

**Human Capital, Capabilities and Poverty in Rural Nigeria**

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## **CHAPTER ONE**

### **INTRODUCTION**

#### **PROBLEM STATEMENT**

Poverty is a multifaceted concept, which manifests itself in different forms depending on the nature and extent of human deprivation. In absolute terms, poverty suggests insufficient or the total lack of basic necessities like food, housing and medical cares. It embraces the inadequacy of education and environmental services, consumer goods, recreational opportunities, neighbourhood amenities and transport facilities. In relative terms, people are poverty-stricken when their incomes fall radically below the community average (World Bank 2000). This implies that such people cannot have what the larger society regard as the minimum necessity for a decent living. In precision terms, the poor can be defined as follows:

- Individuals and households lacking access to basic services, political contacts and other forms of support;
- Households whose nutritional needs are not met adequately;
- Ethnic minorities who are marginalized, deprived and persecuted economically, socially, morally, and politically; and
- Individuals and households below the poverty line whose incomes are insufficient to provide for their basic needs (World Bank 2001)

One important consensus in the literature on poverty is that, poverty is a rural phenomenon (World Bank, 1990; Fields, 2000). By this, it is acknowledged that rural communities are the worst hit by poverty. Unfortunately, the importance of the rural poor is not always understood, partly because the urban poor are more visible and more vocal than their rural counterparts. Incidentally, the rural sector is the predominant sector in the Nigerian economy. It plays some fundamental roles, which include job creation at relatively low unit costs, and thus remains the most important growth priority of the country. The AERC Collaborative Poverty I research finds that poverty is concentrated among rural population in Nigeria and it is everywhere higher than urban poverty for the period 1980- 1996 (see Okojie et al 2001). This specifically makes it necessary to investigate rural poverty further.

The Poverty situation in Nigeria is quite disturbing. Both the quantitative and qualitative measurements attest to the growing incidence and depth of poverty in the country. This situation however, presents a paradox considering the vast human and physical resources that the country is

endowed with. It is even more disturbing that despite the huge human and material resources that have been devoted to poverty reduction by successive governments, no noticeable success has been achieved in this direction. The Human Development Report (UNDP, 1999) reveals that Nigeria is one of the poorest among the poor countries of the world. Nigeria ranks 54th with respect to the human poverty index (HPI) - making it the 20th poorest country in the world. It is also ranked 30th in gender related development index (GDI) while occupying 40th position from below in its human development index (HD1).

In line with the above, the quantitative poverty assessment by the Federal Office of Statistics (FOS, 1999), based on the analysis of a series of national consumer surveys over a 16 year period (1980-1996), shows that the incidence of poverty rose drastically between 1980 and 1985 on one hand and between 1992 and 1996 on the other, but decreased between 1985 and 1992. The 28.1 percent poverty incidence of 1980 translated to 17.7 million poor people in the country, whereas there were 34.7 million poor people in 1985 with an incidence of poverty of 46.3 percent. Despite the drop in the poverty incidence in 1992 to 42.7 percent, the population of the poor was 39.2 million, about 5 million more than 1985 figures. By 1996, 67.1 million people were in poverty with an incidence of poverty of 65.5 percent. The situation of poverty as at 2001 would have worsened, as there has not been any significant improvement in the quality of life (welfare) of the majority of the people. The bitter reality of the Nigerian poverty situation according to NISER (2003) is that more than 40 percent of Nigerians live in conditions of extreme poverty, spending less than N320 per capita per month. This expenditure would barely provide a quarter of the nutritional requirements for healthy living. As revealed by the survey, rural poverty increased by 22-percentage point in the period 1980-1985. Although this decreased slightly between 1985 and 1992, it soared in the following four-year period 1992-1996. In any case however, the percentage of the rural poor increased from 28.3% in 1980 to 69.8% in 1996 (FOS, 1999).

Human capital indicators of poverty also showed a very deplorable situation for Nigeria, Infant and under-5 mortality were 217 and 147 per 1000 live births respectively while maternal mortality was 9 per 1000 live births in 1996 (CBN, 1998). All these were critically above the average for developing countries and even for Sub-Saharan Africa. In addition, the preliminary health profile figures for 1999 as prepared by the Federal Ministry of Health (FMOH) indicate the major causes of mortality to include malaria which is 919 per 100,000; dysentery with 386 per 100,000, pneumonia with 146 per 100,000 and measles with 89 per 100,000. Gross primary school

enrolment averaged 85.2 percent while adult literacy rate was 51 percent. Life expectancy, which was 54 years in 1990 and 52 in 1995, has dropped to less than 50 years since 1998. This lack of capabilities such as education, health and nutrition threatens to make poverty dynastic with descendants also becoming poor (World Bank, 2000)

The main asset of individuals and households in the rural sector of an economy is their bodies and literature has tried to capture this through concepts like labour power, labour availability and dependency ratio. The capacity to do work has even been captured through anthropometric measures such as body mass index (BMI). Evans (1989) noted that poorer people depend on physical work and are the personal cost of physical disability. As a result, bodies (main asset) of the poor are more vulnerable than those of the less poor because they are more exposed to sickness from unsanitary, polluted and disease-ridden environment both at home and at work. This affects their productivity and since they are the majority in the rural sector, it also deters rural development.

Poverty is increasingly being recognised as both a policy and economic problem in Nigeria. This is stressed by the Interim Poverty Reduction Strategy Paper in Nigeria as well as the Poverty and Vulnerability Assessment of the country. Although the documents provide trends and profile of poverty and vulnerability in Nigeria, they do not investigate the determinants of poverty. However, understanding the determinants of poverty is critical for policy analysis and the design of effective poverty reduction strategies. In some instances there have been few studies investigating the determinants of poverty in Nigeria (see Omonona, 2000 and Olaniyan, 2002). However, these studies do not explicitly consider capabilities as determinants of poverty despite the fact that capabilities dictate the state of deprivation and poverty among households.

This study therefore examines the links between human capital, capabilities and poverty in the rural sector of the Nigerian economy. Specifically, we shall characterise the effects of various forms of human capital and capabilities on poverty status in rural Nigeria

## Chapter Two

### Literature Review

#### **Human Capital, Capability and Poverty**

Poverty can be regarded as the denial of choices and opportunities, a violation of human dignity. It means lack of basic capacity to participate effectively in society. It means not having enough to feed and cloth a family, not having a school or clinic to go to, not having the land on which to grow one's food or a job to earn one's living, not having access to credit. It means insecurity, powerlessness and exclusion of individuals, households and communities. It means susceptibility to violence, and it often implies living on marginal or fragile environments, without access to clean water or sanitation (World Bank, 2001). This means that poverty in all intent means lack of capabilities and can also be described as deprivation.

#### **Poverty**

There is no concise way of defining the concept of poverty, as it is a multi-dimensional issue that affects many aspects of human condition ranging from physical to moral and psychological (Ogwumike, 2002). As a result, different forms of conceiving poverty have emerged over the years. Some analysts have used the convention of regarding poverty as a function of insufficient income levels for securing basic goods and services. Poverty has also been viewed as inability of individuals to subsist and to produce for themselves as well as inability to command resources to achieve these (Sen, 1981; Amis and Rakodi, 1994). Some researchers have denoted poverty with the inability to meet basic nutritional needs (see Dreze and Sen, 1990 among others). Others such as Musgrave and Ferber (1976) have used the levels of consumption and expenditures to qualify the poor, while some like Singer (1975) view poverty in part, as a function of education and /or health: life expectancy at birth, child mortality, etc. Other development analysts see poverty in very broad terms such as being unable to meet "basic needs" – physical (food, health care, education, shelter, etc.) and non-physical (participation, identity, etc) requirement for a "meaningful life" (Streeten, 1979; Blackwood and Lynch, 1994).

The common practice is to conceptualise poverty in absolute or relative terms (Fields, 2000). ***Absolute poverty*** is the lack of adequate resources to obtain and consume a certain bundle of goods and services deemed basic. Such a bundle of goods and services would contain an objective minimum of basic necessities such as food, shelter and clothing (see Ogwumike and Odubogun,

1989; Odusola, 1997). In this regard, absolute poverty characterized by low calorie intake, poor housing conditions, inadequate health facilities, poor quality of educational facilities, low life expectancy, high infant mortality, low income, unemployment and underemployment. Using consumption as the base line, any household that spends more than a specified maximum of its income on basic needs such as food, housing, health care etc are considered as poor (see FOS, 1999; Obadan, 1997; Odusola, 1997; Afonja and Ogwumike, 1995). According to Gordon et al (2003), poverty is also regarded as a condition characterised by severe deprivation of basic human needs, including food, safe water, sanitation facilities, health, shelter, education and information. It depends not only on income but also on access to social services.

