nearly all the known health facilities, including drugs. The situation in Nigeria is true of many other Third World countries where the population growth rates cannot be matched with the rates of developments of medical and health facilities. Whatever improvement that is envisaged in the health sector may be dwarfed by the large and growing population.

Pressure on other Social Services

The problem most countries, particularly Nigeria, are facing is how the public facilities and infrastructures can be provided to cope with the ever growing population. Road transport facilities, for example, are not growing as rapidly as the population is growing, particularly in the urban areas. There are terrible traffic congestion on the available roads and over-crowding in available public transports. The number of vehicles per 1000 of the population, according to a report of a World Bank Mission sent to Nigeria in 1979, is 1.4 for the whole country and 13.8 for Lagos Metropolis, while vehicles per mile of road is 1.5 for the whole country and 106.8 for Lagos Metropolis. While the first set of figures shows the inadequacy of motor vehicles in relation to the population, the second set of figures shows the rate at which our cities and Lagos Metropolis in particular are congested. It is a common occurrence in our cities, therefore, to see vehicles which are meant to carry at least 40 passengers carrying instead over a hundred persons.

Other social facilities like public toilets are far from being adequate where they exist at all in Nigeria. It must be noted that public toilets are provided only in big cities in Nigeria. The same thing could be said of waste disposal system which is no longer adequate in big cities. The problem was not so much noticeable in about a decade or so ago but as people migrated in large numbers into the cities, the problem of waste disposal became unbearable.

On electricity supply, both the industrial and domestic demands have grown so tremendously in recent years in Nigeria that the supply could not meet the demands of rapidly growing cities and villages. Total sales rose from about 2.3 million megawatt hours in 1975 to nearly 4.8 million megawatt in 1980, representing an average growth rate of about 22 percent (Nigeria's Fourth National Development Plan, 1981-85). The rapid increase in the demand for power implies that output of electricity will have to be triped to cater to the demand

Population Growth and Capital Formation

In an attempt to discuss the problem of capital formation in relation to population, one may first analyse the effect of population change on *per capita* income, and in trying to do this, some important aspects may be looked into, viz., (a) the size of the population, and (b) the growth rate of the population.

On the size of the population, if optimum population theory indicates that a population is too large, a negative growth or decline is advantageous. With a very large population, a sharply diminishing returns will set in, resulting in falling *per capita* income. *However, if a population is below the optimum, a larger population will be advantageous with economics of scale favouring a rising per capita income.* Capital accumulation results when some proportion of present incomes are saved and invested in order to augment future outputs and income. With rising *per capita* income one will expect a greater proportion of the income to be save and invested but with falling *per capita* income less will be saved and invested. Optimum population is, therefore, ideal since it yields maximum *per capita* output.

The argument on whether a given population is larger or smaller than the one yielding maximum *per capita* output is difficult to resolve. A population may be very large and at the state of sharply diminishing returns while it is absolutely illiterate. This population after a generation of worthwhile education might be of optimum or even sub-optimum size. The whole question, therefore, of increasing or decreasing returns in respect of the size of the population or the labour force demand on the skills the population possesses and the availability of other factors of production arises. These other factors of production include capital (which is deficient in less developed countries), land or natural resources (fixed factor of production).

On growth rate, a higher rate of population growth implies a higher level of needed investment to achieve a given *per capita* output. The high-fertility countries witnessed a steady increase in recruits to their labour forces, and hence rising investment requirements. Additional workers need more output-producing equipment (tools, machinery, plants) in industry, agriculture, or the service sector. If the existing amount of capital per worker and, therefore, his productivity are to be safeguarded, each new recruit to the labour force must be guaranteed the same amount of real capital assets. Population growth, with its concomitant increase in the labour force, swells investment needs. The value of the capital stock in many countries has been estimated at about three times the gross national product (GNP) - which means that it takes three Naira of productive equipment to produce one Naira of output. If we assume that it also takes three Naira in investment to increase the GNP by one Naira, a one percent increase in population requiring a one percent expansion of GNP, to prevent a fall in *per capita* income, would call for a 3 percent investment rate. A 3 percent growth in population (by no means uncommon in many less developed countries, Nigeria inclusive) would require 9 percent of the national income to be saved and invested just to hold *per capita* incomes at previous levels. For the United States of America and Western Europe in general, it is less than 3% of their national incomes.

