EFFICIENCY OF MEDIAN PER CAPITA EXPENDITURE METHOD FOR MEASURING THE LEVELS OF POVERTY IN NIGERIA

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CERTIFICATION

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DEDICATION

This research work is dedicated to my all knowing and sufficient God and to my loving family.

ABSTRACT

Measurement of levels of poverty is a powerful instrument for focusing the attention of policy makers on the living conditions of the poor. Previous studies on measurement of poverty in Nigeria have adopted two-third of mean per capita expenditure method for defining the poverty line. This has failed to capture the number of poor skewness in household expenditure data. Therefore, this study was designed to access the efficiency of Median Per Capita Expenditure (MPCE) method in measuring poverty in Nigeria.

Expenditure data from the 2006 general household survey from National Bureau of Statistics (NBS), Nigeria were collected. A standard distribution software was used to fit four distributions (log normal, log logistic, gamma and frechet) to per capita expenditure using Maximum Likelihood Estimation (MLE) method. The distributions were ranked using Kolmogorov Smirnov goodness-of-fit statistic. Any distribution with p value < 0.05 was considered good. The MPCE and the corresponding value for two-third mean per capita expenditure were obtained for comparison. Foster-Greer-Thorbecke poverty index was used to determine the proportion of poverty for the states. Differences in the lowest poor and highest poor states were investigated using the Z test. Using two-third mean and MPCE, a bootstrap simulation was performed on the expenditure data to obtain precision estimates for poverty headcount index. This was carried out for the purpose of comparing the two-third mean per capita and the MPCE methods as well as the relative gain in efficiency.

Log logistic distribution with parameter estimates (α=1.0452, β=3169.2) performed best, ($p < 0.000014805$) in fitting per capita expenditure data. The MPCE was ₦2,550.00 while the Two-third Mean Per Capita Expenditure (TMPCE) was ₦3,613.75 per month respectively. The proportion of the poor was 50.1% using MPCE but rose to 61.6% when TMPCE was used. Across states, the proportion of the poor was highest in Katsina state (52.7%) and lowest in Anambra state (42.9%) using MPCE method. However, poverty was highest in Kwara state (73.9%) and lowest in Anambra state (48.3%) using TMPCE method. The difference between the proportions were highly significant ($P < 0.003$) for MPCE and not significant ($P < 0.246$) for two-third mean per capita expenditure. The precision estimates were 2.50×10^{-05} and 9.78×10^{-05} for median and two-third mean per capita methods respectively and the relative gain in efficiency of the median method over two-third of mean method was 25.5%.

Median rather than two-third of mean per capita expenditure was a more efficient method for measuring poverty. Therefore, for improved precision of poverty measurements in Nigeria, median per capita expenditure would be a better approach.

Keywords: **Poverty line, Poverty depth, Median per capita expenditure, Household expenditure**

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CHAPTER ONE

INTRODUCTION

1.0 Background

Nigeria is supposed to be a rich country given the enormous human and mineral resources available in the country. The country has a very arable land and climatic conditions which is most suitable for agriculture. It is currently the sixth largest exporter of crude and other resources like cocoa, bitumen, tin ore ,to mention but a few. In terms of human population, Nigeria is currently the most populous country in Africa and one of the ten most populous countries in the world (PRB, 2009).

Incidentally, despite these enormous material and human resources in Nigeria, one issue that keeps recurring is the increasing poverty levels. It is disheartening to note that in recent times, poverty has become pervasive in Nigeria. For instance, at the commencement of the present century, it was estimated that about seven out of every ten Nigerians lived below the poverty line (Obadan, 2003; NPC, 2004). Poverty has continued to devastate Nigeria and the country is currently rated as one of the poorest in the world (UNDP, 2005, 2006 and 2009; World Bank, 2009). Poverty levels tend to vary among regions of almost every country of the world of which Nigeria is not an exception. Besides, successful policy making in Nigeria requires a good information base. For instance an understanding of poverty, the best measures and estimation method is a prerequisite for fine geographical targeting of interventions aimed at improving welfare levels.

This study aims at accessing the efficiency of Median per capita expenditure in measuring poverty in Nigeria as well as deriving estimates of poverty line at the national, state and sector levels, since there is need for statistics of a domain of study, small enough to be able to target the right groups

1.1 Poverty in Nigeria

The poor in Nigeria consider poverty as a multidimensional phenomenon that goes beyond simply the lack of income or consumption. In the Voice of the Poor study (1999), the poor defined poverty in terms of want or being in need, lack of good things, suffering backwardness, the inability to afford basic things, dependence at adulthood, and lack of freedom. They identified poor governance as a cause of poverty and feel at the vagaries of the natural environment.

There has been little reliable information on the incidence and depth of poverty in the country. Between 1982 and 1996, several National Consumer Surveys were conducted and poverty profiles were constructed. In 1996, it was estimated that about 66% of the population was poor, an increase of 20 per cent point from 1992.

The National Bureau of Statistics (NBS,2010) recently released the poverty incidence figures for 2010 and forecast for 2011 for Nigeria. The figures suggest that the incidence of poverty in Nigeria worsened between 2004 and 2010. The report indicates that the number of Nigerians living below poverty line rose from 68.7m to 112.5m (63.7% rise in poverty incidence) during the period while the population rose from 139.2m to 158.6m (13.9% rise in population) over the same period. Earlier figures on unemployment in Nigeria corroborated this situation as the number of unemployed members of the labour force continued to grow from 12.3% in 2006 to 23.9% in 2011. However, during the same period, Nigeria economy grew strongly at an average annual growth rate in excess of 6.6%, making the country the 5th fastest growing economy in the World in 2010 at 7.87% real growth rate.

In 2003, the UNDP Human Development Index ranked Nigeria 157th out of 175 countries. Infant and child mortality rate were high, especially among people living in the Northern regions, rural areas, and poor households. As reported by the UNDP (2010), between 1980 and 1996, the percentage of the core poor rose from 6.2 percent to 29.3 percent, and declined to 22.0 percent in 2004. According to Omotola (2008), about 70% of the population now lives in abject poverty.

1.2 Perspectives of poverty

It can be seen from the above that poverty has three perspectives namely:

Income/expenditure Perspective: A person is poor if and only if her income/expenditure level is below the defined poverty line. Often, the cut-off poverty line is defined in terms of having enough income/expenditure for a specified amount of food.

Basic needs perspective: Poverty is deprivation of material requirements for minimally acceptable fulfilment of human needs, including food, basic health and education, and essential services like employment and participation that have to be provided to prevent people from falling into poverty.

Capability perspective: Poverty represents the absence of some basic capabilities to function, a person lacking the capability to achieve some minimally acceptable levels of functioning.

1.3 Causes of poverty

There are several factors that contribute to poverty, in other words, there is no one cause or determinant of poverty. The factors include low or negative economic growth, inappropriate macroeconomic policies, deficiencies in the labour market resulting in limited job growth, low productivity and low wages in the informal sector, and a lag in human resources development. There are also other factors that have contributed to poverty and are structural causes or determinants. They include: increase in crime and violence, environmental degradation, retrenchment of workers, a fall in the real value of safety nets, and changes in family structures.

Low Economic Growth: Economic growth reduces poverty. In developing countries such as Nigeria, growth that is employment generating and with export base is desirable in other to achieve growth that is poverty reducing with equity, but since 1980s, growth rates have been low or negative due to adverse changes in several country's terms of trade, changes in global demand for exports and changes in global interest rates on developing countries external debts. All these on the other hand are responsible for the increase in poverty level in various countries of the world. Extensive evidence links the importance of economic growth to poverty reduction

(World Bank, 1990). Growth can reduce poverty through rising employment, increased labour productivity and higher real wages it generates.

Macro economic shocks and policy failure: As many economies in the world faced macroeconomic disequilibrium, mostly in the balance of payments due to expansive aggregate demand policies, terms-of-trade shocks, and natural disasters, it became necessary to undertake major policy reform. In the process, such economies became vulnerable to poverty. Macro economic shocks and policy failure accounts for poverty largely because they constrain the poor from using their greatest asset "labour". Also monetary policies that adversely affect cost and access to credit by the poor, fiscal policies which results in retrenchment, lay-off and factor substitution: exchange rate policy which raises the domestic cost of production in an import dependent production system will affect the poor negatively. But an exchange rate policy that boosts export particularly those in which the poor are predominantly engaged like agriculture will help reduce poverty. The urban poor as a result of policy failure are vulnerable to job losses resulting from job-cut-backs in the public sectors or from the decline of industries adversely affected by shift in relative prices. Devaluation produces both negative and positive effects on equity and poverty incidence. On the negative side, higher production, costs of input, especially in input dependant economy, usually result in declining capital utilization rate in manufacturing and lay-off and retrenchment in the private sector, all worsening poverty.

Labour market deficiencies: The poor's most abundant resources are the labour. In most countries of the world, the majority of the poor households participate in the labour market in one way and another, and thus poverty is a problem of low wages, low labour returns to rural self employment activities, underemployment, and in some cases, protracted unemployment. These problems are affected in different ways, by deficiencies in labour market. Also relatively high labour cost in the formal sector lead to over expansion of a low productivity informal sector, thus putting downward pressure on wages in the formal sector where many of the poor work, and limited opportunities for unskilled youths to acquire job training and skills can perpetuate a cycle of poverty.

Employment and Underemployment: Employment is the key determinant of poverty. Gainful employment is important for individual to earn income and escape income poverty. While generally, in countries of the world, the non poor suffer from transitional or involuntary unemployment, the poor are faced with problems of structural unemployment due to lack of skills or extremely low educational levels, medical problems, geographical isolation which affects some of the rural poor in general and the urban poor due to marginalisation of persons living in high crime neighbourhood and in some countries, discrimination based on race, tribe and other attributes.