In *relative* terms, poverty is conceptualised in terms of the standard of living that prevails in a given society. Thus, relative poverty exists where households within a given country have per capita income of less than one-third of the average per capita of such country (World Bank, 1997). Relative poverty would occur where certain sections of a society do not have adequate income to enable them have access some basic needs being enjoyed by other sections of such society. Poverty can also be subjective. Subjective poverty concept requires the individuals (including the poor) to specify what they consider to be a minimally adequate standard of living or an income or expenditure level they personally considered to be absolute minimal (Ogwumike, 2002). There is also *material poverty*, which is taken to imply lack of ownership and control of physical assets such as land and animal husbandry (UNDP, 1997). This is similar to the concept of *exchange entitlement and capabilities* propounded by Sen (1981) and Dreze and Sen (1990). Other concepts of poverty that have evolved over time include transitory and chronic poverty. Transitory poverty is temporary, transient and short-term in nature while chronic poverty is a long-term, persistent poverty, the causes of which are structural (Haddad and Ahmed, 2003).

Given the array of definition of poverty, it is essential that a broad and wide definition that include both economic and non-economic factor would be a useful means of dealing with all the facets of poverty.

### **Human Capital and Poverty**

Human capital refers to the abilities and skills of human resources of a country (Adamu 2002). This suggests that human capital is a form of resources that can be acquired, built up and developed. In essence, the development of human capital is to ensure that they acquire meaningful

and productive skills that enhance their capabilities to engage in productive activities that lead to earning of livelihood. Human capital is thus defined by Meir (1995) as the development of human resources concerned with the two-fold objective of building skills and providing productive employment for non-utilized or under-utilised manpower. This view is corroborated by the United Nation Economic commission for Africa (1988) and Awopegba (2002) when they argued that human capital is the knowledge, skills, attitudes, physical and managerial efforts required to manipulate capital, technology, land and material to produce goods and services for human consumption. Therefore, human capital impacts on productivity, employment, income generation and standard of living. By implication human capital development leads to improved capability and ultimately reduction in poverty.

A major issue in the literature is the measurement or indices of human capital. Many researchers have argued that those factors that contribute to human development are the indices of human capital. In this regard, Schultz (1961) identified five ways of developing human resources:

- i) Investment in health facilities and services; broadly conceived to include all expenditures that affect the life expectancy, strength and stamina, and the vigour and vitality of the people;
- ii) On-the-job training, including old-typed apprenticeships organized by firms;
- iii) Formally organized education at the elementary, secondary and higher levels;
- iv) Study programmes for adults that are organized by firms, including extension programmes notably in farm; and
- v) Migration of individuals and families to adjust to changing job opportunities.

From the above, two major indices of human capital can be identified – education/training and health. First, education is said to be the most crucial means of improving skills, capabilities and eradicating poverty. As noted by Umo (1997), high quality and market relevant education is capable of offering a genuine solution to most economic problems including poverty. Education and training are generally indicated as the most important direct means of upgrading the human intellect and skills for productive employment (see Söderbom and Teal, 2001; Yesufu, 2002). However, it is worthy to note that not all forms of education can have meaningful effect on human capital. For education to contribute to human capital acquisition, such form of education must be capable of leading to skill improvement (Okojie, 1995).

Olaniyan 2004 reveals that the rising poverty trends in many households can be traced to the refusal to send their children to school. Indeed low level of income of parents account for a very strong reason why parents have withdrawn their children from school (e.g Ray, 2000). Basu and Van (1998) stated a hypothesis based on the idea of parental altruism that “a family would send the children to the labour market only if the income from the non-child labour sources drop very low.” This suggests that poverty is one of the main causes of child withdrawal from school into child labour. As a consequence, Ray (2000) argued that child labour prevents children from benefiting fully from school by increasing the opportunity cost of education, and reducing child schooling,

Another important aspect of the contribution of education to human capital is the type of education desirable for improvement in human resources. While some empirical studies (e.g Weir and Knight, 2000; Söderbom and Teal, 2001; Akerlof and Kranton; 2002) have emphasized on formal educational training, others have argued that other non-formal training are equally important in the process of skill formation. For example, although formal education at all tiers offers a foundation knowledge accumulation and skill formation through on-the-job and out-of-job training (Umo, 2002), human capital formation transcends mere acquisition of intellectual ability through formal education system. It is dynamic and multi-institutional, including the family, the educational system, formal and informal institutions, special professional and training organizations; enterprises in-house arrangements; as well as individual self-efforts and trainings (e.g. see Adamu, 2002).

The intrinsic value of education in raising individual capabilities and freedoms and consequently contributing to higher incomes cannot be over-emphasised. It has been severally documented (e.g. World bank, 2000) that labour is the main asset of the poor. One of the important ways of enhancing and preserving this asset is through education. Indeed, the World Bank (2000/2001) showed that investment in education and other forms of human capital particularly health is an important element of a poverty reduction strategy. The baseline between education and poverty is that education not only benefit those who receive it, but that it also carries external effects in the sense that persons living near those who receive the education also benefit (Lanjouw et al. 2001). In this direction, studies have documented strong positive relationship between education and labour market outcomes. Olaniyan (2002) found that the most important determinant of household poverty in Nigeria is the educational attainment of the household head. Sen (1985) argues that education helps provide human capabilities, which is “the essential and individual power to reflect, make choices, seek a voice in society and enjoy a better life”



On the basis of the estimation of Mincerian earnings function, studies (e.g. Psacharopoulos, 1994) have almost universally demonstrated that private returns to education tend to be high especially for primary education and females. Also, in line with the external effects of education, studies (e.g. Haveman and Wolfe. 1984) have also shown that education plays an important role in affecting non-market outcomes and input allocations. These studies showed that there is positive relationship between parental education and child education even after controlling for other factors like income, assets, location etc. Parental education also has strong relationship with other inputs like health, child mortality, and life expectancy and child anthropometry, especially height-for-age. Studies such as Handa, (2000) argues that maternal education benefits children's survival probabilities through reducing fatalism, increasing child health and nutrition status, increasing mother's ability to manipulate the world (i.e., improving her ability to seek and secure treatment), and changing the balance of power in family relationships.

Thus, maternal education can help to reduce life cycle poverty through better processing of health information and better use of health facilities (Glewwe, 1999). As a result, education can also have impact on mother's behaviour in terms of greater value attached to child schooling, and exposure to modern ideas especially in the case of girl' schooling. This tends to have cumulative effects on the life earnings of children in the family.

The foregoing suggests that education not only promote growth and efficiency, but they can reduce inequality and the impacts of disadvantaged backgrounds. In fact, Becker (1981) argued that education remains the most effective way by which young people of poor backgrounds can rise in the economic hierarchy because human capital remains the main asset of 90% of the population. This also accounts for why income inequality is greater in countries where inequality in education is also high.

Health is also a major form of human capital and there exists substantial agreement in the literature on the relationship between health and economic development through its relationship between capability and poverty (Strauss and Thomas, 1998). It is assumed that improvement in health leads to improvement in life expectancy, which is a robust indicator of human development. A simple channel through which health affects human development is by improving living conditions. As living conditions improve, human longevity is expected to improve and vice-versa. Empirical evidence has shown that among poor countries, increase in life expectancy is strongly correlated with increase in productivity and income (Deaton, 2003). This is predicated on the fact

that improvement in health status leads to increase in life expectancy, which implies more opportunities for people to work and earn more income and subsequently break the yoke of poverty.

The definition of health as a form of human capital is however fraught with controversy in the literature. Self reported health status as a measure of health status is often biased because the norms of what constitutes an illness vary for different group of population. This makes it difficult to obtain the effects of improved health on earnings. However, on the basis of height as a proxy for health, Strauss and Thomas (1998) found positive returns to health in the labour market after correcting for education. In Nigeria, Alayande et al (2001) also found these positive returns to health for women in the labour market even after controlling for education status.

Another major form of human capital is the individual nutritional status. Nutrition as a form of human capital is often based on three anthropometric measures which are height for age, which measures “stunting”, or chronic malnutrition; weight for age, a measure of underweight, and, weight for height, a measure of wasting or acute malnutrition. Martorell (1982) demonstrated that height and weights are indeed measures of growth attainment rather than nutritional status per se. Height for age represents an accumulated consequence of retarded skeletal growth and is frequently found to be associated with poor overall economic conditions. Weight for age represents a deficit in tissue and fat mass compared with the amount expected in a child of the given height. One of the main characteristics of wasting is that it can develop very rapidly, and, since under favourable conditions, weight can be restored quickly, the individual can also regain the necessary weight equally rapidly. Nutritional status has long-term consequences. Apart from convincing evidence which suggests that nutritional inadequacy increases the risks of death and impairs cognitive development, evidences also abound that inadequate nutrition can affect future productivity and earnings and hence poverty (Strauss and Thoma, 1998. Indeed, Behrman and Deolalikar (1988) argued that investment in better nutrition have a considerable positive effect in terms of economic growth and equity. This is manifested in the fact that healthy individuals would be able to work adequately to earn better income to improve his living standard.