To save 7.5 to 10 percent of any GNP takes a major effort. Again, all less developed countries want intensive economic development because they wish to raise *per capita* production or the standard of living which requires what the economists call "Capital deepening" of quite simply, more capital per worker.

High fertility is, therefore, a major constraint on the use of more capital per worker because growth of the labour force absorbs nearly all domestic savings, leaving little for capital deepening. In other words, rapid population growth either prevents or greatly retards capital formation in less developed countries - a situation the developed countries have never known to some degree.

Moreover, it has already been stated that rapid population change causes unemployment. The unemployment problem gives rise to a number of other subsidiary problems, the most important of which is the high dependency load of the average household. Not only does a household head have to bear the responsibility of his relatively large family but very often, he also has to support two or three relatives still looking for jobs. Such dependency loads are inimical to capital forma-

tion in most of the West African countries.

Rapid population growth also results in greater consumption of government capital by way of providing social services like health services, electricity, good roads, communication, education, public law and order for the growing population. This problem is aggravated by the common cases of tax evasion in developing countries like Nigeria. Every West African government is understandably and appropriately dedicated to improving the health of its citizens. This dedication is reflected not just in the speeches of Health Ministers but also in the amounts of money devoted to health. For instance, in Nigeria, health establishments numbered to 654 General Hospitals and 2,182 Maternity Centres in 1979 (Federal Ministry of Health). This involved millions of Naira. Also, production of electricity rose drastically between 1972 and 1979 involving heavy capital outlay. Number of primary schools rose from 14,901 in 1970 to 35,300 in 1978. Number of Secondary Grammar and Commercial schools rose from 1,155 to 2,249 in 1978. All these expenses take heavy tolls on government revenues and could be obstacles to capital formation in the short run.

One other consequence of population growth on capital formation is the greater dependence on foreign aids and investments in the absence of local savings. These foreign aids and investments have a lot of uncomfortable strings attached to them which constitute obstacles to capital formation.

Population Growth and Employment Generation

In most developing countries of the world, economists and policy-makers are seriously concerned about population change and employment generations. The question that readily comes to their minds is how the level of unemployment can be reduced in the face of rapid population growth. This has been a serious problem and is not an easy task. For instance, Ghana's policy paper on population states: "Even the most ambitious and successful program for the creation of new jobs will have no effect on the rate of unemployment if the number of prospective workers increases as fast or faster than the number of available jobs." (Republic of Ghana: Population, Planning for National Progress and Prosperity, Accra, March 1969).

Most development plans express a similar concern - Nigeria's development plans in particular. In fact, two items particularly have drawn the attention of the planners, and hence need elaboration here:

- 1) the problems caused by the growth of the labour force, and the consequent need to expand the number of jobs;
- 2) and the problems caused by the expansion of the educational system.

To examine the relationship between high population change and employment generation, we must recognise that saving and investment, for the purposes of creating most jobs, start among the small population units which make up the employment sector in the economy of West Africa.

There is a great deal of unemployment or underemployment in the agricultural sector in West Africa. An important form of unemployment exists because the

seasonal pattern of cultivation often alternates periods of idleness with periods when labour shortage constitutes a bottleneck, preventing the expansion of production. Direct investigation has left no doubt that there is often considerable underemployment in agriculture. For instance, a survey in Senegal estimated that underemployment amount to 180 days per adult male per year (J. Serreau, *Le Développement la Base*, pp. 36-37). In the studies mentioned above and in similar others, there is a lack of empirical evidence making unemployment and underemployment a direct result of population pressure, but the relationship is plausible.