Underemployment occurs largely in the informal sectors and results in low incomes for an important segment of labour force particularly in the rural areas.

Human resource development: This is the key for human capital development and capability to escape from poverty. Continued investment in human capital with improvement in efficiency is necessary to sustain reduction in poverty changes in the labour market. It can boost the living standard of households by expanding opportunities, raising productivity, attracting capital investment and increasing earning power.

Health and diseases: Good health is basic to human welfare and a fundamental objective of social and economic development. Poor health shackles human capital, reduces returns to learning, impedes entrepreneurial activities and holds back growth and economic development. Disease causes poverty and vice versa.

1.4 Objectives of the study

a) To fit distributions to per capita expenditure to know the best fit for Nigeria.

b) To compute the poverty line using both the two-third of mean and median per capita expenditure.

c) To determine the distribution of the poor by the states and sector in Nigeria.

d) To perform a bootstrap simulation on the expenditure data to obtain precision estimates for poverty headcount index.

1.5 Significance and motivation of the study

Because poverty reduction is an important development concern, designing effective targeting indicators require in-depth knowledge of the determinants of poverty and characteristics of the poor. But most studies have adopted a rather arbitrary and variable method of defining the poverty line on the basis of which poverty is profiled for Nigeria. For example, Aigbokhan (1991, 1997 and 2000a), Canagarajah et al. (1997, 2001), Ogwumike and Aromolaran, (2001) and Federal Office of Statistics (FOS, 1997) all adopted ratios (one-third and two-thirds) of mean income/expenditure as a basis for defining the poverty line. The limitation of this approach in tracking welfare need not be overemphasized. The method fails to reflect underlying distribution of household expenditure data. It is established that Income/expenditure data are generally skewed; rendering two-third and one third of mean per capita expenditure a poor statistic. The limitations of the use of highly arbitrary poverty lines have led to the adoption of consumption based methods in the construction of poverty lines.

Ogwumike, (1987 and 1991) used the basic needs approach in constructing a robust poverty line and in examining the nature and extent of poverty among Nigerians. But the application of the term “basic needs” is highly problematic in the sense that there is no consensus on the specific consumption goods and the proportion of such goods that constitute basic needs. Basic needs vary from one society to another, therefore this poses problem in the approach.

Aigbokhan, (2000b) used food-energy intake (FEI) approach to analyze poverty in Nigeria. The FEI method has been shown to possess some limitations, however,

Notably, Ravallion and Bidani (1994) and Ravallion and Sen (1996) demonstrated that the method suffers the inconsistency problem. It is argued that when the aim of setting a poverty line is to inform policy, whether or not a given standard of living constitutes poverty should not depend on the subgroup to which the person belongs. So, consistency requires that the poverty lines used should imply the same command over basic needs within the domain of the poverty profile (Ravallion and Bidani, 1994). Specifically, it has been argued that where food is relatively cheap, people will consume more, and poverty lines will be higher where the prices of food are higher. The authors showed that higher food prices in urban areas, together with the lower calorie requirements of most urban jobs, imply that urban calorie intake is lower than that of rural areas. At the same level of per capita expenditure, urban consumers tend to consume fewer calories than rural consumers do. As a result, the same nutritional standard requires a higher level of per capita expenditure in the urban areas. When applied to Indonesia and Bangladesh, Ravallion and Bidani (1994) and Ravallion and Sen (1996), respectively, found the FEI method to result in a much higher poverty line in urban areas, and higher level of poverty in urban areas, contrary to the general observation that poverty is more pronounced in rural areas, where both real income and real consumption are noted to be lower.

Omonona (2001) addressed the issue of household consumption by using adult equivalent scale but the study did not cater for economies of scale in household consumption. The study also only covered a single state in Nigeria.

This study is motivated by the recognition of the fore going research gaps. The study at present contributes majorly in this area of determination of the poverty line by proposition of an approach that is distribution based.

Therefore the poverty line in this study will be defined as the median of per capita expenditure. This is because expenditure data are generally skewed; therefore the mean does not enjoy an advantage as the best measure of location. Here the Median becomes a better measure of location since it is not affected by extreme values.

Also since eradication of poverty by the year 2015 is one of the eight Millennium Development goals, there is need to employ the right approach in tracking welfare in Nigeria so as to aid policy makers in targeting and mapping of poverty in other to meet the goal.

1.6 Data collection

The data used in the research work were the expenditure data from the 2006 general household survey, which was conducted by the National Bureau of Statistics, Nigeria.

1.7 General household Survey

General household survey was implemented as a National Integrated Survey of Household module. Six replicates were studied per state while three were studied FCT. With a fixed-take of 10 households systematically selected per enumeration areas, 600 households thus were selected for interview per state and 300 for FCT, Abuja. Hence, nationally, a total of 21,900 households drawn from the 2,190 enumeration areas were selected for interview for the General Household Survey. The selected enumeration areas and households cut across the rural and urban sectors.

1.8 Why expenditure as the poverty indicator

Most recent studies on poverty in Nigeria have rightly recognized the need to focus on expenditure rather than income as a better indicator of welfare. A measure of current consumer spending is generally preferred to income as a measure of current living standards for the following reasons. First, current consumption is often taken to be a better indicator than current income because instantaneous utility depends directly on consumption, not on income per se. Second, current consumption may also be a good indicator of Long-term average well-being, as it will reveal information about incomes at other dates, in the past and future. This is because incomes (including those of the poor) often vary over time in fairly predictable ways-particularly in agrarian economies such as Nigeria.

Alderman and Paxson (1992), Deaton (1992), income as a measure of living standard is often questioned on the ground of incorrect rendition by the respondents. On balance, consumption expenditure is preferred to income as a measure of living standard. It is generally believed that survey respondents are more willing to reveal their consumption behavior than they are willing to reveal their income. For example, in a compilation of household surveys from 88 developing countries, which was originally constructed for establishing world poverty counts, 36 of the surveys use income as their welfare measure and 52 use expenditures (Ravallion, 2001). Growing use of household consumption expenditure as the welfare indicator for poverty

measurement reflects both conceptual and practical reasons. Conceptually, consumption expenditure is a better measure of both current and long-term welfare. Practically, income is considerably more difficult to measure.

In principle, the best measures of a household's long-term economic resources are either wealth or permanent income, which is the yield on wealth. Important components of wealth, such as the present value of expected labor earnings, are unobservable. While current income is observable, it has a transitory component, which obscures any ranking of households based on permanent income. However, consumers have some idea about their permanent income, and so are unlikely to make lasting adjustments to their spending if they believe that the changes in their income are transitory. Consequently, consumption is a function of permanent but not of current income. This reliance of consumption on permanent income also means that consumption levels are less variable over time than are income levels. In other words, because the transitory component of consumption is small, current consumption is a good measure of permanent consumption, which in turn is proportional to permanent income.

The choice of consumption rather than income indicators can affect the temporal trends in poverty rates. Because of transitory income fluctuations, income-poor households include those who have suffered temporary reductions in their incomes, while their consumption level may stay close to its long-run average (depending on the options for consumption smoothing). Such households have high ratios of consumption expenditures to income (Deaton, 1997). Thus, if the poverty line remains fixed in real terms while the society enjoys an increase in average income, the ratio of consumption to income at the poverty line will grow over time because the poverty line is cutting at a lower and lower point in the cross-sectional income distribution. Therefore, the poor will increasingly be those with high permanent incomes who happened to suffer transitory shocks to their income during the reporting period. Because the measured consumption expenditure of this group is high relative to their income, a wedge is driven between the time-path of income-based and consumption-based poverty measures (Jorgenson, 1998).

In addition to affecting the trend in poverty, transitory income fluctuations also affect the precision of the cross-sectional poverty profile. The high transitory component in measured income means that a poverty profile based on income is less likely to identify the characteristics of the long-term poor. Instead, it will mix together households with low permanent incomes and those with temporary reductions in income. For example, Slesnick found that the U.S. poverty profile shows surprisingly high homeownership rates and low food budget shares when income is used to define the poor. This goes against the expectation that the poor have few assets and devote most of their budgets to necessities like food (Slesnick, 1993).

Another drawback of income approach is that some monetary attributes cannot be purchased because markets do not exist, for example with some public goods. It is also clear that in many settings, particularly in developing countries, markets operate very imperfectly as in the case of formal rural credit markets from which many small farmers are sealed off because of inadequate collaterals. The use of income to pinpoint poverty presuppose that a market exist for all attributes and that prices reflect the utility weights of all households within a specified setting assigned to those attributes. Therefore income as the sole indicator of wellbeing is limited, if not inappropriate as it typically does not /or cannot incorporate and reflect such key dimensions of poverty as life expectancy, literacy, the provision of public goods and even at the limit, freedom and security. The state of wellbeing is strongly correlated with the quality of life but less so with income.

Another drawback of income approach to capture poverty is that even if it were possible to specify the minimum threshold of each and all basic needs and put a price tag on them and aggregate across minimum threshold to derive to monetary poverty line, there is no guarantee that individuals with incomes at or even above poverty line would actually allocate their incomes so as to purchase minimum basic needs bundle.
In terms of practicalities, at least three factors make household income more difficult to measure than household consumption expenditures. These difficulties are likely to impair the accuracy of the income data gathered and are especially apparent in developing and transition countries. First, survey questions on income typically require a longer reference period than is needed for questions on expenditures because income estimates for periods less than a year will be affected by seasonal variation,

especially for agricultural households. While there may be seasonal and other short-term temporal patterns in consumption expenditures, they will normally be less marked if households have access to consumption-smoothing devices such as savings, credit, storage, and exchange networks. The longer reference period needed for measuring income introduces greater problems of recall error.