The body mass index (BMI) (weight in kilogram over height in meter squared) is the most common indicator of adult nutritional status. Adult nutritional status has both internal and external effects. The internal effect is to the individual, while the external effects are to the people living around the individual. For example, nutritional status of women has been shown to have positive effects on their children’s birth weight and infant mortality. Second, some studies (e.g. Alayande et

al.) have shown that there are economic and health consequences to being a malnourished adult. Not only has low body mass index been shown to have a negative effect on labour productivity, but also, in development, a BMI lower than 18.5 have been associated with increased mortality risk.

Individual human capital and capabilities can also be enhanced through migration process. The issue of poverty and migration involves an understanding of the prevalence of poverty in rural and urban centres and the interactions of the various dimensions of deprivation (World Bank, 2002). Migration especially from rural to urban centres is one of the consequences of dearth of skill acquisition, which is one of the characteristics of rural areas of developing countries. Thus, in practice, obtaining an education and learning the techniques that are useful for employment in the modern sector of the economy would often require moving away from the rural areas. This is usually due to policy bias against the rural poor in which case the urban centres tend to be disproportionately favoured in terms of infrastructural facilities. Therefore, rural poverty tends to persist due to absence of human capital that would facilitate obtaining high paying jobs. In this regard, IFAD (2001) noted that inadequate access of the rural population to health facilities; sanitation, safe drinking water and high level of illiteracy have perpetually put rural poverty above that of urban centres.

However, in another argument, Masson (2001) argued on the potential role of initial distribution of wealth in deciding who has access to investment in human capital. The argument here, is that even if people migrated into urban centres, and primary and secondary education are free, there is an opportunity cost for sending children to school as well as other basic expenses. The opportunity cost of sending children to school is the income forgone from child labour. These expenses and opportunity cost of education make its acquisition impossible for the very poor, and the cost of skill acquisition could help explain the persistence of poverty across generations. The author argued further that this cost is an important constraint on human capital investment that can produce complex dynamics and several equilibria for per capital income levels. Here, migration may be associated with skill acquisition, but a spell of unemployment may lead to falling into poverty a trap where wealth is no longer adequate to permit educating the children and giving them access to higher skilled jobs. Thus, persistent urban poverty may result, as well as rural poverty among those not migrating to the cities.

## Capabilities and Poverty

Sen (1985) defines capability as the freedom to achieve valuable beings and doings. Akire (2002) identifies that this definition contains two main ideas, which are freedom and valuable beings and doings (which is also referred to as functioning). These are all the ‘means and ‘ends’ of human life. Capabilities can be elementary (e.g. escaping morbidity and mortality; nourishment; mobility) or complex ( e.g. self-respect, participation, in community life, ability to appear in public without shame). Capabilities can also be general such as the capability to be nourished or specific such as the capability to drink a bottle of soda. In addition, functioning on its own refers to the various things a person may value doing or being. Capability is, thus, a set of vectors of functioning, reflecting the person’s freedom to decide what kind of life to lead (Dreze and Sen, 1990)

All these translate to development. In fact, Sen (1987) argues that the goal of development is the “promotion and expansion of valuable capabilities.” It is in this wise that he further submits that “Human development is about people, about expanding their choices to lead lives they value... Fundamental to enlarging human choices is building human capabilities: the range of things that people can do or be.” This means that capabilities comprise ability to be well nourished, to avoid/escape morbidity, to read, write and communicate, to take part in the life of the community, to appear in public without shame. It has further been argued in the literature that absolute deprivation in terms of a person’s capabilities can imply relative deprivation in terms of income, resources or commodities, e.g. for taking part in the life of the community, for the avoidance of shame, or for the maintenance of self-respect (Gordon et al 2003).

Atkinson and Bourguignon (1999) use the same framework but from a welfarist perspective. They regard poverty as inadequate command over economic resources but view this as an intermediate concern, the ultimate concern being in terms of capabilities. The absolute set of capabilities translates into a set of goods requirements, which is relative to a particular society and its standard of living. This leads them to formulate a concept in line with the World Bank’s *World Development Report* (1990, p.26), that a Poverty line can be thought of as comprising two elements: the expenditure necessary to buy a minimum level of nutrition and other basic necessities and a further amount that varies from country to country, reflecting the cost of participating in the everyday life of the society. There is a hierarchy of capabilities. The first concerns physical functioning and requires a set of goods fixed in absolute terms; this capability has priority. The

second capability concerns social functioning and require a set of goods that depends on the mean level of income.

Poverty status is therefore dependent on the (in)adequate physical functioning such as hunger, lack of shelter and lack of warmth and (in)adequate social functioning such as alienation, shame and lack of self-respect. Capabilities are therefore associated with such elements as the standard of living and the broader aspects of the ability to be socially and economically useful. The interaction of entitlement and capabilities largely determine what people do and what they are (Dreze and Sen, 1990; Kannan, 1995). Based on this, a poor person can be defined as one whom, given the ownership he actually has, the exchange entitlement set, does not contain any feasible bundle satisfying the required minimal standard of living (Ogwumike, 2001). An important thing to note here is that the commodity bundle is with reference to minimal standard of living. This could vary from society to society. For instance, what is a minimal standard of living in a developed country will be essentially different from that of a developing country. Hence, the starting point is the establishment of this minimal standard of living on the basis of which individuals or households could be assessed. Therefore, as argued by Ogwumike (2002), concepts of poverty and poverty reduction programmes must, therefore, not only focus on income, expenditure and welfare programmes respectively, they must ensure that the interaction between entitlement and capabilities enable people to engage in socially acceptable way of generating adequate resources for meeting their market determined and socially provided bundle of commodities.

The capability approach to poverty was intended to replace welfarism as a theory of well-being (see Sen, 1985 etc.). The idea of capability and functioning centres on “individual claims are to be assessed not by the resources or the primary goods. Hence capability means absence of deprivation in any form. Deprivation according to Townsend (1987) is the state of observable and demonstrable disadvantage relative to the local community or the wider society or nation to which an individual, family or group belong. Gordon et al (2003) reveal that deprivation can be conceptualise as a continuum that ranges from no deprivation to extreme deprivation.

For the purpose of this study, we define capability as the opposite of deprivation. The operationalised determinants of deprivation is presented in Table 1 According to Gordon et al (2003), when households suffer from these deprivations they lack functioning capabilities to move out of poverty.

**Table 2.1 Measurement of Deprivation**

Deprivation	Mild Deprivation	Moderate Deprivation	Severe Deprivation	Extreme Deprivation
Food	Bland diet of poor nutritional value	Going hungry in occasions	Malnutrition	Starvation
Safe Drinking Water	Not having enough water on occasion due to lack of money	No access to water in dwelling but communal piped water available within 200 metres of dwelling or less than 15 minute walk away	Long walk to water source which is more than 200 m away or longer than 15 minute walk. Unsafe drinking water	No access to water
Sanitation facilities	Having to share facility with other households	Sanitation facilities outside dwelling	No sanitation facilities in or near dwelling	No access to sanitation facilities
Health	Occasional lack of access to medical care due to insufficient money	Inadequate medical care	No immunisation against disease. Only limited non-professional medical care available when sick	No medical care
Shelter	Dwelling in poor repair. More than 1 person per room	Few facilities in dwelling. Structural problems. More than 3 people per room	No facilities in house. Non-permanent structure, no privacy, no flooring, more than 5 people per room	Roofless – no shelter
Education	Inadequate teaching due to lack of resources	Unable to attend secondary but can attend primary education	Child is 7 or older and has received no primary or secondary education	Prevented from learning due to persecution and prejudice
Information	Cannot afford newspaper or books	No television but can afford radio	No access to radio, television or books or newspaper	Prevented from gaining access to information due by government
Basic Social Services	Health and education facilities available but occasionally of low standard	Inadequate health and education facilities e.g. less than 1 hour travel	Limited health and education facilities e.g. a day's travel away	No access to health or education services

Source: Gordon et al 2003

## Review of Theoretical Issues

There is a plethora of theoretical issues on poverty analysis. Most studies on poverty analysis proceed in three stages. First is the definition of welfare, second is the determinant of poverty line and third is the poverty measure.