The cure of over-population in the rural sector may well lie in the intensification of agriculture including the diversification of activities and their distribution over the whole year. This in itself would relieve unemployment and underemployment. The introduction of cash crops, such as cocoa, for example, in Nigeria has played that role in the past and created a considerable seasonal demand for labour, which coincided with a slack period in the hinter-land. Other forms of intensification consist in supplying more capital to agriculture as a complement to the abundant labour.

Economists and planners feel they stand on firmer ground when they deal with the developed part of the economy. However, there are two reasons why they have to pay heed to the subsistence sector, even when they deal with the modern sector. First, the modern sector receives a large inflow of migrants from the countryside, urbanisation proceeds at a pace that greatly taxes the resources of the state, and unemployment increases dramatically in the cities. Second, population growth of such magnitude is expected in the near future in West Africa, and the capacity for absorbing labour in the modern sector is so small, that a large increase of employment in agriculture seems to be the only realistic prospect. In Nigeria, the modern sector accounts for only 5% of the total labour force (C.R. Frank, 1968).

To what extent are the rural-urban drift and unemployment in West Africa's cities a result of the growth of rural populations and of their underemployment? No doubt, rural-urban drift of population contributes to the problem of unemployment in the cities, but the question of urban unemployment is complex and such unemployment has many different causes. However, the modern sector is usually so small that it can easily be overwhelmed by the drift of even a small portion of the underemployment from the countryside.

One must explain, however, why the rural labour force now is attracted to the cities inspite of high and rising levels of urban unemployment. The primary cause seems to be the existence of substantial income differentials between the urban dwellers and the peasants. Wages and other opportunities in the city may be sufficiently attractive to compensate for the risks of unemployment. At the same time, employment in the modern sector has failed to expand at the rate number of jobs has stagnated, or even decreased.

In some West African countries (Nigeria being prominent), the growth of employment is not sufficient to absorb the growth of the labour force. Most employers in Nigeria (and the governments are the largest of them all) are labour-intensive in their methods; and the technical constraints of mining industry are such that capital in-

tensive methods have a competitive advantage. Furthermore, eradicating unemployment may be impossible as long as there is an unlimited supply of labour in the rural areas waiting for opportunity to join the urban labour force. With the unequal development of cities and countryside in West Africa, the concentration of investment in the urban sector will attract more migrants, and only a narrowing of the income differential would reduce the drift.

Population Growth and Food Demand

Food is very important to all living organisms and second only to water. The population elasticity of food demand is unitary, that is, if the population of a country increases by any percent, food demand will increase by that percentage.

At the world level, food production has kept ahead of population growth, but in a number of developing countries it has fallen behind. Therefore, the main issue is not the world-wide availability of food, but the capacity of nations, groups within nations and individuals to obtain enough food for a healthy diet. In developing countries, the staple food is cereal or coarse grains, accounting for about half of total food consumption. Not many poor nations can still boast of regular supply of these grains not even when it was reported (FAO Towards 2000) that global grain production has doubled in the last 30 years and that it would double again by the year 2000.

Productivity in agriculture depends very largely on the techniques of production. In developed countries of the world, the production technique is quite advanced. World agriculture, in fact, comprises two very distinct types of farming, viz: (1) the highly efficient agriculture of the developed countries where substantial productive capacity and high output per worker permits a very small number of farmers to feed entire nations; and (2) the inefficient and low productivity agriculture of developing countries, where in many instances the agricultural sector can barely sustain the farm population, let alone the rapidly growing urban population even at a minimum level of subsistence.

In the developed countries, the steady growth of agriculture has been occurring since the mid-eighteenth century. This growth rate accelerated particularly after the Second World War and as a result, fewer farmers have been able to produce more food. In America, for example, the advanced technique in agricultural production makes it possible for only five percent of the country's labour force to produce enough food for the population of about 250 million citizens and still be able to export to a number of other countries. The picture is entirely different in agricultural production experience of Third World Nations, particularly in Africa and South Asia where almost 70% of the labour force are located in rural areas and engaged primarily in subsistence agriculture.