Second, household income is hard to construct for self-employed households and those working in the informal sector because of the difficulty in separating out business costs and revenue. Frequently, arbitrary assumptions are needed to measure the income streams from assets such as agricultural livestock, and there can be difficulties in valuing the receipt of in-kind payments and self-produced items. These problems are less severe, although not absent, when household consumption is measured. Moreover, in developing and transition economies, the sources of household income are more diverse than the categories of household consumption so it is harder to design and implement questions for all of these sources.

Third, questions about consumption are usually viewed as less sensitive than questions about income especially if respondents are concerned that the information will be used for tax collecting purposes or where illegal or barely legal activities provide a substantial portion of household income.

The use of expenditure to indicate the standard of living has also been endorsed by Peter Travers and Sue Richardson, who argued in relation to measuring poverty that when measuring the resource available to an individual, it is preferable to quantify expenditure rather than income. Expenditure generates the flow of services from which material wellbeing is derived. Income, in contrast provides the capacity to purchase things. Generally, income is valued not for its own sake but for the ability it provides of to buy goods and services. It is thus more satisfactory to measure directly the level of goods and services bought (Travers and Richardson, 1993)

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

In this chapter, works and findings of other researchers and authors related to poverty, its concept, measurement and poverty line was reviewed.

2.1 Concept and Meaning of Poverty

To date there is no single definition of poverty. The concept of poverty is defined according to individuals' perception looking at different circumstances. According to Ajakaiye (1998) a review of the massive literature on poverty shows that a standard concept of poverty remains elusive because of its multidimensional nature as well as its dynamic properties. It is viewed metaphorically as elephant and complex to define as Aboyade (1975) noted that, poverty, like an elephant, is more easily recognized than defined. Current trends have focus on the perception of the poor himself, consequently, poverty is perceived by poor Africans to include alienation from the community, food insecurity, crowded homes, and usage of unsafe and inefficient forms of energy, lack of jobs that are adequately paid and/or secure, and fragmentation of the family.

A view of the poor is that expressed by a poor man in Kenya in 1997 as reported by Narayan, *et al.* (2000) thus: "Don't ask me what poverty is because you have met it outside my house. Look at the house and count the number of holes. Look at my utensils and the clothes that I am wearing. Look at everything and write what you see. What you see is poverty".

Blackwood and Lynch (1994) identified the poor using the criteria of the levels of consumption and expenditure.

Further, Sen (1983), relates poverty to entitlements which are taken to be the various bundles of goods and services over which one has command, taking into cognisance the means by which such goods are required and availability of the needed goods.

Basically, there are two approaches to definition of poverty; Absolute poverty and relative poverty. Absolute poverty refers to a lack of the needs for physical subsistence, what Seebohm Rowntree called the minimum necessity for the maintenance of physical health and physical efficiency. Relative poverty extends the concept of poverty to consider individuals as social beings, who have psychological needs to participate in a society and share in its custom and norms.

The 1995 UN World Summit on Social Development defined absolute poverty as a condition characterised by severe deprivation of basic human needs including food, safe drinking water, sanitation facilities, health, shelter, education, and information. It depends not only on income but also on access to social services. There have always been differences of views on what poverty means in conceptual terms, and even greater differences on how to measure it. These differences span a broad spectrum of normative and ideological positions and raise a number of technical issues surrounding the statistical measurement of poverty. Some of the eminent social scientists have been trying to define poverty for more than 200 years.

Bank (2000) defines absolute poverty as "a condition of life degraded by diseases, deprivation, and squalor." On the other hand, the essence of poverty, in relative term, is 'inequality'. This implies that poverty can also be described as relative deprivation

Bradshaw (2006) and Rocha (1998), however, noted that the persistence of chronic deprivation of basic needs nowadays makes absolute poverty the obvious priority in terms of definition, measurement, and political action from the international point of view.

According to Ajakaiye and Adeyeye (2002), poverty can broadly be conceptualised in four ways; these are as a result of lack of access to basic needs/goods, result of lack of or impaired access to productive resources, an outcome of insufficient use of common resources, and as a result of exclusive mechanism. Poverty as a lack of basic needs /goods is essentially economic and consumption-oriented. It explains poverty in material terms and specifically employs consumption-based categories to explain the extent and depth of poverty and to establish who is and who is not poor. Thus the poor are conceived as those individuals or households in a particular society, incapable of

purchasing specific basic goods and services. Indeed in his study of how government in ten countries set minimum income standard, Professor John Veit Wilson identified no fewer than seven different ways of conceptualising poverty.

The UN World summit, definition of overall poverty was broader, it says that poverty has various manifestations, including lack of income and productive resources to ensure sustainable livelihoods, hunger and malnutrition, ill health, limited or lack of access to education and other basic services, increased morbidity and mortality from illness, homelessness and inadequate housing, unsafe environment and social discrimination and exclusion. It is also characterised by a lack of participation in decision making and in civil, social and cultural life. It occurs in all countries, as mass poverty in many developing countries, pockets of poverty amid wealth in developed countries, loss of livelihood as a result of economic recession, sudden poverty as a result of disaster or conflict, the poverty of low wage workers, and the utter destitution of people who fall outside family support systems, institutions and safety nets World Bank,(2000).

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. This implies that such people cannot have what the large 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)

Atkinson and Bourguignon (1999) regard poverty as inadequate command over economic resources but viewed it as an immediate concern, the ultimate concern being in terms of capabilities. The absolute set of capabilities translates into a set of goods requirement, 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 Development Reports (1990, pg 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.

Dreze and Sen (1990); Kannan, (1995) Poverty status is therefore dependent on the inadequate physical functioning, such as hunger, lack of shelter, and lack of warmth and inadequate 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.

Ogwumike, (2001) 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.

William Beveridge, (1942) argued that an important thing to note 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 if 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 individual or households could be assessed. In considering the minimum income needed by persons of working age for subsistence during interruption of earnings, it is sufficient to take into account food, clothing, fuel, light and household sundries and rent, though some margins must be allowed for inefficiency in spending.

Amartya Sen, (1992) Poverty is the failure of basic capabilities to reach certain minimally acceptable levels. The functioning's relevant to this can vary from such elementary physical ones as being well nourished, being adequately clothed, and sheltered, avoiding preventable morbidity, e.t.c. to more complex social achievements such as taking part in the life of the community, being able to appear in the public without shame, and so on. Individuals, families and groups in the population can be said to be in poverty when they lack the resources to obtain the type of diet, participate in the activities and have the living conditions and amenities which are customary, or at least widely encouraged or approved in the societies which they belong (Peter Townsend,1979).

Ravallion and Bidemi (1994) refers to poverty as lack of command over basic consumption needs, that is a situation of inadequate level of consumption' given rise to insufficient food, clothing and shelter.

Aluko N.L (1951), Sen (1987) defined poverty as lack of capabilities such as being able to participate with dignity in social endeavours.

Gore (2002) explains the concept of all-pervasive poverty. According to him, poverty is all-pervasive, where the majority of the population live at or below income levels sufficient to meet their basic needs, and the available resources, even when equally distributed, are barely sufficient to meet the basic needs of the population. He reiterates further that pervasive poverty leads to environmental degradation. This is because people eat into the environmental capital stock to survive. This, in turn, undermines the productivity of key assets on which the livelihood depends. It should also be noted that where extreme poverty is all-pervasive, state capacities are necessarily weak.

An Australian, Ronald Henderson (1975), said that in as much as poverty is defined by reference to a minimum acceptable standard of living, it is a relative concept. It requires a value judgement that must reflect the productivity of the economy and community attitudes. The task of determining a minimum standard of living is difficult given the variety of lifestyles and values in the society, and the range of matters such as food, shelter, clothing, health and education that must be considered.

2.2 Measurement of Poverty

In other to distinguish the poor from the non poor, it is necessary to measure the prevalence of poverty. The literature on the measurement of poverty, particularly consumption or income based poverty, owes Sen (1976) a great deal. Before, poverty issues were treated under the concept of income inequality. The measurement of poverty since then focused on the development of properties that satisfy certain ethical criteria, and on that basis, to derive an index that can capture the notion of poverty. This approach made good use of the well-known concept of social welfare functions, which are in turn functions of the indirect utility functions of individual households. In the literature, this method is better known as the welfarist approach to the measurement of poverty.

The need to measure poverty can be justified by Ravallion (1998), who argued that "a credible measure of poverty can be a powerful instrument for focussing the attention of policy makers on the living condition of the poor". Poverty data can inform policies intended to reduce poverty.

NBS (2012), in 2004, Nigeria's relative poverty measurement stood at 54.4%, but increased to 69% (or 112,518,507 Nigerians) in 2010. The North-West and North-East geo-political zones recorded the highest poverty rates in the country with 77.7% and 76.3% respectively in 2010, while the South-West geo-political zone recorded the lowest at 59.1%. Among States, Sokoto had the highest poverty rate at 86.4% while Niger had the lowest at 43.6% in the year under review.

Oni Omobowale A. and Adepoju Temitayo A (2011) used the Nigerian Core welfare Indices survey questionnaires of 2006 to provide data relevant to capability well being dimensions. The dimensions include housing, health, nutrition, education, asset ownership/economic, information flow and security. The first part of the study involve developing indices of well being using the fuzzy set in order to generate a composite well being index by the elementary indicators of the well being dimensions. The second part of the study used a logistic regression to explore the variability in achieving the composite well being index value by a set of Conversion factors.