Hamdock (1999) argues that poverty is not simply a matter of incomes that are too low to meet basic subsistence needs, but also reflects in malnutrition, poor health, low literacy and inadequate shelter and living. There are thus two broad definition of welfare in the literature to take

this versatility into consideration. These are the money metric measures and the non-money metric measures of poverty. The money metric measures define the poor in terms of inadequate income or expenditure to provide for the minimum standard of living (Fields, 2000) The non-money metric measures assumes that poverty goes beyond the issue of income as it also include the capability of turning income into welfare enhancing activities. Hence rather than using money or income as the basis of defining welfare, welfare is defined in terms of the assets of the individuals or the household. In this vein, studies have computed asset index and argues that it better dictate the welfare status of individuals than the income and expenditure levels (see for example, Glick and Sahn 2000).

No matter how welfare is defined there is the need to classify some as poor and others as better off based on the definition of welfare. This is done by computing the poverty line that is defined as the level of welfare below which an individual or household falls into a welfare level unacceptable to the community and thus termed poor.

There are two main ways of determining poverty lines. These are the absolute poverty line and the relative poverty line. The absolute poverty line is derived by calculating the costs of bundle of goods deemed to assure that basic consumption needs are met in the specific domain of poverty comparison (Kabubo-Mariara and Kiriti, 2000). The cost of basic needs first estimates the cost of meeting the calorie requirements and then includes a mark-up for non-food needs. The amount, which is estimated to meet calorie requirement is regarded as food poverty line and when the non-food component is added to the component, it is referred to as the cost of basic need poverty line (Bigsten et al 2003).

The relative poverty line on its own is the poverty line that is set as a constant proportion of the mean income. Poverty line in this case is dependent on the community. The relative poverty line is the most frequently utilised for studies in Nigeria<sup>1</sup>. The usual practice is to set the poverty line at some proportion of the mean per capital income or expenditure

Poverty measures are designed to count the poor and diagnose the extent and distribution of poverty over a particular geographic space. Fields (2000) states that any poverty measure must satisfy two main properties, which include strong monotonicity and distributional sensitivity. According to the monotonicity principle, an increase in some poor person's income, holding the

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<sup>1</sup> See for example, World Bank, 1996, Aigbokhan, 2000, Okojie et al, 2000 and Olaniyan, 2002.

other poor persons income constant must necessarily reduce poverty. This means that the poverty measure should be responsive to the severity of poverty of each individual.

In the case of the distribution sensitivity also referred to as the Transfer axiom, a transfer of income from a poor individual to any other individual who is richer than him must increase poverty measure. According to Fields (2000) the most common poverty measures that satisfy the principles are the Sen's index of poverty and the Forster-Greer-Thorbecke (FGT)  $P_\alpha$  class of measures. The  $P_\alpha$  class of poverty measures are most frequently used. There are 3 main poverty measures proposed by Forster, Greer and Thorbecke (1984) and they are the headcount (where  $\alpha =0$ ) , poverty gap (where  $\alpha =1$ ) and the squared poverty gap (where  $\alpha =2$ ) indices.

The headcount index measures the proportion of individuals/households below the poverty line. The problem with this measure is that every individual that is below the poverty line is weighted equally and therefore violate the principle of distributional sensitivity (Fiess and Verner, 2004). The poverty gap index takes this principle into consideration, as it is the product of incidence and average distance between income of the poor and the poverty line. This index distinguishes between the poor and the very poor. The squared poverty gap index is sensitive to the poorest below the poverty line and is the squared average distance of income of poor to the poverty line.

These three measures are used to describe poverty profile of many countries. We shall also use the three measures in our analysis of poverty profile in rural Nigeria.



## **Chapter Three**

### **Profile of Human Capital in Nigeria**

Nigeria has the largest population in sub-Saharan Africa. By 2002, the population of the country was more than 120 million people and one out of every five African is a Nigeria. It has been argued that these human resources if adequately combined with the enormous natural resources that the nation is endowed with; the nation should be one of the richest countries in the world. One of the reasons for the stunted growth of the economy has been the low level human capital status in the country. The quality of human capital status is dictated by the quality and quantity of education, health and nutrition available to the citizens. In this section, the profiles of education, health and nutrition availability in Nigeria are discussed.

#### **Education**

The profile of primary education in Nigeria since 1989 is presented in Table 3.1. According to the Table, although the gross enrolment into primary and post-primary school is on the increase in Nigeria, other indicators of child well-being show the precarious situation in which the Nigerian child find him or herself. While the benefit of schooling is the highest if a child can start and complete a level of formal school, Table 3.1 shows that there is a high dropout rate in the primary schools. By 1995, more than 18 percent children who attend primary school dropped out before their fourth year while more than 43 percent dropped out before completing the normal six years necessary to obtain a primary school leaving certificate. This deny them the opportunity not only of having a primary school leaving certificate but also of attending secondary schools as primary school is a prerequisite for entering secondary school in Nigeria

Even for those who attend, the efficiency in the schools is also not too good as revealed by the student teacher ratio. The student teacher ratio (STR), which was 37 in 1989, increased to 56 by 2001. This is far above the standard of 40 prescribed by the 1998 National policy on education.

The profile of secondary schooling is presented in Table 3.2 and the Table reveals that enrolment in secondary schools increased over the years. However, while the number of teachers also increased between 1989 and 1996, there was a decline in the number of teachers in 1997. Apart from 1993,1994 and 2000, the STR stayed within the acceptable region.

**Table 3.1: Primary school indicators in Nigeria. (1991 – 2001)**

Year	Enrolment	Percentage of Female Enrolment	Number of Schools	Number of Teachers	Student School ratio	Student Teacher Ratio	Percentage Drop Out before 4 years	Percentage Drop Out before 6 years
1989	12,721,087.00	45.00	34,904.00	343,813	364.46	37.00		47.4
1990	13,607,249.00	43.20	35,433.00	377,979	384.03	36.00		41.2
1991	13,776,854.00	43.80	35,446.00	372,347	388.67	37.00	25.3	40.4
1992	14,805,937.00	44.10	36,610.00	379,639	404.42	39.00	19.0	29.8
1993	15,911,888.00	44.40	37,812.00	388,095	420.82	41.00	17.7	27.3
1994	16,831,560.00	44.40	38,000.00	336,631	442.94	50.00	14.4	25.5
1995	17,994,620.00	44.00	39,677.00	299,910	453.53	60.00	18.1	43.3
1996	19,794,082.00	41.70	41,660.00	412,377	475.13	48.00		
1997	21,161,852.00	43.50	43,951.00	406,959	481.49	52.00		
1998	22,473,886.00	45.20	45,621.00	416,183	492.62	54.00		
1999	23,709,949.00	46.30	47,902.00	455,961	494.97	52.00		
2000	24,895,446.00	49.00	48,860.00	461,027	509.53	54.00		
2001	27,384,991.00	51.00	49,343.00	489,018	549.99	56.00		

Source: Olaniyan (2004)

**Table 3.2: Secondary school indicators in Nigeria. (1991 – 2001)**

Year	Enrolment	Percentage of Female Enrolment	Number of Schools	Number of Teachers	Student School ratio	Student Teacher Ratio
1989	2,723,791.00	41.90	5,868.00	73,616	464.18	37
1990	2,901,993.00	42.80	6,001.00	80,611	483.58	36
1991	3,123,277.00	41.70	5,860.00	84,413	532.98	37
1992	3,600,620.00	45.00	6,009.00	92,323	599.20	39
1993	4,150,917.00	48.60	6,162.00	101,241	673.63	41
1994	4,500,000.00	48.60	6,300.00	107,143	714.29	42
1995	5,084,546.00	43.00	6,452.00	127,114	788.06	40
1996	5,389,619.00	39.20	9,111.00	145,665	591.55	37
1997	5,578,255.00	41.90	7,311.00	143,032	762.99	39
1998	5,795,807.00	46.20	7,801.00	144,895	742.96	40
1999	6,056,618.00	45.00	8,113.00	159,384	746.53	38
2000	6,359,449.00	46.00	8,275.00	155,109	768.51	41
2001	6,995,394.00	47.00	8,275.00	174,884	845.36	40

Source: Olaniyan (2004)

We also investigate the enrolment patterns of children in Nigeria by age of the child. Table 3.3 shows that for primary and secondary age children, 56.59 percent and 51.09 percent of male and female children respectively are enrolled in formal schools. For the age cohort in secondary school,

the enrolment rate is higher at 59.71 percent than the cohort for primary school, which is 56.2 for male children as against 53.57 percent for secondary school age cohort and 51.3 percent for the primary school age cohort for the female children. The implication of this is that younger generation are having lower enrolment rates and this calls for more policy insights