In Nigeria, over 75% of the population are directly or indirectly involved in agricultural production but still the output cannot successfully feed the estimated 110 million people. With the current growth rate of overall feed demand of about 3.5 percent per annum and the production growth rate of about 1.2 percent, it is pertinent to note that more than half of the country's food requirements must be im-

ported.

Agricultural policies and planning in Nigeria since 1946 have been based on agricultural production in favour of tree crops (cocoa, rubber, groundnut, etc.) until recently when the impact of food shortage were felt. There is no doubt that food supply in Nigeria is not in any way adequate to feed the growing population. Despite the large sum of money expended on importation of food in Nigeria in the last one decade, Nigerians have not had the required quantity and quality of food. While the country's population is growing at a rate of 2.5 - 3 percent per annum, *per capita* food production and agricultural production (which includes not only food but also non-edible agricultural products like cotton, rubber, etc.) increased by less than one percent per annum in the last decade. To import all the required food for the country would mean exhausting the whole foreign reserve on food alone.

Table 6.3

Calories and Proteins Supplied in Nigeria in 1978 and the Requirements

Food Items	Requirement	Amount Available	Shortage
Calories	3,000/cap/day	2,198/cap/day	802/cap/day
Protein	65gm/cap/day	54gm/cap/day	11gm/cap/day

Source: F.A.O. Agric. Commodities Journal, 1978.

The figures in Table 6.3 show that there is a wide gap between food requirements and the amount available. The consequences of these shortages are malnutrition and undernutrition among a very large part of the population.

Problems of Increasing Food Supply

Man still gets nearly all his food from the soil with less than one percent of what he eats from fish. Apart from the possible development of food producing resources other than land, the potential food supply depends on the amount of land suitable for food production and the possibilities of increasing yields per unit of such land.

Increasing needs for food due to the growth of population, may lead, at least under some conditions, to a reduction in the productivity of the land. Improper methods of cultivation caused by ignorance, neglect, disregard of the future for the sake of quick profits or efforts to make large crops to meet emergency demands may cause lasting damage to the quality of the soil.

A larger percentage of the total land areas in Nigeria could be said to be arable, particularly if there is efficient technology to irrigate most part of the vast and semi-

desert areas in the Northern part. If the arable part is properly developed, there would be adequate food supply for a larger proportion of the growing population. As things are, productivity of most of the land areas is low. This is due to improper cultivation by illiterate and ignorant farmers, high density of population on some land areas (e.g. Eastern part of Nigeria) and their resultant fragmentation and over use. These have led to the problems of increasing food supply for the growing population in Nigeria.

Low productivity in agriculture compared with other sectors of the economy has resulted into a situation where people are moving away from farming to more lucrative jobs in industries. This has increased the demand for food in urban and industrial areas of the country and reduce the supply of food items from rural areas.

Ecological disturbance and water pollution due to mining activities and urbanisation in the country have negative impact on food production. These are common in petroleum producing states like Bendel, Rivers and Cross River States. Ecological disturbance like clearing of bush, mineral oil digging and bush-burning has reduced the fertility of the affected soil. Water pollution has reduced the living organisms in our fresh water - rivers and streams. It has also been reported that Nigerian coastal water has low population of living organisms like fish, crab, etc., due to the warm current operating in the areas.

World Food Supply and its Distribution

Some writers on the world food situation like Boerman, Smith, East and Baker had concluded that even at an Asiatic standard of consumption, the earth could not support much more than 2,800 million people; that is, less than 400 million more than the present population of the world. This conclusion which may be a bit pessimistic given future technological advancement in most part of the world was based on the calculations of the carrying capacity of the earth based on estimates of the quantity of food that could be produced and a supposed average consumption of calories per individuals.