Oyekale (2011) in his study examined the impact of government programs on the multidimensional poverty of rural Nigeria by using the 2006 Core Welfare Indicator Survey (CWIQ) data. Fuzzy set approach was used to compute the multidimensional poverty index of rural Nigeria. Tobit regression was used to examine the impact of poverty alleviation programs on multidimensional poverty index of rural Nigeria. The results show that the multidimensional poverty index for rural Nigeria is 0.3796. It is also reflected that some development programs had negative impact on multidimensional poverty index of rural Nigeria. Household head in the South South region were multidimensionally poor than those in other regions. The government should intensify efforts on programs that had positive impact on multidimensional poverty index of rural Nigeria. Also, it should be ensured that government programs get to the targeted people

Oshowole (2011) using the NLSS 2004 data, modelled the incidence of poverty in Nigeria. He determined the probability distribution of the selected FGT indices using possible analytical and numerical approaches. He also assessed statistical properties of conventional indicators.

Pudji Ismartini et al (2011) proposed to develop a hierarchical model for estimating household expenditure in an attempt to measure the effect of regional diversity by taking into account district characteristics and household attributes using a Bayesian approach. Due to the variation of household expenditure data which was captured by the three parameters of Log-Normal (LN3) distribution, the model was developed based on LN3 distribution. Data used in this study was household expenditure data in Central Java, Indonesia. Since, data were unbalanced and hierarchical models using a classical approach work well for balanced data, thus the estimation process was done by using Bayesian method with MCMC and Gibbs sampling. The hierarchical Bayesian model based on LN3 distribution could be implemented to explain the variation of household expenditure using district characteristics and household attributes. The model shows that districts characteristics which include demographic and economic conditions of districts and the availability of public facilities which are strongly associated with a dimension of human development index, i.e., economic, education and health, do affect to household expenditure through its household attributes.

World Bank, (2008) In terms of the human development index, Nigeria is ranked 158th of the 159 countries surveyed in 2005 (CIA, 2009). Using selected world development indicators, the life expectancy at birth in 2006 for male and female in Nigeria was 46 and 47 years, respectively. Between 2000 and 2007, 27.2 percent of children under five were malnourished. This is alarming compared to 3.7 per cent between the same periods in Brazil, another emerging economy. Worse still, the mortality rate for children under five years old is given as 191 per 1,000 births in 2006. This situation is very ridiculous compared to the figures of 69 per 1,000 births in South Africa, 108 per 1,000 births in Togo, 120 per 1,000 births in Ghana, and 149 per 1,000 births in Cameroon .This implies that there is a generalized high level of poverty in the country.

Fisher and Weber (2005) used the panel study of income dynamics to develop measure of asset poverty for urban and rural areas. They find that residents of urban are more likely to be poor in terms of net worth, but that rural residents are more likely to be poor in terms of liquid assets. Rural people tend to have non liquid assets such as homes that they may not be able to convert to cash in times of economic hardship. Urban people on the other hand, do not appear to be able to accumulate non liquid assets but may be better able to withstand short term economic disruptions.

Jollife (2004) finds that if official poverty threshold is adjusted for spatial cost of living differences, all three measures of poverty are worse in urban areas over the 1990s.

Ulimwengu and Kraybill (2004) use the National Longitudinal Survey of Youth (NLSY1979) data to develop a measure of real economic well being (a "living standard "defined as income divided by a cost of living adjusted poverty threshold) for households who were in poverty at least once during the survey period. They find that controlling for household demographics and local economic context, the expected living standard of the poor is higher.

Nwaobi (2003) asserts that Nigeria presents a paradox. The country is rich, but the people are poor. As noted by Omotola (2008), Nigeria is richly endowed and the country's wealth potentials manifest in the forms of natural, geographical, and

socioeconomic factors. With this condition, Nigeria should rank among the richest countries of the world that should have no business with extreme poverty. However, Okpe and Abu (2009) perspicaciously remark that Nigeria has witnessed a monumental increase in the level of poverty. According to them, the poverty level stood at 74.2 percent in the year 2000.

Cushing and Zheng, (2000) and Jollife, (2003) used a distribution sensitive Foster, Greer and Thorbecke poverty index to examine urban and rural differences in poverty incidence, depth and severity. Both find in conclusion that rural poverty is higher and that the rural poverty is not supported if one uses distribution sensitive measures. Jollife for example, finds that while the standard measures of poverty incidence is higher in rural areas during the 1990s; neither the poverty gap/depth of poverty nor severity of poverty is consistently higher in the rural areas. Moreover, the average poverty gap (shortfall of income relative to the poverty threshold) is smaller in rural areas and the rural poor are less likely to live in extreme poverty.

Aigbokhan, (2000), using data from National household income survey, found that poverty tends to be lower in the southern zones than in the northern zones. Even so, poverty incidence is not uniform within the zones. In the south, poverty was more in Akwa ibom, Delta, and Edo states and in the North, in Bauchi, Jigawa and Yobe states. The depth of poverty generally increased over study periods, but the trend was not uniform over geopolitical zones.

Rocha (1998) purports that defining the relevant and operational poverty concepts and choosing the adequate measurement procedures is the result of a sensible and informed analysis of social reality. Rocha (1998) states further that measuring poverty is a matter of identifying the essential causes of poverty in a given society. Is it widespread and affects the majority of the population or is it locally concentrated? Which are its roots? Is it a traditional syndrome or does it result from economic and technological changes? What are its main features? And who are the poor in terms of some essential characteristics? This overall information on poverty syndrome is the key element for adopting concepts and measurement instruments that seem the most appropriate to a specific context in terms of social reality and data gathering possibilities. Poverty needs to be measured to;

- Allow one to assess the effects of projects or crises or government policies on poverty.
- Permit one to compare poverty indices over time.
- Enable one to make comparisons with other countries.
- Target the poor with a view to improving their positions.
- Improve on social spending by both governmental and non governmental organizations and;
- To monitor poverty policies.

Echebiri (1997) carried out a study on the structure of rural income inequality and poverty in the South eastern Nigeria. In his study, household data were collected from sixteen villages in Abia, Anambra, Enugu and Imo States for the period of November 1984 and December 1985. A total of one hundred and fifty five (155) households were surveyed. Households were categorized into bottom, medium and top income groups to capture differences in income levels. The analyses showed that household's income is best estimated using monthly expenditure and repeated cost-route visit techniques. Income was generally low in study areas and the distribution was not particularly skewed.

World Bank (1996) shows that incidence of poverty in Nigeria increased from 28.1% in 1980 to 46.3% in 1985. It was noted that in 1992, 34.7 million people were extremely poor. The poverty problem grew so worse in the 1990s that in 1996, about 65.6% of the population was concluded to be poor. These scenarios vividly portray Nigeria as one of the poorest countries in the world and target programs for poverty alleviation seem not to be making significant impacts Nigeria's economy is characterized by a large rural, agriculture-based traditional sector that encompasses about two-third of the population living in poverty, and by a smaller, urban, capital – intensive sector that has benefited from exploitation of the country's resources and from the provision of services that successive governments have provided. As in many African economies, the rural traditional, mostly private agricultural sector is characterised by small scale, poor farmers, and by informal traders. The formal capital-intensive sector has a few multinational firms, a multitude of small local industries, and a myriad of government parastatals operating in most areas of

economic activities. The formal, urban, capital-intensive sector jobs are better paying and more secure, but scarce. The duality arose in large measure from domestic policies that steered most investment-physical, human and technological-into a few already capital-intensive sector of the economy. The benefits of government and foreign investment have only reached relative narrow strata of the population, while the majority of the people have not benefited from higher productivity or increased real wages (World Bank, 1996a).

(World Bank, 1995b), Basta, (1997); Bradley et al (1992) says that it is thought that urban population exhibits more variation in poverty morbidity and nutritional status compared to rural populations.

According to Odafalo, (1981), Nigeria's pattern of development incentive regimes have tended to favour the urban, modern sectors to the detriment of the rural , traditional sectors consistently, worsening the domestic terms of trade of the latter. Moreover, economic and social policies, have clearly accented poverty bin some regions more than others. The southern and middle agro climatic zones are better provided with infrastructure and social services than the northern zone. More of the doctors, nurses, and hospitals in the south and to a lesser extent, the middle zone, and the south also have more and better schools. Given the geography of Nigeria, the southern zone also has had a longer exposure to economic development and to modern international links. Nevertheless, poverty is pervasive to differing degrees in all three regions and within all states.

2.3 Measures of Poverty

Foster, Greer, and Thorbecke Index

Foster, Greer, and Thorbecke (1984) and World Bank (1990) proposed an index that contains the above measures of poverty. This index provides a distributionally sensitive measure through the choice of a poverty aversion parameter α . The formulae is given by

$$P(\alpha) = \frac{1}{N}\sum_{1}^{q}\left(\frac{Z-Y_i}{Z}\right)^{\alpha} \qquad 2.3.1$$

Where α is the FGT parameter, N is the population size, Z is the poverty line, q is the number of persons/households below the poverty line, and Y_i the expenditure/income of the household, and α is the FGT parameter which takes the values 0, 1, and 2, depending on the degree of concern about poverty. By increasing the value of α, the "aversion "to poverty as measured by the index, is increased. Where there is no aversion to poverty, α = 0, which is equal to the poverty headcount ratio, the index measures the incidence of poverty, which is based on the ratio or percentage of the number of individual or household whose income are not equal to the poverty line to the total number of individuals or households (Bardhan, 1973; Ahluwalia 1976; Ginneken 1980). As mentioned above, poverty headcount ratio expresses poverty in a single index. It measures the proportion of the population that is counted as poor and is denoted by

$$P(0) = \frac{1}{N}\sum I(Y_i \leq Z) = \frac{q}{N} \qquad 2.3.2$$

where N is the total population, q is the total number of the poor, I ($Y_i \leq Z$) is the indicator function that takes on the value of 1 if the bracketed expression is true and 0 otherwise. Y_i is the expenditure, and Z is the poverty line. This is the share of the population whose income or consumption is below the poverty line, that is, the share of the population that cannot afford to buy a basic basket of goods. An analyst using several poverty lines, say, one for poverty and one for extreme poverty, can estimate the incidence of both poverty and extreme poverty. Similarly, for nonmonetary indicators the incidence of poverty measures the share of the population that does not reach the defined threshold (for instance, the percentage of the population with less than three years of education). The headcount index gives a quick and simple-to-understand first look at the incidence of poverty in a particular area.