**Table 3.3: Enrolment Rates in Rural Nigeria by Age and Gender of the Child**

Age in Years	MALE			FEMALE		
	Illiteracy Rate	Enrolment Rate	Withdrawal Rate	Illiteracy Rate	Enrolment Rate	Withdrawal Rate
6	54.63	41.61	3.76	56.3	39.19	4.51
7	48.14	48.05	3.81	50.1	46.49	3.41
8	38.48	57.28	4.24	46.57	48.63	4.8
9	34.17	62.2	3.63	39.48	55.79	4.73
10	35.9	58.87	5.23	45.34	50.29	4.37
11	24.81	69.19	6.01	27.01	67.41	5.58
<b>Average (Primary School Age)</b>	<b>39.36</b>	<b>56.20</b>	<b>4.45</b>	<b>44.13</b>	<b>51.30</b>	<b>4.57</b>
12	28.42	64.7	6.89	33.13	60.17	6.7
13	26.28	61.65	12.07	31.78	57.38	10.84
14	24.04	65.44	10.53	29.24	59.86	10.9
15	31.53	53.45	15.03	38.13	48.81	13.06
16	24.1	64.27	11.63	25.5	55.26	19.24
17	27.53	48.76	23.71	33.27	39.96	26.77
<b>Average (Secondary School Age)</b>	<b>26.98</b>	<b>59.71</b>	<b>13.31</b>	<b>31.84</b>	<b>53.57</b>	<b>14.59</b>
<b>TOTAL</b>	<b>35.56</b>	<b>56.59</b>	<b>7.85</b>	<b>40.69</b>	<b>51.09</b>	<b>8.22</b>

*Source: computed from the 1999 MICS data*

## HEALTH

Nigeria witnessed a declining of health status indices in the last decade and more so in the last five years. Life expectancy, for example, declined from a value of 54 years in the early 80s to 52 years by 1994 and increased marginally to 53 years in 1996. A picture of the health indicators of Nigeria shown in Table 3.4 reveals that there are inadequate health personnel in the country. The average population per physician rose from 3707 in 1995 to 4605 in 2001. Likewise, population of nursing staff to population increased from 605 in 1995 to 920 in 2001. These indicators are well above the norm for adequacy of health personnel. It should also be noted that the number of tertiary health institutions has stagnated since 1998. This is not only the issue, it is also on record that there is inadequate funding if the existing ones, which impairs their effective provision of adequate health, care.

**Table 3.4: Number of Health Institutions and Health Personnel ratio in Nigeria**

Year	Population per physician (No.)	Population per Nursing staff (no)	Population per Hospital bed (No)	Number of Health Institution			
				Primary	Secondary	Tertiary	Total
1995	3707	605	1477	6205	790	47	7042
1996	4706	1023	1555	6224	793	48	7065
1997	4839	1014	1632	6242	795	48	7085
1998	4977	1044	1738	8958	882	51	9899
1999	4479	906	1564	8970	892	51	9913
2000	4529	920	1611	10149	936	51	11136
2001	4675	1082	2124	10393	982	51	11426

*SOURCE: CBN ANNUAL REPORT (VARIOUS ISSUES)*

Despite these inadequacies in both health personnel and institutions requirements, the reported cases of notifiable diseases have increased over the years (Table 3.5). Malaria still maintains its position as the most prevalent in the country killing the highest number of people. This is followed by Typhoid and Cholera respectively.

**Table 3.5: Reported Cases From Notifiable Diseases**

Year	Cases				Deaths			
	Malaria	Typhoid	Cholera	AIDS	Malaria	Typhoid	Cholera	AIDS
1970	628 534	2054	-	-	1109	195	-	-
1975	1 083 263	511	38	-	309	28	1	-
1980	1 171 071	288	139	-	865	8	23	-
1985	1 284 403	673	734	-	1400	17	18	-
1990	1 116 922	4772	4101	2	2284	92	61	-
1995	1 133 926	26 729	3364	117	3268	707	140	11
1998	1 975 380	32 231	13 405	5058	3189	191	468	19

*Source: Federal Office of Statistics (Various Years)*

**Table 3.6: Incidence of HIV/AIDS in Nigeria (1999)**

People	Prevalence
Adults (15-49)	2,600,000
Adult Rate of Growth (%)	5.1
Women (15-49)	1,400,000
Children (0-14)	120,000
AIDS Death	250,000

Source: World Bank, 2002

The incidence and burden of HIV/AIDS is also on the increase in the country such that its doubt or denial is no longer possible. The prevalence rate estimated to be 1.8 per cent in 1993, increased by more than 100 per cent within a year to 3.8 per cent in 1994, then to 4.5 per cent in 1996 and 5.4 per cent in 1999. The prevalence and distribution of HIV/AIDS in Nigeria is presented in Table 3.6 below.

Table 3.6 shows that more than 2 million of the total population are infected by HIV/AIDS in Nigeria. The Table also reveals that women represent a higher percentage of those infected by the disease at an estimated population of 1,400,000 in 1999. The estimated death as result of HIV/AIDS was also 250,000 in 1999, which is almost a quarter of the number of HIV/AIDS death recorded in Africa in 1999. An investigation into the zonal distribution of the AIDS pandemic shows that the North central zone is worst-hit by the disease as 8.6 per cent of its population is affected by the disease. This is shown in Table 3.7. While the disease is more prevalent in the urban region for the South east, South west, and North west geopolitical zone of Nigeria, it is more prevalent in the rural areas for the three other geopolitical zones of the country.

**Table 3.7: HIV prevalence by Zone in Nigeria (%)**

Zone	Urban	Rural	Total
South-east	7.1	4.6	7.1
South-west	4.7	2.9	4.1
South-south	5.4	6.4	6.1
North-west	5.8	3.0	3.8
North-east	4.5	4.8	3.5
North-central	8.2	8.7	8.6

Source: Nigeria (2000)

## **Nutrition**

Available indicators of child well-being show that Nigeria has made little progress in improving the well-being of its children. One of the cases in point is under-nutrition. Table 3.8 shows the level of under-nutrition for some nutrition indicators for sectors (rural and urban) and gender in Nigeria. The rural areas are worst hit by the three anthropometric measures of nutrition than the urban centres, just as they are worse hit by levels of poverty. These measures are wasting, stunting and underweight. These measure also serve as proxy for measurement of child well-being because poor growth performance reflects deeper problems such as food insecurity, poor child care,

poor access to health services etc. Stunting or low height-for-age refers to shortness that is a deficit of linear growth that has failed to reach genetic potential as a result of poor diet and diseases. The figure shows that 27 per cent of rural children suffered stunting in 1999, while only 25 per cent of urban children suffered this problem. The North Eastern children are the worst hit by stunting at 44 per cent, while the South western children are least hit by stunting at 24 per cent.

Also, wasting describes a recent and severe process that has produced a substantial weight loss, usually as a consequence of acute and recent shortage of food and/or severe disease within a short time span. Again, the rural children suffered from wasting more than their urban counterparts. Also, in terms of zonal distribution of wasting, the Northeastern zone is the worst hit with the Southeast have the least share of wasting among its children.

**Table 3.8 Percentage of Undernourished Under-5 Children**

	Stunting	Wasting	Underweight
National	33.5	15.6	30.7
Urban	32.6	14.1	21.7
Rural	37.3	16.2	34.1
Male	35.2	15.8	31.8
Female	31.6	15.4	29.3

*Source: computed from the 1999 MICS data*

Underweight represents a shortfall in weight-for-age, which is the anthropometric index of body mass relative to age. Weight-for-age is influenced by the height and weight of a child and is thus a composite of stunting and wasting. In the absence of wasting, both weight-for-age and height-for-age reflect the long-term nutrition and health experience of the individual or population (Thomas et al., 1996). The distribution of wasting in Nigeria is reflection of other anthropometric measure of nutrition. For example, the rural child suffers larger wasting than the urban child. Also, the northern zone (northeast and northwest) suffers larger wasting than the southern zone.

Table 3.9 presents the sources of water, access to sanitation facilities and crowdedness of accommodation in Nigeria. The Table reveals that only 11.7 percent of Nigerians have access to tap water whether public or piped into residence. Rather majority of Nigerians source water from unsafe sources such as rivers and surface water. In the same vein, more than 35 percent of Nigerians has no toilet facility at all while 62.2 percent uses pit latrine. In the case of the number of persons sleeping per room, about half of the population sleeps in rooms shared by more than 3 persons. This reveals inadequate shelter and overcrowded shelter for most people in the country.

**Sources of Water, sanitation Facilities and Number of persons per Room in Rural Nigeria (1990s & 1999)**

	<b>1990</b>	<b>1999</b>
<b>Source of Water</b>		
Piped water into residence	3.3	3.7
Public tap	8.4	9.5
Well	34.9	34.7
River and surface water	51.9	38.3
Tanker and other vendors	0.7	2.3
Rain water	0.7	0.8
<b>Sanitation facility</b>		
Flush	2.1	4.3
Bucket	0.3	0.1
Pit	62.2	61.9
No facility	35.5	32.1
<b>Person Sleeping per room</b>		
1-2 persons	50.2	67.5
3-4 persons	33.6	23.3
5-6 persons	10.3	5.2
7 and above	5.6	2

*Source: computed from the 1999 MICS data*

## Chapter Four

### METHODOLOGY

#### **Introduction**

The central theme of this research is to examine the effects of human capital and capabilities on poverty in rural Nigeria. In order to achieve the assigned objectives of this study, the research methodology and analysis is hinged on the following procedure.