It must be noted that there is a great disparity between the distribution of the world's population and land resources. For instance, there are large acres of uncultivated lands in Africa and South America estimated at 900 million acres but a large proportion of this is not arable, particularly in Africa, unless a great deal of modern technology is put to use.

The total world food supply has decreased relative to rapid population growth. This is because some nations which formerly exported a considerable volume of primary products have become industrialized and many more are bent on becoming more industrialized.

In the 1970s the only developing region that managed to accelerate food production was Western Asia. In all other developing regions, food production growth rates fell back from the achievements of the 1960s. It was in Africa that the decline in food production growth rate was most serious. The consequence is that in recent years *per capita* food production has declined terribly.

Table 6.4

Average Annual Rates of Growth of Food Production in Relation to Population in the World and Main Regions 1970 - 1976

	Average Annual Percentage Growth of Food Production		
	Population 1970 - 1976	Total 1970 - 1976	Per Capita 1970 - 1976
World	1.9	2.4	0.5
Developed Regions	0.9	2.3	1.4
North America	0.9	3.1	2.1
Developing Nations	2.3	2.7	0.3
Africa	2.7	1.2	1.4
Western Asia	2.8	2.8	1.4

Source: World Population Trends and Policies, Monitoring Report, United Nations, 1979.

The world food supply may not be adequate to feed the growing world population. More than half of the present population of the world subsists on less than 2,200 calories per day per person. Even if one country is able to produce large food surpluses, it is not likely to send great quantities of food to countries which have nothing to export in return. We can identify three major world groupings in relation to food supply, viz - the Industrial Western Nations, the Industrial Eastern Nations and the Third World countries.

The Industrial Western countries like America, Britain, France, etc., are somehow self-sufficient in major food commodities and where there is any shortage they can easily get supply from the neighbouring States. It is pertinent to note that the population growth in these countries is quite low. Over time also, these countries have evolved agricultural systems suitable to their climate and political environment.

The Industrial Eastern countries like U.S.S.R., Poland, East Germany, etc., are to a certain extent sufficient in basic food items. However, majority of the countries still import wheat and grains from Western Industrial countries like America. The method of farming in this group is quite different from what is operating in Western countries. Here, the population is organised into farming communities and production target is set by control planning committees. Some critics have, however, said that the system is less efficient when compared with the method of production in America or France.

The Third World countries like Ghana, Nigeria, Tanzania, etc., still largely practise traditional and archaic method of agricultural production. This system had been found to be inefficient and cannot increase food supply in line with the population growth in these countries. They are deficient in majority of food commodities. The

areas have been of major concern to international bodies like United Nation Organisation, Food and Agricultural Organisation, and World Health Organisation. Majority of the countries depend on food aids from the Industrialised Nations of the world. The Head of State of Ghana, Flight Lieutenant Jerry Rawlings, said in Paris on 1, April 1983 that Ghana will "in the near future" run out of food and that the country was presently depending on supplies from outside. Concrete effort is needed to save the deteriorating food situation of the world in general.

Plans for adequate world food production must reckon with the formidable fact that by the end of another decade there will be probably about one billion more people to feed. The reason behind this is that in 1970, the world population was 3,652,000 people while the projected world population in the year 1990 is 5.5 billion. Orthodox agriculture may not provide adequate food and reasonable living standards for all the people of the world unless birth rates are reduced to a little more than replacement level.

In conclusion, in the face of rapid population growth and the limited supply of world cultivable land which may support ever increasing demand for food coupled with the world distribution of resources and policies, it may not be safe for any country to depend solely on another for its food supplies. The means of producing the necessities of life will not be increased as rapidly as population grows and that the level of living of the world's people will be depressed as their numbers increase.

NEED FOR PUBLIC POLICIES

The governments of both developing and developed countries and other international agencies must consider a number of economic and social policies in bringing about a reduction in the overall rates of world population growth and promote a more equitable distribution of the limited world resources for the benefit of global economic progress.