If the degree of aversion to poverty is increased such that
α = 1, the index becomes

$$P(1)= \frac{1}{N}\sum_1^q \left(\frac{Z-Y_i}{Z}\right) \qquad 2.3.3$$

The above index measures the depth of poverty and is referred to as the income gap measure. It measures the intensity / magnitude of poverty. Here the deviation of the poor's incomes from the poverty line is average and divided by the poverty line or expressed as its percentage.

This provides information regarding how far off households are from the poverty line. This measure captures the mean aggregate income or consumption shortfall relative to the poverty line across the whole population. It is obtained by adding up all the shortfalls of the poor (assuming that the nonpoor have a shortfall of zero) and dividing the total by the population. In other words, it estimates the total resources needed to bring all the poor to the level of the poverty line (divided by the number of individuals in the population). This measure can also be used for nonmonetary indicators, provided that the measure of the distance is meaningful. The poverty gap in education could be the number of years of education needed or required to reach a defined threshold. In some cases, though, the measure does not make sense or is not quantifiable (for example, when indicators are binary, such as literacy, in which case only the concept of the headcount can be used).

The poverty gap can be used as a measure of the minimum amount of resources necessary to eradicate poverty, that is, the amount that one would have to transfer to the poor under perfect targeting (that is, each poor person getting exactly the amount he/she needs to be lifted out of poverty) to bring them all out of poverty. These two measures both have the problem of being very insensitive to the actual level of the poor. Thus a transfer from the poorest to the least poor which raises the income of the latter above poverty would reduce headcount while in the case of poverty gap; it will be less obvious that poverty has fallen.

This is the difference between the poverty line and mean income of the poor, expressed as a ratio of the poverty line (World Bank, 1993). It adds up the extent to which individuals fall below the poverty line (if they do).By definition, poverty gap is the poverty line less actual income, Y_i for the poor individuals

$G_n = (Z\text{-}Y_i)I(Y_i < Z)$, therefore, poverty gap is written as

$$P(1) = \frac{1}{N}\sum\frac{G_n}{Z} \qquad 2.3.4$$

If α =2, the index allows for concern about the poorest of the poor through attaching greater weight to the poverty of the poorest than those jus below the poverty line. This is done by squaring the income gap to capture the severity of poverty.

$$P(2) = \frac{1}{N} \quad \sum\left(\frac{Z-Y_i}{Z}\right)^2 \qquad 2.3.5$$

The severity of poverty index, does not only measure poverty and the depth of poverty, but also includes the distributional effects of the group of people living below the poverty line.

Another advantage of FGT index is that overall poverty can be expressed as the sum of groups poverty weighted by the population share of each of each group thus,

$$P\ (\alpha) = \sum K_j\, P\alpha_j$$

Where j = 1, 2…m groups, K_j is the population share of each group, and $P\alpha_j$ is the poverty measures for each group. The contribution of each group, C_j to the overall poverty can then be calculated.

$$C_j = \frac{K_j P\alpha_j}{P_\alpha}$$

The above index will be used in the research work to determine the distribution of poverty in Nigeria.

2.4 Poverty Lines

Poverty lines can be broadly defined as the socially acceptable minimum standard of living within which a household or individual is classified as poor or non poor. This has become the standard tool of policy makers for poverty monitoring. In a poverty line, people are counted as poor when their measured standard of living falls below a minimum acceptable threshold. There are various measures that can be used to define this minimum level of welfare and much controversy surrounds the choice of poverty

line. Whatever methods used to define this threshold, the poverty line is a relatively arbitrary divider of poor and non-poor.

NBS, (2010), Apart from the relative poverty index, other poverty measurement standards are absolute measure, which puts the country's poverty rate at 99.284 million or 60.9 per cent; the dollar per day measure, which puts the poverty rate at 61.2 per cent; and the subjective poverty measure, which puts the poverty level at 93.9 per cent.

NBS (2006) poverty profile for Nigeria: Based on the 2003-04 Nigeria Living Standards Survey (NLSS) estimated the poverty line using the relative measure approaches to poverty line. Average per capita household expenditure was ₦ 35,600 naira. The poverty line was based on 2/3 of the average per capita expenditure or ₦23,733. All persons with per capita expenditure less than this amount are considered poor. Those equal to or above are non-poor. The results of the surveys show that poverty incidence increases with the size of the household. Households with less than five members are likely not to be in poverty. A direct correlation exists between the size of the household and poverty for all years. A Food poor (or extreme poverty) was defined as 1/3 of the average per capita expenditure of ₦ 11,867 Naira. All persons with per capita expenditure less than this amount are considered extremely poor. All persons whose expenditure falls between ₦11,867 and ₦ 23,733 Naira are considered moderately poor. This gave a poverty incidence of 54.4%.

Anakor (2005) using the 1996 National consumer survey data from FOS, derived some poverty lines for Nigeria by urban and rural sectors respectively. The overall poverty lines was estimated at ₦520.00 per head per month or ₦6420.00 per year, for core poor urban, and ₦475.83 per head per month or ₦5709.96 per year, for the core poor rural, and ₦1040.31 per head per month or ₦12,489.96 per year, for moderately poor urban and, ₦951.67 per head per month or ₦11,420.04 per year, for moderately poor rural sectors.

According to Poverty and Agricultural Sector in Nigeria Report (FOS, 1996), it revealed that in 1985, 51.4 percent of the population in the rural areas was poor, it declined to 46.0 percent in 1992 and thereafter increased to 69.8 percent in 1996. On

the other hand, the proportion of the poor in the urban areas was 37.8 percent in 1985, 37.5 percent in 1992 and grew to 58.2 percent in 1996.

Ogwumike and Ekpeyong (1995) using the above approach, computed food poverty line based on 1992 prices to be ₦210.00 per head per month or ₦2,500 per head per year. The overall poverty line (food and non food) was ₦280.00 per head per month or ₦3,360.00 per head per year.

Ogwumike (1987, 1991) using micro data of 1980 household survey conducted in Borno, Imo, and Oyo state and complemented by FOS data, derived some poverty lines for Nigeria. This derivation was based on the weekly requirement of an average of six members in a household. The food poverty line derived was ₦38.00 per head per month or ₦456.00 per head per year. The overall basic needs income poverty line was estimated at ₦47.44 per head per month or approximately ₦569.00 per head per year. And using income per head obtained from the survey, the study estimated that 46million Nigerians were living in poverty as at 1986.

Awa, (1983), Awa further rumbles that up to 95% of this great wealth is controlled by about 0.01 % of the population. In another wider study by the World Bank carried out in 1996 on poverty in Nigeria, they assessed the poverty trend in Nigeria between 1985 and 1992 using two-thirds of mean of household's expenditure as poverty line. The main findings of the study were firstly, poverty was more pronounced in rural than urban area. Secondly, the southern part of the country had less poverty than either the central or northern part of the country, finally, poverty in Nigeria declined between 1985 and 1992 from 36 million out of a 1995 population of 84 million to 34.7 million out of 1992 population of 102 million. The study shows that the mean per capita household expenditure (in 1985 prices) rose from ₦592.81 in 1985/86 to N792.6 in 1992/93. Consequently, the estimated moderate and extreme poverty lines stood at ₦395.41 and ₦197.71 respectively. Moderate poverty was reported to have fallen from 31 percent in 1985/86 to 20.5 percent in 1992/93, while extreme poverty rose marginally from 12 percent in 1985/86 to 13.6 percent in 1992/93. It was shown that incidence and depth of poverty fell nationally between the two periods, poverty severity rose during the period. In addition, the incidence rose in some states such as Kano, Rivers and Sokoto. The severity also rose in states like Borno, Benue, Cross

Rivers, Kano, Kwara, rural Lagos, Plateau and Rivers. The incidence of poverty for all poor in 1992 was 36.4 percent for rural Nigeria and 30.4 percent for urban Nigeria, which indicates that poverty is not seen in the rural but also co-existed in urban cities/areas of Nigeria.

2.5 Poverty Line Axioms

The Poverty Line which specifies the society's minimum standard of living should be fixed across all individuals. In other words, it should be horizontally equitable, which means that all individuals should be treated equally. Since all individuals are different with respect to their basic needs and they live in different geographical regions facing different prices, we cannot and should not have the same Poverty Line for all individuals. In order to achieve horizontal equity, the Poverty Line should be adjusted for the individual circumstances so that all the individuals on the Poverty Line have the same standard of living irrespective of their circumstances.

These circumstances include the fact that individuals vary with respect to their age and sex and, hence their food and non-food requirements are different. For example, children will require less food than adults and women require less food than men in order to maintain an adequate nutritional standard. Thus, the construction of the Poverty Line should take account of different individual needs. This leads us to suggest the following axiom.

Axiom 1: The poverty line should be proportional to individual needs.

If two persons A and B have the same income but A has greater needs than B, then A is poorer than B. Thus, the same Poverty Line should not be applied to both persons; A's Poverty Line should be higher than that of B. If person A has poorer health than person B, then person A has to spend a part of his or her income on medical attention and will thus require greater income in order to maintain the same standard of living.