- The definition of an indicator of good living (welfare) so as to identify the poor.
- Choice of poverty index
- The econometric procedure to better understand the effects of human capital and institutions on rural poverty in Nigeria

The starting point for our analysis is to define a poverty measure for rural Nigeria based on our data. There are arguments in the literature on the appropriate measure of good living<sup>2</sup>. In this study, we shall not enter into the debate on the best measure, however, we shall utilise per capita expenditure as our measure of household economic welfare. This is preferred to income because literature has shown that income as a measure of welfare especially in Sub-Saharan Africa has many flaws (see Datt and Jolliffe, 1999). One of the basic reasons is that individuals are often reluctant to declare their true income. The approach of using per capita expenditure has been used in many studies on poverty in Nigeria (see Canagarajah and Thomas, 2001).

The next thing to do is to determine the poverty line. A poverty line is often defined as a predetermined or well-defined standard of income or consumption, which is deemed to represent the minimum, required for a productive and active life or even survival (Okunmadewa, 1999). There is no official poverty line in Nigeria and as such many earlier studies have used poverty lines, which are proportions of the average per capital expenditure (see Canagarajah and Thomas, 2001 and FOS 1999). In this study, we also follow the approach to determine poverty line. Using the per capita expenditure, we define the poverty line as the two-thirds of the mean value of per capital consumption expenditures in the rural areas.

This poverty line helps us in classifying the poor and non poor before we go on to calculate the poverty indices for rural households in Nigeria. We shall then use the Forster-Greer-Thorbecke (FGT) indices to measure the magnitude, depth and severity of rural poverty.

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<sup>2</sup> See studies such as Lipton and Ravallion (1995), Khan (2000) and Sahn and Stifel (2000) for some arguments for and against different measures.



The general class of the FGT ( $P\alpha$ ) class of poverty measures is given by

$$P\alpha = \int \{(z-y)/z\}^\alpha f(y) dy \quad 1.$$

Where  $z$  is the poverty line,  $f(y)$  is the population density function of income. The 3 indices that we intend to use are the P0, which is the headcount ratio, P1, which is the poverty gap index and the poverty severity index, P2. These indices shall thereafter be decomposed according to the characteristics of the household including human capital and capabilities variables. After identifying the rural poor and characterising them, the next issue is to examine the determinants of poverty in rural Nigeria with special emphasis on variables related to human capital and capabilities.

### Model Specification

There are two main approaches in modelling the determinant of poverty. The first is to model the determinants of the indicator of welfare usually income, consumption or expenditure using the ordinary least square estimation technique. The second is to group the non-poor and the poor separately and utilise a limited dependent variable framework. This may include the use of probit, logit or tobit estimation techniques. The approach in this study is to combine the two approaches.

In the first approach, we model per capita expenditure as the indicator of standard of living and for the second approach, we classify all households into the poor and non-poor groups using the relative poverty line of two third of mean per capita expenditure (PCE). We then estimate probit to examine the determinant of the probability of a household being poor in rural Nigeria. In the case of the per capita expenditure we specify our model as follows

$$\ln PCE = a_i X_i + u_i \quad \dots \quad 2$$

Where  $\ln PCE$  = log of per capita expenditure  
 $X$  is a set of household characteristics and other determinants, and  
 $u$  is a random error term.

The parameters of equation 2 are estimated using the ordinary Least Square (OLS) estimation technique.

PCE is used because it measures ability to obtain goods and services. There are four main reasons that are identified in the literature why consumption or expenditure is preferred to income. (Datt et al 2000). First, according to Atkinson, 1981, income is only a measure of welfare opportunity and not welfare achievement. This is because not all income is consumed and not all consumption is financed out of income. Second, It has been found that expenditure fluctuates less than income and thus provides more accurate and stable measure of welfare. Third, respondents to survey instrument are more willing to give their expenditure information than income information, and finally, where there is a large proportion of self employed and own consumption, measurement of income is often fraught with difficulties.

The second approach used in modelling the determinants of poverty in this paper is the probit model with binary response in analysing the determinants of the probability of households being poor. The probit specification is designed to analyse qualitative data reflecting a choice between two alternatives, which in our case are the poor, and the non-poor. The probit model thus represents a convenient way of quantifying the relationship between the characteristics of the households/individuals and their poverty status. The dependent variable takes the value of zero or one where one represent being poor and zero otherwise. The choice of the probit model is premised on the fact that ordinary least squares assume a continuous dependent variable while in the case of poverty, the response is a binomial process taking the values of 1 for poor and 0 for non-poor. In addition, level regression imposes constant parameters over the entire distribution. This assumes that the poor are not fundamentally different from the rich may not be a plausible assumption (see Grootaert, 1997 and Bekouin, 2000)

We therefore transform our dependent variable which is the household per capita expenditure into a dichotomous response variable  $y_h$  with binary outcomes taking two values ( $y_h \in \{0,1\}$ ), with  $y_h = 1$  if per capita expenditure is greater than the poverty line, and 0 otherwise.

Based on the above, the probability of poor which corresponds to  $y_h = 1$ , is derived using the following probit equation

$$Pr(y_h = 1) = \Phi[\sum \beta_k x_k] \quad \dots 3$$

In the same vein, since the response is a binary outcome, the probability associated with alternative event of being non-poor is represented by

$$Pr(y_h = 0) = 1 - \Phi[\sum \beta_k x_k] \quad \dots \quad 4$$

Where Pr is the likelihood of being poor and where

$y_h$  = poverty status of household i ( $Y_i = 1$  if the household is poor, and zero if the household is non-poor)

$x_{ik}$  = k-th explanatory variable of the likelihood of poverty of household i

$\beta_k$  = parameter associated with  $x_k$

The estimation of equations 3 and 4 yields predicted probabilities given the set of values taken by the explanatory variables. However, our analysis will be based on the marginal effect of each variable on the probability of the effect. This is because probit coefficients do not represent the standard marginal effects represented by linear regression coefficients. However, the marginal effects combine the predicted probability of being poor with the estimated probit coefficients.

The marginal effect is derived by taking the partial derivative of equation 3 with respect to an independent variable. This is given as

$$\frac{\partial \text{Prob}(Y=1)}{\partial x_k} = \Phi[\sum \beta_k x_k] * \beta_k \quad \dots \quad 5$$

Equation 4 represents the marginal changes in the probability that a household is poor due to changes in the underlying regressors. It should be noted that the changes are evaluated at the mean values of the data.

The parameters of the probit model are then estimated using the maximum likelihood estimation method. The assumption is that the response variable has a sample of N observations, which are independent.

### **Selection of Explanatory variables**

Our choice of explanatory variables in the two specifications above is guided by the objectives of this study. Hence the main explanatory variables are those representing human capital. Human capital is embodied in the members of the household (Grootaert, 1997). The main human

capital variable in our model is the education of the household head<sup>3</sup>. We define education as categorical variable for those without formal schooling, those with primary schooling, those with secondary schooling and those with post secondary schooling. Because of the limitations of the data which is a household survey without individual data, we use the variables of the household head as important determinants of living standard in the respective households. These variables include the age and gender of the household head. We also introduce quadratic term in the age variable so as to capture the life cycle effects of the head.

In addition, we include various household variables such as the household size, number of children below 6 years in the households as well as the number of adults above 60 years of age. The number of children and adults are introduced so as to capture the dependency effects in the households. We further introduce quadratic term in the household size so as to allow for non-linearity in the household size, living standard relationships. However, variables which represent aspects of capabilities such as health variables and dwelling characteristics are omitted because we have no evidence to prove that they are truly exogenous as determinants of per capita expenditure. We have only used these variables to explain poverty profile.

## **DATA REQUIREMENT AND SOURCES**

This study is based on merged data from the 1996 General Household Survey (GHS) and the National consumer survey (NCS) conducted by the Federal Office of Statistics as supplemental modules under the National Integrated Survey of Households (NISH). Both surveys had a national coverage, covering all the 30 states of the federation at the time and the federal capital territory. The sample design for the study was a two stage stratified sample design. The first stage was a cluster of housing units called Enumeration Area (EA), while the second stage was the housing unit. The sampling procedure was such that 120 Enumeration Areas (EAs) were selected and covered annually in each state. However, 10 EAs were randomly allocated to each month of the survey. In each selected EA, a sample of 10 households was covered each month for the GHS while five households were sub-sampled for the NCS. In the final analysis, the merged GHS and NCS data consists of 9,436 households spread across all the states of the federation. The data is rich in providing general information required for an examining the determinants of household poverty in

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<sup>3</sup> It would have been better to get the educational level of all members of the household, but the information is not available in the data set that is available to us.

rural Nigeria. Apart from the fact that it provides information on the structure and composition of households, it also provides information on the quality of housing facilities available to the households.