Experience has shown that as development progresses, fertility falls. But because current rates of population growth are so much greater in the developing world than they were at comparable income levels in today's developed countries, many developing countries cannot afford to wait for fertility to decline spontaneously. Fertility reduction brought about by development progress comes only gradually. Education, for example, cannot be transferred overnight because literacy rates today are strongly influenced by their level in the past. Rural transformation takes time to occur. For example, adequate social infrastructure (electricity, water, hospitals, cinema houses) must be provided in the rural areas for the rural dwellers to de-emphasise their sexual habits. It has been said that the reason for high procreation in the rural areas could be due to the fact that the inhabitants don't have much to occupy themselves (like social activities) after the farm work except regular sex. This stands to encourage them to take more wives.

Governments in the developing countries should try to lower birth rates in the short run through some specific policies: The governments can try to persuade people to have smaller families through the mass media and other educational channels

both formal and informal. Late marriages and longer breast feeding which can reduce birth rate and at the same time raise welfare should be encouraged.

Governments can establish more vigorous family planning programmes to provide health and contraceptive services in order to encourage the desired behaviour. These programmes are available in a number of developing countries today but their achievements leave much to be desired because of a number of constraints, notably religion. In Nigeria for example, there is family planning programme, but the effect is still negligible. Only people without any religious bias visit family planning clinics where they are established.

Governments can provide couples with specific incentives and disincentives to limit their fertility. They can offer rewards for women who defer pregnancy; they can compensate people who undergo sterilisation for loss of work and travel costs; they can provide insurance and old-age security schemes for parents who restrict the size of their families; there can be elimination or reduction of maternity leaves and benefits; reduction or elimination and/or the imposition of financial penalties for having children beyond a certain number; the raising of school fees and the elimination of heavy public subsidies for secondary and higher education.

Governments can attempt to redirect the distribution of their populations away from the rapidly growing urban areas. They must realise that they have population problems which are not limited to population growth but also spatial distribution. They must eliminate the current imbalance in economic and social opportunities in urban as compared to rural areas. It is gratifying to note that rural development programmes are increasingly being emphasised in contemporary Third World development strategies to stem the rising of rural-urban population movements and thus to promote a more geographical balanced distribution of the population. However, few of the policy approaches to the task of slowing down rural-urban migration, ranging from direct controls on population mobility to efforts to improve economic conditions in the countryside, have achieved their demographic objectives while their social and financial costs have been high.

The developed countries on their own part have a role to play in bringing down the overall rates of world population growth. The need to assist third World countries to achieve their lowered fertility and mortality objectives not only by providing contraceptives and funding family clinics but more importantly, by curtailing their own excessive depletion of resources through programmes to lower the unnecessary consumption of scarce materials and non-renewable resources. It has been argued that the developed countries with only one-third of the world's population consume almost 80% of the world's resources (M.P. Todaro, 1977). The United States alone account for 40 percent of annual world resources use. It is suggested that 10 percent reduction in beef consumption by North Americans would free many million tons of grain to feed the hungry in poor nations. At the very least, it is believed that such a reduction would alleviate the upward pressure on world grain prices.

The developed countries can also assist developing countries by making genuine commitments to eradicating poverty, illiteracy, disease and malnutrition. Such ge-

nuine commitments must also include improved trade relations, more appropriate technological transfers, assistance in developing indigenous scientific research capacities and better international commodity pricing policies.

The International Agencies can also assist the developing countries in their various population programmes by way of financial assistance for family planning programmes, public education and national population research activities. Many of these agencies are already doing just these.

CONCLUSION

The effect of population growth may vary widely, depending on the economic and cultural setting but nevertheless, the evidences discussed above points overwhelmingly to the conclusion that population growth at the rapid rates common in most of the developing world slows development. High fertility can reduce the amount of time and money devoted to each child's development. It makes it harder to tackle poverty because poor people tend to have large families. It weakens macro-economic performance by making it more difficult to finance the investments in education and infrastructure that ensures sustained economic growth.