Axiom 2: If two persons A and B have the same needs and face the same prices, but A has more expensive tastes than B, then A should not have higher poverty line than B.

By this axiom, the difference in individual tastes is a matter of personal choice and should not be a criterion in the measurement of poverty.

Axiom 3: If A enjoys a higher standard of living than B, then the real poverty line for A cannot be higher than that of B.

The above axiom implies that PL is fixed in terms of level of living required so that the consistency criterion is met. This axiom implies that the difference in regional Poverty Lines for persons with the same needs should be entirely attributed to difference in regional costs of living. For example, the richer regions generally have more expensive tastes, which should not entitle them to have a higher real Poverty Line.

Axiom 4: A person on the Poverty Line in period t_1, denoted by z t_1 should have exactly the same standard of living as the person on the Poverty Line in period t_2, denoted by z t2 .

This axiom implies that the Poverty Line should be is fixed over time and adjusted over time by means of the true cost of living index so that the observed differences in Poverty Line measure the real change in the Poverty Line. This means that the standard of living implied by the Poverty Line does not change over time.

Axiom 4: A person on the PL in period t_1, denoted by z t_1 should have exactly the same standard of living as the person on the PL in period t_2, denoted by z t2 .

This axiom implies that the PL should be is fixed over time and adjusted over time by means of the true cost of living index so that the observed differences in PL measure the real change in the PL. This means that the standard of living implied by the PL does not change over time.

2.6 Basic Properties of the Poverty Line

Individual Needs: It has already been pointed out that a person with greater needs will require a greater income than a person with a lesser needs in order to be able to enjoy the same level of living standard. As such, the determination of Poverty Line should take account of individuals' needs. However, the evaluation of individuals needs is very problematic since these needs can vary widely across individuals that it is almost impossible to quantify all of them. In order to solve this problem, the measure will focus on only some of the most important individual needs.

Individuals vary with respect to their age and sex and thus their food and non-food requirements also differ. Children require less food than adults in order to maintain the same nutritional standard while women require less food than men but may require more expenditure on clothing. Thus, a person with greater needs should have a

higher Poverty Line than a person with lesser needs. If person A has poorer health than person B, then person A has to spend a greater part of his or her income on medical attention and will thus require greater income in order to maintain the same standard of living.

Equivalent Adult Scales: Since it is very difficult to measure each individual's consumption separately, surveys typically estimate total household consumption (or income), which then is distributed evenly among household members. Then adult equivalent scales are generally used to take account of the relative needs of individuals of different age and sex within the household. The adult equivalent scale measures the relative income required by households of different composition to maintain the same standard of living. Kakwani takes the view that the estimation of adult equivalent scales from the observed consumption behaviour is not feasible but attempt to take account of individual needs by using the information on calorie requirements, which vary with individuals' age and sex.

Economies of Scale: A household consumes either private goods, which can be attributed to individuals in the household or public goods, where several individuals within the household can consume jointly without jeopardizing the satisfaction derived by other members of the household. For instance, two or more persons can share a refrigerator or a television set obtaining the same satisfaction as a single person using the same facilities, resulting economies of scale. Economies of scale in household consumption generally occur as a result of joint consumption of public good – the doubling of household size does not result in a doubling of consumption expenditure in order to maintain the same standard of living. Thus, the PL should take account of the economies scale in the larger households. Unfortunately, Kakwani and Sajaia point out that there exists no credible method to estimate them.

Regional Costs of Living: Since individuals live in different geographical regions facing different prices, same level of nominal income will buy different level of goods and services. Individuals living in more expensive areas and regions will require more income in order to enjoy the same minimum standard of living and thus should not have the same PL for all regions and areas. Thus, Poverty Line should be adjusted for differences in costs of living across areas and regions.

2.7 Consistency of Poverty Line

Ravallion and Bidani (1994) define a poverty profile to be inconsistent if one of two households deemed to have exactly the same standard of living but located in different regions are classified as poor and the other as not. Thus, consistency requires that the Poverty Line be fixed in terms of the level of living required.

The real Poverty Line is the nominal Poverty Line adjusted for regional differences in the cost of living. In order to maintain consistency, the difference in regional Poverty Lines for people with the same needs should be entirely attributed to differences in regional costs of living. If persons A and B have the same needs and face the same price vectors but living in different regions, they should have exactly the same Poverty Lines. Consistency is an essential requirement of Poverty Lines for without consistency it is impossible to make poverty comparisons across regions.

The poverty line should reflect the consumption patterns of the population

The Poverty Lines should be derived from the basic food and non-food baskets, which reflect the consumption patterns of the poor and the choice of the basic needs basket should take, account the consumption patterns in each region and area. Ravallion and Bidani (1994) call this specificity, which implies that we should have a separate food basket for each area or region. But if we have separate basket for each region, then we may violate the consistency of the Poverty Lines in terms of maintaining a constant standard of living across the regions and area. Thus, there can be a conflict between consistency and specificity. How can we resolve this issue? As a matter of fact, this is the most contentious issue in the specification of Poverty Lines.

The poverty line should be consistent over time: To monitor poverty, we need to have poverty profiles that are comparable over time. The comparability of poverty profiles requires that the minimum standard of living implied by the Poverty Line should be fixed over time. The Poverty Line should change over time only because of changes in prices. This property implies that the Poverty Line should be adjusted over time by means of the true cost of living index, so the observed differences in the Poverty Line measure the real change in the Poverty Line. Thus, consumer price indices play an important role in obtaining Poverty Lines that are consistent over time.

2.8 Different Methods of Estimating Poverty Line

Food Energy Intake Method: The Food Energy Intake method (FEI) estimates the Poverty Line by finding the Consumption expenditure or income level at which food energy intake is just sufficient to meet predetermined food energy requirements. Once this consumption or income level is located, it automatically provides the allowance for both food and non-food consumption. Separate Poverty Lines are computed for groups or regions having similar tastes and preferences and facing uniform prices. Hence, this method does take into account differences in regional cost of living as well as variations in basic needs and preferences, thus meeting the specificity requirement. Poverty Lines using the FEI method can be obtained either by calculating the mean income or expenditure of households whose estimated calorie intakes are approximately equal to the stipulated requirements; or by using the empirical relationship between food energy intakes and consumption expenditure (either regressing intake against consumption and invert the estimated function, or simply regressing consumption expenditure on nutritional intake). India and Pakistan are among the many countries using this method.

According to Kakwani (2002), the main drawback of this measure is that since the regions can differ with respect to their living standard, the food preferences will also differ. Those living in richer regions generally have more expensive tastes and, thus, buy fewer calories with the same food cost, resulting in their PL being higher than that of the poorer region. Thus, it violates the consistency requirement of a poverty line. It may lead to a situation where the richer regions have a higher incidence of poverty than the poorer regions. That is, this method cannot separate the effects of regional costs of living differences from the differences in living standards across the regions.

Cost of Basic Needs Method: The cost of basic needs approach (CBN) estimates the poverty line by computing the cost of a food basket that enables households to meet a predetermined minimum daily nutritional requirement and then adding to this cost an allowance for basic non-food consumption. Three steps are involved in implementing this method: (i) defining a bundle of food items meeting the predetermined minimum daily nutritional requirement, usually in the form of calorie intake; (ii) estimating the cost of this food bundle; and (iii) computing an allowance for non-food items.

Food Poverty Line: This can be determined by two methods: (a) by choosing a commonly consumed and least- cost food bundle that yields the specified calorie requirement, and valuing this at current prices. A food basket derived in that manner does not guarantee that people with food expenditure level equal to the Poverty Line are actually consuming the required minimum nutritional intake because of diverse food preferences. The second approach is to determine the food basket that meets the calorie specification which is actually consumed by "a reference group" (normally "a priori" definition of a poor group) as shown by household consumption surveys. Selecting these households ensures that non-basic food items are not represented in the basket. As the composition of the bundle is based on existing consumption patterns in the study area, the food items included in the basket clearly reflects the tastes, culture, and norms of that particular area. This method requires detailed consumption data including the total food expenditure levels and the quantities of the food items actually consumed. There is also an issue of what prices to be used: the average market prices or the prices paid by the "poor".

Non-food Poverty Line: The method of deriving the non-food Poverty Line is analogous to the method of computing the food Poverty Line, that is, by choosing some non-food items considered essential. However, since there is no absolute standard for minimum non-food requirement similar to that of food that has a standard calorie intake as basis, constructing the non-food Poverty Line remains arbitrary and controversial. Thus, this approach is not used as the Poverty Line should be estimated as objectively as possible so that poverty comparisons can be made over time and across various socioeconomic and demographic groups. Thus Kakwani (2004) proposed to use the Consumer Theory to determine the non-food poverty line.

Subjective Measures of Poverty: Subjective perceptions can be used to measure poverty. Such measures of poverty are based on questions to households about (a) their perceived situation, such as, "Do you have enough?" "Do you consider your income to be very low, rather low, sufficient, rather high, or high?" (b) a judgment about minimum standards and needs, such as, "What is the minimum amount necessary for a family of two adults and three children to get by?" or "What is the minimum necessary for your family?" or (c) poverty rankings in the community, such as "Which groups are most vulnerable in the village?" On the basis of the answers to these questions, poverty lines can be derived. Answers to the second group of

questions could provide a line for different types of reference households, and answers to the first group of questions can be compared with actual income to infer the income level that households judge to be sufficient. This income level could then be used as the poverty line.

Subjective measures can be used not only to assess the situation of a particular household but also to set or inform the choice of poverty lines, equivalence scales, economies of scale, and regional cost-of-living differences. It can also be useful to compare subjective and self-reported measures of well-being to objective measures based on observed income and consumption data.