## Chapter Five

### Analysis of Empirical Results

#### 5.1 Poverty Profile in Rural Nigeria

The starting point for our analysis is the characterisation of the poverty profile of rural households in Nigeria. This provides the key correlates of poverty as well as gives important clues underlying the determinants of poverty. Table 4.1 presents the characteristics of the households taking specifically into consideration, the issues of human capital and capabilities. Poverty is distinguished by gender and we found that poverty incidence is higher for male-headed households at 62.8 percent and that of female-headed households is 56.0 percent. However, poverty is more severe among the female-headed households. In terms of the age of the household head, we found that households headed by old people who are 65 years and above have the highest poverty incidence in Nigeria followed by household whose heads fall within the age group 35 to 44 years old. The old age poverty in Nigeria could be traced to the fact that most of the rural dwellers operate in the informal sector where there is no pension cover. Hence when they become too old to engage in farming activities, they found it difficult to generate income and slid into poverty. In addition to household headed by old people, households whose head falls between the age-range of 35 to 44 years old also have a very high poverty incidence of 63.7 per cent. However, the poverty gap and severity is higher for household whose head falls into the age range of below 25 years. This might be due to the fact that these are households that developed after the economic crisis of the eighties and the attendant problems.

Furthermore, household size is also an important factor in poverty and we also investigate the poverty profile of rural households by the sizes of their households. We classify household sizes into three categories, which are small, medium and large households. Our findings reveal that there is a strong positive relationship between household size and poverty among rural households in Nigeria. This is despite the fact that we use per capita expenditure and not total expenditure of the households. We found that the larger the household size the higher the poverty headcount ratio. While the headcount index for smaller households is 59.4 percent it increases to 64.1 percent for larger households. In the case of the highest level of education level attained by the household head, the poverty profile presents some interesting results. Contrary to expectations that the higher the education level, the lower the poverty status, our findings reveal that the axiom is true only to some extent. While poverty level decreases with additional educational attainment, this stopped at the

secondary education level where we found that the headcount index for post secondary education is higher than that of secondary education although poverty status of post secondary education headed household is still better than those of heads who only attained primary education or have no formal education at all.

**Table 4.1: Poverty Profile in Rural Nigeria**

	<b>P0 Headcount</b>	<b>P1 Poverty Gap</b>	<b>P2 Severity</b>	<b>Proportion of population</b>
<b>ALL RURAL</b>	0.624	0.299	0.181	100.00
<b>Human Capital</b>				
Male	0.628	0.300	0.180	87.40
Female	0.600	0.299	0.187	12.60
<b>Age of Household Head</b>				
Below 25	0.611	0.324	0.208	2.51
25-34	0.621	0.301	0.183	19.80
35-44	0.637	0.306	0.185	28.30
45-54	0.608	0.286	0.170	26.20
55-64	0.626	0.302	0.183	14.40
65 and above	0.639	0.303	0.181	8.80
<b>Household Size</b>				
Small Household (1-3 persons)	0.594	0.293	0.179	38.90
Medium Household (4-6 persons)	0.645	0.301	0.178	41.90
Large Household (more than 6 persons)	0.641	0.311	0.188	19.20
<b>Education of Household Head</b>				
No Education	0.669	0.329	0.201	67.20
Primary	0.541	0.237	0.137	20.80
Secondary	0.504	0.239	0.142	9.20
Beyond Secondary	0.530	0.252	0.142	2.80
<b>Occupation</b>				
Farming	0.644	0.310	0.187	80.90
Non-Farming	0.539	0.257	0.155	19.10
<b>Number of Spouses</b>				
0	0.340	0.137	0.076	22.32
1	0.618	0.268	0.151	51.84
2	0.860	0.466	0.294	20.15
3	0.975	0.606	0.423	3.28
4 and above	0.938	0.668	0.505	2.40

In the rural sector of the Nigerian economy, it is common to find male headed households with more than one wife. The most quoted reason for this is that since most of the farming activities are not mechanised, an extra wife is an extra hand in the farm and hence, the more the number of

children in the household. We therefore investigate the poverty profile in rural areas by the number of wives of the household head. Our results show that the argument of more cheap labourers with extra wife may not be plausible as the higher the number of wives of the male household head, the higher the poverty incidence in the household. While unmarried household head have the lowest poverty incidence of 34 per cent, household heads, who have at least four wives or more have a poverty incidence of 97 percent.

We also investigate poverty profile by the activity of the household head. We classified the rural sector into two broad activity levels, which are households that are engaged in farming activities and those that are engaged in non-farming activities. The non-farming sector is defined as non-farm rural activities such as manufacturing, craft, industry, transport, trade and services. Our findings reveal that 19.1 percent of rural dwellers engage in non-farming activities while 80.9 percent engage in farm activities. Our findings indicate that poverty incidence is everywhere higher for those engaged in farming activities than for those engaged in non-farming activities. While poverty incidence is 64.4 percent for farm workers, it is 53.9 percent for non-farm workers.

We distinguish rural households by different indicators of capabilities. The capabilities include access to safe water, good sanitation, shelter and refuse disposal and examine the poverty profile for households in the different categories. Table 4.2 presents the poverty profile by capabilities in rural Nigeria. The results show that Household without safe water are poorer than those who have access to safe water. Despite the fact that more than 58 percent of rural Nigerians have no access to safe water, 62.9 percent of them are also poor by the poverty headcount ration. Poverty is also more severe among those households without access to safe water. The same trend is observed among those who have access to safe sanitation and good refuse disposals. In this case, those with better access have lower proportion of the poor either in headcount, depth or severity. In addition, we found that there is a positive relationship between the number of persons per room and the incidence of poverty. Households with smaller number of people living in the house have a lower poverty index. For example, while only 42.4 percent of persons living in households with less than an average of 1 person per room; the poverty incidence for households with at least 6 persons per room is 66 percent

Nigeria is a federal country with 36 state and 778 local government areas. As a result of the multiple ethnic, locations, tribes, the country is often divided into six geopolitical zones for ease of policy and analysis. We therefore present rural poverty profile among the six different geopolitical



zones of the country. The Table reveals that rural poverty is highest in the Northeast and lowest in the Southeast.

**Table 4.2: Poverty Profile by Different Categorisations of the Rural Households**

	<b>P0 Headcount</b>	<b>P1 Poverty Gap</b>	<b>P2 Severity</b>	<b>Proportion of population</b>
<b>Capabilities</b>				
<b>Safe water</b>				
Yes	0.622	0.300	0.183	41.10
No	0.629	0.299	0.176	58.90
<b>Safe Sanitation (toilet)</b>				
Yes	0.610	0.286	0.170	42.80
No	0.635	0.309	0.188	57.20
<b>Good refuse disposal</b>				
Yes	0.618	0.303	0.181	23.00
No	0.629	0.297	0.177	77.00
<b>Shelter (persons per Room)</b>				
1 person or below	0.424	0.204	0.119	38.10
1.1 - 3	0.594	0.279	0.165	41.80
3.1 – 6	0.611	0.300	0.185	18.10
Above 6 persons	0.660	0.313	0.187	2.10
<b>Type of house</b>				
Single room	0.639	0.310	0.187	71.82
Duplex	0.627	0.332	0.220	2.03
Whole building	0.678	0.379	0.250	0.71
Flat	0.581	0.267	0.158	24.95
Others	0.556	0.222	0.119	0.49
<b>Geopolitical Zone</b>				
South West	0.552	0.261	0.160	7.10
South East	0.494	0.213	0.121	14.80
South South	0.543	0.255	0.153	15.50
North east	0.732	0.379	0.238	19.40
North West	0.718	0.343	0.205	21.90
North Central	0.603	0.286	0.172	21.30

## 5.2 Determinants of Rural Poverty

The key socio-economic determinants of rural poverty in Nigeria include human capital variables, household characteristics, economic activity of the household head and the spatial

locations of the households. We recognise the potential problems of omitted variables and try to solve them using fixed effects model (i.e. set of enumeration areas dummy variables) that will control for observed and unobserved enumeration area level determinants of living standard. This is based on our belief that including enumeration area fixed effects would control for much of the potential omitted variable bias. The definitions of variables used in the models as well as the descriptive statistics are presented in Tables 4.3.