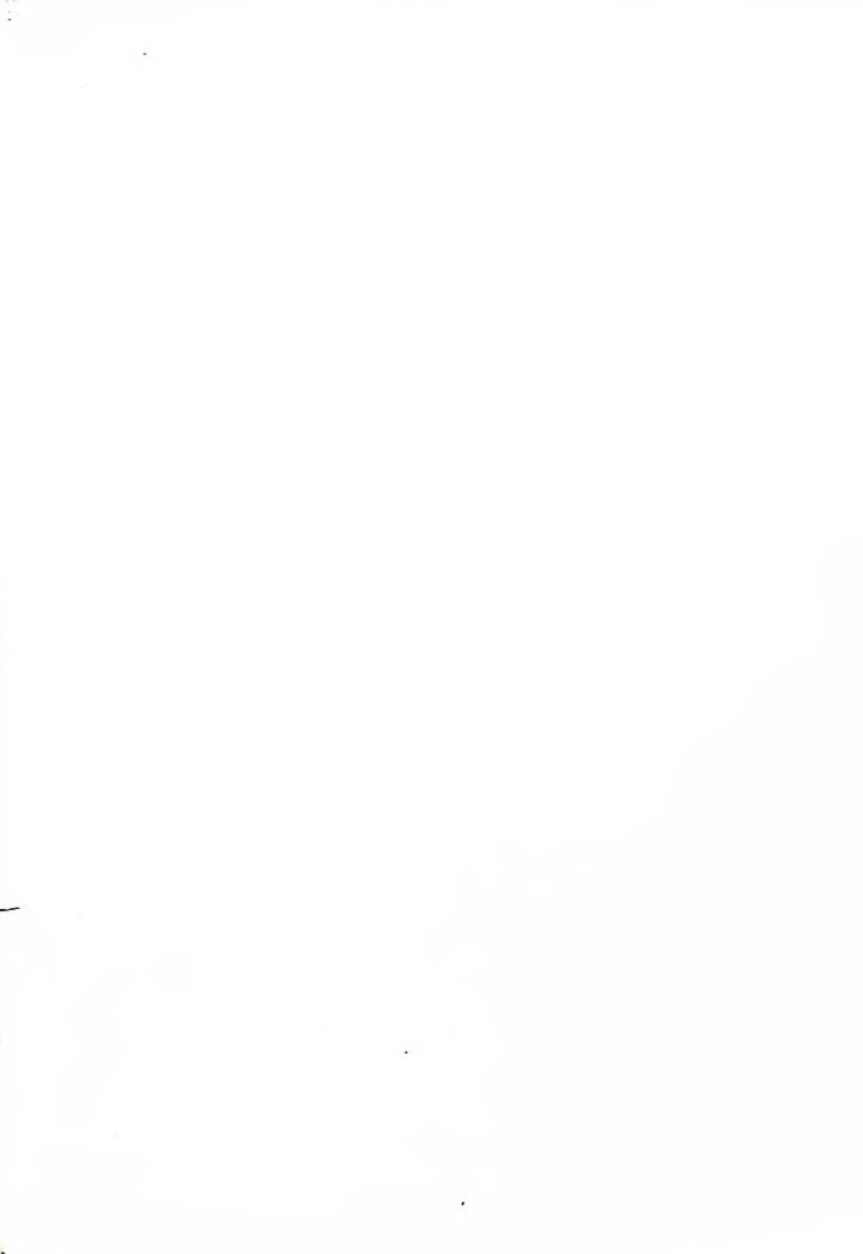
Even though population growth eventually slows as parents decide to have fewer children, the effect may not be positively felt in the developing countries. Declines in fertility, for example, will cut the growth of the labour force in these nations only after fifteen to twenty years because of the built-in momentum. Policies to reduce population growth will, however, make an important contribution to development especially in the long run.

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Published in Nigeria by
Nigerian Educational Research & Development Council, Lagos
(NERDC) Printing Press
1987

ISBN 978-174-004-3