Self-reported measures have important limitations, however. Subjective measures might reproduce existing discrimination or exclusion patterns if these patterns are perceived as normal in the society. This might be the case in discrimination against girls or other particular groups in society. Subjective assessments could then fail to capture discrimination, which should be addressed by public policy. More generally, the observed perceptions of poverty need not provide a good basis to establish priority public actions. This may be the case if policymakers have a different time horizon or a different understanding of the determinants of social welfare from the population providing the subjective measures of poverty. It might also be the case that people perceive the elderly to be those most in need, but that public policy aimed at improving nutrition practices or providing preventive health care would have a higher impact on poverty. Goedhart and others (1977). Pradhan and Ravallion

2.9 Theories of Poverty in Contemporary Literature

Recent literature on poverty uniformly acknowledges different theories of poverty, but the literature has classified these theories in multiple ways (for example, compare Blank, 2003; Goldsmith and Blakely, 1992; Jennings and Kushnick,1999; Rodgers, 2000; Schiller, 1989; Shaw, 1996). Virtually all authors distinguish between theories that root the cause of poverty in individual deficiencies (conservative) and theories that lay the cause on broader social phenomena (liberal or progressive). Ryan (1976) addresses this dichotomy in terms of "blaming the victim." Goldsmith and Blakely, for example distinguish "Poverty as pathology" from "poverty as incident or accident" and "poverty as structure." Schiller (1989:2-3) explains it in terms of "flawed characters, restricted opportunity, and Big Brother." Jennings (1999) reviews a number of variants on these individual vs. society conceptions, giving emphasis to racial and political dynamics. Rank

is very clear: “the focus on individual attributes as the cause of poverty is misplaced and misdirected.” Structural failings of the economic, political, and social system are causes instead. The various theories are divergent, and each results in a different type of community development intervention strategy.

This first theory of poverty is a large and multifaceted set of explanations that focus on the individual as responsible for their poverty situation. Typically, politically conservative theoreticians blame individuals in poverty for creating their own problems, and argue that with harder work and better choices the poor could have avoided (and now can remedy) their problems. Other variations of the individual theory of poverty ascribe poverty to lack of genetic qualities such as intelligence that are not so easily reversed. The belief that poverty stems from individual deficiencies is old. Religious doctrine that equated wealth with the favour of God was central to the Protestant reformation and blind, crippled, or deformed people were believed to be punished by God for either their or their parents’ sins. With the emergence of the concept of inherited intelligence in the 19th century, the eugenics movement went so far as to rationalize poverty and even sterilization for those who appeared to have limited abilities. Rainwater (1970:16) critically discusses individualistic theories of poverty as a “moralizing perspective” and notes that the poor are “afflicted with the mark of Cain. They are meant to suffer, indeed must suffer, because of their moral failings. They live in a deserved hell on earth.” Rainwater goes on to say that it is difficult to overestimate the extent to which this perspective (incorrectly) under-girds our visions of poverty, including the perspective of the disinherited themselves. Ironically, neo-classical economics reinforces individualistic sources of poverty. The core premise of this dominant paradigm for the study of the conditions leading to poverty is that individuals seek to maximize their own well-being by making choices and investments, and that (assuming that they have perfect information) they seek to maximize their well-being. When some people choose short term and low-payoff returns, economic theory holds the individual largely responsible for their individual choices--for example to forego college education or other training that will lead to better paying jobs in the future.

The economic theory that the poor lack incentives for improving their own conditions is a recurrent theme in articles that blame the welfare system's generosity on the perpetuation of poverty. In a Cato Journal article, economists Gwartney and McCaleb argue that the years of the war on poverty actually increased poverty (adjusted for noncash transfers) among working age adults in spite of unprecedented increases in welfare expenditures. They conclude that "the application of simple economic theory" suggests that the problem lies in the war on poverty programs: They [welfare programs] have introduced a perverse incentive structure, one that penalizes self-improvement and protects individuals against the consequences of their own bad choices. This and similar arguments that cast the poor as a "moral hazard" also hold that the problem of poverty continues to fester not because we are failing to do enough, but because we are doing too much that is counterproductive. Their economic model would solve poverty by assuring that the penalty of poverty was great enough that none would choose it (and welfare would be restricted to the truly disabled or otherwise unable to work). A less widely critiqued version of the individualistic theory of poverty comes from American values of individualism-the Horatio Alger myth that any individual can succeed by skills and hard work, and that motivation and persistence are all that are required to achieve success. Self-help literature reinforces the belief that individuals fail because they do not try hard enough. Frank Bettger (1977:187-8), in the Dale Carnegie tradition, tells how he got a list of self-improvement goals on which to focus and became one of the most successful and highly paid salesmen in America. He goes on to say that anyone can succeed by an easy formula--focused goals and hard work. This is the message of hundreds of self-help books, articles, and sermons. By extension, this literature implies that those who do not succeed must face the fact that they themselves are responsible for their failure. While scientifically it is routine to dismiss the individual deficiency theory as an apology for social inequality, it is easy to see how it is embraced in anti-poverty policy which suggests that penalties and incentives can change behaviour

The second theory of poverty roots its cause in the "Culture of Poverty". This theory is sometimes linked with the individual theory of poverty or other theories to be introduced below, but it recently has become so widely discussed that its special features should not be minimized. This theory suggests that poverty is created by the

transmission over generations of a set of beliefs, values, and skills that are socially generated but individually held. Individuals are not necessarily to blame because they are victims of their dysfunctional subculture or culture. American Sociology has long been fascinated by subcultures of immigrants and ghetto residents as well as the wealthy and powerful. Culture is socially generated and perpetuated, reflecting the interaction of individual and community. This makes the "culture of poverty" theory different from the "individual" theories that link poverty explicitly to individual abilities and motivation. Technically, the culture of poverty is a subculture of poor people in ghettos, poor regions, or social contexts where they develop a shared set of beliefs, values and norms for behaviour that are separate from but embedded in the culture of the main society. Oscar Lewis was one of the main writers to define the culture of poverty as a set of beliefs and values passed from generation to generation. He writes, Once the culture of poverty has come into existence it tends to perpetuate itself. By the time slum children are six or seven they have usually absorbed the basic attitudes and values of their subculture. Thereafter they are psychologically unready to take full advantage of changing conditions or improving opportunities that may develop in their lifetime. Cultures are socialized and learned, and one of the tenants of learning theory is that rewards follow to those who learn what is intended. The culture of poverty theory explains how government antipoverty programs reward people who manipulate the policy and stay on welfare. The underlying argument of conservatives such as Charles Murray in Loosing Ground (1984) is that government welfare perpetuated poverty by permitting a cycle of "welfare dependency" where poor families develop and pass on to others the skills needed to work the system rather than to gain paying employment. This theory of poverty based on perpetuation of cultural values has been fraught with controversy. No one disputes that poor people have subcultures or that the subcultures of the poor are distinctive and perhaps detrimental. The concern is over what causes and constitutes the subculture of poverty. Daniel Patrick Moynihan found the concept particularly applicable to his study of Black poverty in the early 1960s and linked Black poverty to the largely "dysfunctional" Black family found in central cities. Valentine (1968:20) criticizes E. Franklin Frazier, who with Daniel Patrick Moynihan (1965), portrayed the culture of the negro poor as an "immoral chaos brought about by the disintegration of the black folk culture under the impact of urbanization". In other sub-cultural situations the cultural

portrayal of the poor is more sympathetic. For example, many liberal scholars understand the cultural problems that Native Americans face trying to assimilate middle class value systems. Ironically, after a number of generations we recall the "heroic" efforts of Irish or Italian immigrant groups and their willingness to accept hard work and to suffer for long term socio-economic gains; we forget the cultural discrimination they faced for not fitting in during the first generations after they arrived. Today the sub-cultural values for higher education and entrepreneurship among Asian and Indian immigrant groups are prized as an example of how subcultures can work in the favour of groups trying to escape poverty.

Whereas the first "individualistic" theory of poverty is advocated by conservative thinkers and the second is a culturally liberal approach, the third to which we now turn is a progressive social theory. Theorists in this tradition look not to the individual as a source of poverty, but to the economic, political, and social system which causes people to have limited opportunities and resources with which to achieve income and well being. Research and theories in this tradition attempt to redress the problem noted by Rank, Yoon and Hirschl (2003): "Poverty researchers have in effect focused on who loses out at the economic game, rather than addressing the fact that the game produces losers in the first place." The 19th century social intellectuals developed a full attack on the individual theory of poverty by exploring how social and economic systems overrode and created individual poverty situations. For example, Marx showed how the economic system of capitalism created the "reserve army of the unemployed" as a conscientious strategy to keep wages low. Later Durkheim showed that even the most personal of actions (suicide) was in fact mediated by social systems. Discrimination was separated from skill in one after another area, defining opportunity as socially mediated. Taken to an extreme, radical thinkers argued that the system was flawed and should be radically transformed.

Much of the literature on poverty now suggests that the economic system is structured in such as way that poor people fall behind regardless of how competent they may be. Partly the problem is the fact that minimum wages do not allow single mothers or their families to be economically self sufficient .The problem of the working poor is increasingly seen as a wage problem linked to structural barriers preventing poor

families from getting better jobs, complicated by limited numbers of jobs near workers and lack of growth in sectors supporting lower skilled jobs. Interestingly research is showing that the availability of jobs to low income people is about the same as it has been, but wages workers can expect from these jobs have fallen. Fringe benefits including health care and promotions have also become scarce for low skilled workers. Elimination of structural barriers to better jobs through education and training have been the focus of extensive manpower training and other programs, generating substantial numbers of successes but also perceived failures. However, in spite of perceived importance of education, funding per student in less advantaged areas lags that which is spent on richer students, teachers are less adequately trained, books are often out of date or in limited supply, amenities are few, and the culture of learning is under siege. This systemic failure of the schools is thus thought to be the reason poor people have low achievement, poor rates of graduation, and few who pursue higher education (Chubb and Moe, 1996).