**Table 4.3 Description of Variables used in estimation**

Variable	Description	Mean	Standard error
Age	Age of the household head in years	44.80	13.19
age2	Square of Age of the household head in years	2183.76	1301.02
gender	Dummy: Female =1	0.1262	0.3321
achild	Number of children below the age of 6 years	2.887	2.827
adult	Number of dependent adults above the age of 60	0.679	1.131
sizeofhh	Household size	4.519	2.669
Hh2	Square of household size	27.552	35.791
edu1	Educational attainment of the household head (no education = 1)	0.672	0.469
edu2	Educational attainment of the household head (primary education = 1)	0.207	0.406
edu3	Educational attainment of the household head (secondary education = 1)	0.092	0.288
edu4	Educational attainment of the household head (above secondary education = 1)	0.028	0.166
farming	Household headed by a farmer( Dummy = 1)	0.808	0.393

The first model that is estimated is a fixed effect model of the determinant of welfare. Our measure of welfare indicator is the real per capita expenditure of the household. While we recognise that even this indicator excludes some aspect of welfare such as consumption of public goods like schools, health services etc., it is still one of the best representation of money metric measures of welfare that reflects households preference conditional on prices and incomes. Table 4.4 presents the parameter estimates for rural households in Nigeria. The model is estimated using ordinary least square estimation technique with enumeration area fixed effects. The fit is good with a  $R^2$  of 0.4659 and virtually all the parameter estimates are statistically significant. In terms of the characteristics of the household head, we found that the age of the household head shows the expected life cycle effect. Household welfare increases with age given the positive significant sign

of the parameter of age. But the negative sign of the quadratic which is statistically significant shows that welfare declines after some period. This reflect the situation where there is higher earning capacity with greater experience and age thereby leading to consumption smoothing over the life cycle. The magnitude of the quadratic parameter is however very low.

**Table 4.4: Determinants of Poverty Among Rural Households in Nigeria: OLS Estimation**

Source	SS	df	MS			
Model	978.016428	11	88.9105844	Number of obs = 7374		
Residual	1117.65621	7363	.151793591	F( 11, 7363) = 585.73		
				Prob > F = 0.0000		
				R-squared = 0.4667		
				Adj R-squared = 0.4659		
Total	2095.67264	7374	.284197537	Root MSE = .38961		

  

	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
dev_logpce						
dev_age	.0113486	.0028874	3.93	0.000	.0056885	.0170087
dev_age2	-.0001155	.0000282	-4.09	0.000	-.0001708	-.0000602
dev_gender	-.1387528	.0232984	-5.96	0.000	-.1844244	-.0930812
dev_achild	-.1692214	.0024171	-70.01	0.000	-.1739595	-.1644833
dev_adult	-.0349701	.0054292	-6.44	0.000	-.0456128	-.0243273
dev_sizeofhh	-.0289058	.0064254	-4.50	0.000	.0163102	.0415014
dev_hh2	.001039	.0003686	2.82	0.005	.0003165	.0017615
edu2	.1613294	.0299761	5.38	0.000	.1025674	.2200914
dev_edu3	.0554228	.0280452	1.98	0.048	.0004462	.1103994
dev_edu4	.0541221	.0280565	1.93	0.054	-.0008767	.1091209
dev_farming	-.0285342	.0240799	-1.18	0.236	-.0757376	.0186692

The coefficient for female headed household is significant indicating that the per capita expenditure of female headed households is significantly different from that of the male headed households. Our results indicate that demographic variables are important determinants of welfare. Household size has a significant negative effect on welfare indicating that the larger the household size, the lower the per capita expenditure. It is believed that it is also possible to have economies of scale for large households, but this is not the case with the rural households. Our result confirms many earlier studies on the impact of household size (see (Lipton and Ravallion, 1995). The quadratic of the household size is also significant but negative. We further found that household composition matters. An that an increase in either the number of children or old people in the household will reduce the overall welfare level of the household given the negative significant values of the parameters of the variables. A comparison of the coefficients of the adults and children

indicates that an additional adult in the household reduces Per capita expenditure less than an additional child in the household all *ceteris paribus*. While an extra child reduces per capita expenditure by 16.5 percent, an extra adult in the household reduces per capita expenditure by 3.5 per cent

The educational attainment of the household head is a major factor in the determinant of welfare in the households. Our results show that education attainment has a strong positive effect on the welfare status of the households. We however found that the economic activity of the household head, whether in the non-farm sector or the farming sector do not have any significant impact on the welfare of the households in rural Nigeria.

In addition to the OLS estimation, we also present the results of probit regressions for rural households in Table 4.5. The likelihood ratio statistics show that the model is significantly different from the null or intercept only model. We examine the marginal impact of each variable on the likelihood that the household falls into poverty. The results are largely in line with the findings of the OLS estimations. The age of the household head is a significant determinant of the probability of being poor. This is further reinforced by the marginal effects of the probit. The age of the household head initially reduces the probability of being poor while the age squared is positive indicating that at later years, there is the possibility of increase in age increasing the probability of being poor. However, as been found earlier, the life cycle effect is very minimal judging by the value of the marginal effect. The result shows that a unit change in age squared will only reduce the probability of being poor by 0.01 percent only. The results reveal that there is a life cycle effect of age to rural poverty, as the predictors are significantly different from 0.

The positive and significant sign of the coefficient for female-headed households shows that a female headed household has a higher probability of being poor than the male headed households. Household structure also has significant effects on the probability of being poor in the rural areas. It is interesting to note that the presence of more adults and children increases the probability of the household being poor. This is in line with our OLS results. However, while the parameter of the extra child is statistically significant, the parameter of the extra adult is not significant. This findings might reflect the fact that an extra person increases the quantity of individuals relative to the resources available to the household.

**Table 4.4: Determinants of Poverty Among Rural Households in Nigeria: Probit Estimation**

Probit estimates

Number of obs = 7374  
 LR chi2(11) = 1210.70  
 Prob > chi2 = 0.0000  
 Pseudo R2 = 0.1506

Log likelihood = -3413.8044

poora	dF/dx	Std. Err.	z	P> z	x-bar	[	95% C.I.	]
age	-.002337	.0022478	-1.04	0.299	46.3368	-.002069	.006743	
age2	.0000463	.000022	2.11	0.035	2297.95	-.000089	-3.2e-06	
gender*	.0389786	.0163896	2.47	0.014	.874113	.006856	.071102	
achild	-.0084555	.0019291	-4.38	0.000	3.30703	-.012236	-.004674	
adult	.0036399	.0046898	0.78	0.438	.724706	-.012832	.005552	
sizeofhh	.1201946	.0052021	23.18	0.000	5.97514	.109999	.13039	
hh2	.004585	.0002941	15.73	0.000	44.7902	-.005161	-.004009	
edu2*	-.1904366	.0159167	-13.13	0.000	.168273	-.221633	-.15924	
edu3*	-.1858354	.0257908	-8.08	0.000	.065309	-.236385	-.135286	
edu4*	-.2053233	.042418	-5.47	0.000	.022776	-.288461	-.122186	
farming*	.0165319	.0177713	0.91	0.363	.070877	-.018299	.051363	
obs. P	.7651724							
pred. P	.7982368	(at x-bar)						

(\*) dF/dx is for discrete change of dummy variable from 0 to 1  
 z and P>|z| are the test of the underlying coefficient being 0

All the predictors of human capital variables represented by the educational level of the household head have estimates that are significantly different from 0 as judged by the size of the coefficient relative to the asymptotic standard error, and further by the size of p-values. The results agrees totally with the OLS results as they indicate that education reduces the probability of being poor in a household and judging from the marginal effects, the largest impact is for those who have up to post-secondary education, which is followed by those with primary education. Human capital has a decreasing effect on the probability of being poor among all rural households whether they are engaged in farm activities or engaged in non-farm activities. The marginal effects indicate that the effects are significant both in magnitude and sign. For example having up to primary level of education reduces the probability of being poor by the rural households by as much as 19.0 percent while for households with education up to secondary school decreases the probability of being poor by 18.6 percent

In addition, households whose head are engaged in farming activity have a higher probability of being poor and the marginal effect shows that this is as about 4 percent. In all, the results from our estimations reveal that household characteristics including human capital variables have negative significant effect on the probability of rural households being poor in Nigeria.

## **Chapter Six**

### **Conclusion**

This study has presented analysis of poverty in rural Nigeria with specific emphasis on the roles of human capital and capabilities. The analysis indicates that poverty is widespread in rural Nigeria and those engaged in farm activities are poorer than those engaged in non-farming activities. Furthermore, the probit estimates emphasise the significant effects of human capital and capabilities in determining poverty status of rural households in Nigeria.

The findings of this study therefore suggest a conscious effort at the policy level to redress poverty by increasing the human capital of individuals through provision of adequate education to individuals especially in rural areas. Since capabilities also explain substantial part of poverty in Nigeria, there is the need for better provision of social services, infrastructure and public goods. It should be noted that any increase in public incomes in the rural area would inevitably lead to significant decrease in rural poverty.

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