A parallel barrier exists with the political system in which the interests and participation of the poor is either impossible or is deceptive. Recent research has confirmed the linkage between wealth and power, and has shown how poor people are less involved in political discussions, their interests are more vulnerable in the political process, and they are excluded at many levels. Coupled with racial discrimination, poor people lack influence in the political system that they might use to mobilize economic benefits and justice.

A final broad category of system flaws associated with poverty relate to groups of people being given a social stigma because of race, gender disability, religion, or other groupings, leading them to have limited opportunities regardless of personal capabilities. No treatment of poverty can be complete without acknowledging that groups against which discrimination is practiced have limited opportunities regardless of legal protections. The process of gaining stronger rights for minorities in poverty is an ongoing one, for which legal initiatives and public policy reform must work with efforts to change public attitudes.

Rural poverty, ghetto poverty, urban disinvestment, Southern poverty, third-world poverty, and other framings of the problem represent a spatial characterization of

poverty that exists separate from other theories. While these geographically based theories of poverty build on the other theories, this theory calls attention to the fact that people, institutions, and cultures in certain areas lack the objective resources needed to generate well being and income, and that they lack the power to claim redistribution. As Shaw (1996:29) points out, "Space is not a backdrop for capitalism, but rather is restructured by it and contributes to the system's survival. The geography of poverty is a spatial expression of the capitalist system."That poverty is most intense in certain areas is an old observation, and explanations abound in the development literature about why regions lack the economic base to compete. Recent explanations include disinvestment, proximity to natural resources, density, diffusion of innovation, and other factors

In a thorough review of the literature on rural poverty, Weber and Jensen (2004) note that most literature finds a "rural differential" in poverty, but that the spatial effect is not as clearly isolated from individual effects as needed for confidence. Goldsmith and Blakely offer a comprehensive perspective on the link between development and poverty in urban contexts. In their book, Separate Societies they argue that the joint processes of movement of households and jobs away from poor areas in central cities and rural regions creates a separation of work, residence, and economic, social and political life. These processes which we already discussed are multiplied by racism and political indifference of the localities in which they flourish.

One theoretical perspective on spatial concentrations of poverty comes from economic agglomeration theory. Usually used to explain the emergence of strong industrial clusters agglomeration shows how propinquity of similar firms attracts supportive services and markets, which further attracts more firms. In reverse, the propinquity of poverty and the conditions leading to poverty or the consequences of poverty (crime and inadequate social services) generate more poverty, while competitive areas attract business clusters, drawing away from impoverished communities. Low housing prices in such locations may attract more poor persons, for example, leading to housing disinvestment by building owners. In a world in which the criteria for investment is "location, location, location," it is not unreasonable to track investment going to neighbourhoods, communities and regions in which there is already substantial investment, while leaving less attractive areas.

A second theoretical insight is from central place theory and related "human ecology" examinations of urban growth that trace the flows of knowledge and capital. As Niles Hansen (1970) points out, rural areas are often the last stop of technologies, and low wages and competitive pricing dominate production. The lack of infrastructure that allows development of human resources limits economic activity that might use these resources. Places left behind experience the largest competition in restructuring of the economy because the jobs in these categories are most likely to move to less developed countries. An increasing body of literature holds that advantaged areas stand to grow more than disadvantaged areas even in periods of general economic growth and that there will be some "trickle-down" but not an equalizing as classical economists would have us believe. A third perspective involves selective out-migration. One part of Wilson's book, The Truly Disadvantaged, holds that the people from ghetto areas with the highest levels of education, the greatest skills, widest world view, and most extensive opportunities were the ones who migrated out of central city locations to other places. In addition, he argued, these departing people also were the community's best role models and were often civic leaders. Rural poverty is similarly attributable to selective out migration. Population density (both low rural density and the negative impact of high density) is another part of a growing body of theory on spatial variables in social science using the tools of GIS to track spatial dynamics of opportunity and poverty (Bradshaw and Muller, 2003).

The previous four theories have demonstrated the complexity of the sources of poverty and the variety of strategies to address it. The final theory of poverty I will discuss is by far the most complex and to some degree builds on components of each of the other theories in that it looks at the individual and their community as caught in a spiral of opportunity and problems, and that once problems dominate they close other opportunities and create a cumulative set of problems that make any effective response nearly impossible (Bradshaw, 2000). The cyclical explanation explicitly looks at individual situations and community resources as mutually dependent, with a faltering economy, for example, creating individuals who lack resources to participate in the economy, which makes economic survival even harder for the community since people pay fewer taxes.

This theory has its origins in economics in the work of Myrdal (1957:23) who developed a theory of "interlocking, circular, interdependence within a process of cumulative causation" that helps explain economic underdevelopment and development. Myrdal notes that personal and community well being are closely linked in a cascade of negative consequences, and that closure of a factory or other crisis can lead to a cascade of personal and community problems including migration of people from a community. Thus the interdependence of factors creating poverty actually accelerates once a cycle of decline is started.

One place where the cycle of poverty is clearly defined is in a book on rural education by Jonathan Sher (1977) in which a focus is on the cycle by which education and employment at the community and individual level interact to create a spiral of disinvestment and decline, while in advancing communities the same factors contribute to growth and well being. For example, at the community level, a lack of employment opportunities leads to outmigration, closing retail stores, and declining local tax revenues, which leads to deterioration of the schools, which leads to poorly trained workers, leading firms not to be able to utilize cutting edge technology and to the inability to recruit new firms to the area, which leads back to a greater lack of employment.

This cycle also repeats itself at the individual level. The lack of employment leads to lack of consumption and spending due to inadequate incomes, and to inadequate savings, which means that individuals can not invest in training, and individuals also lack the ability to invest in businesses or to start their own businesses, which leads to lack of expansion, erosion of markets, and disinvestment, all of which contribute back to more inadequate community opportunities. Health problems and the inability to afford preventive medicine, a good diet, and a healthy living environments become reasons the poor fall further behind. The cycle of poverty also means that people who lack ample income fail to invest in their children's education, the children do not learn as well in poor quality schools and they fall further behind when they go to get jobs. They also are vulnerable to illness and poor medical care.

A third level of the cycle of poverty is the perspective that individual lack of jobs and income leads to deteriorating self-confidence, weak motivation, and depression. The

psychological problems of individuals are reinforced by association with other individuals, leading to a culture of despair, perhaps a culture of poverty under some circumstances. In rural communities this culture of despair affects leaders as well, generating a sense of hopelessness and fatalism among community leaders.

This brief description of the cycle of poverty incorporates many of the previous theories. It shows how people become disadvantaged in their social context which then affects psychological abilities at the individual level. The various structural and political factors in the cyclical theory reinforce each other, with economic factors linked to community and to political and social variables. Perhaps its greatest value is that it more explicitly links economic factors at the individual level with structural factors that operate at a geographical level. As a theory of poverty, the cyclical theory shows how multiple problems cumulate, and it allows speculation that if one of the linkages in the spiral was broken, the cycle would not continue. The problem is that the linkages are hard to break because each is reinforced by other parts of the spiralling system.

This essay started with the premise that the theory or explanation of poverty one holds shapes the type of anti-poverty efforts that are pursued by community developers. The fact that poverty theory addresses individuals, their culture, the social system in which they are embedded, the place in which they live, and the interconnection among the different factors suggests that different theories of poverty look at community needs from quite different perspectives. The diversity and complexity of causes of poverty allow for these multiple points of view. While none are "wrong," it is consequential from a community development perspective which theories are applied to particular anti-poverty efforts. How one frames the question of community development determines who gets what types of service and who gets left out.

However, this essay also argues that the first four theories do not fully explore the relation between individuals and their community in the process of placing people in poverty, keeping them there, and potentially getting them out. The growing realization is that individuals are shaped by their community, and communities are as a consequence shaped by their individual members. The strength of the growing interest in social capital by social scientists following Putnam (2000) points to this

interdependence where individuals through association memberships create communities characterized by more trust and reciprocity, and in these communities with more social capital thousands of small activities are possible that contribute to reversing the spiral of decent into poverty. It is no wonder that communities with strong social capital (or similarly entrepreneurial communities described by Flora and Flora) have been shown to be more resilient to adversity and thus protect their residents from the spiral into poverty that less civic communities experience when facing similar challenges. Similarly, community economic and political systems and institutions reflect community values and respond to the social capital that underlies these values. While reforming social institutions is a policy response to poverty essential in poverty communities, Duncan (1999) concludes her book on rural poverty with the observation that communities which value equality and have narrow gaps of opportunity also have institutions that reflect these values and to a greater degree try to not leave anyone behind too far. She thinks that education is the most important local institution where this dynamic can be reversed in poor communities. Goldsmith and Blakely in their book Separate Societies (1992) make the same type of argument. Policies that build community institutions help to close the gap between poverty and rich communities, rather than many existing policies that widen it.

Increasing the effectiveness of anti-poverty programs requires that those designing and implementing those programs need to not only develop adequate theories of poverty to guide programs, but they must make sure that the community development approaches are as comprehensive as possible.

CHAPTER THREE

3.0 Methodology

This chapter gives detailed background of the methods used in analysis to achieve the objectives of this research work.

3.1 Distribution Fitting

Distribution fitting is the procedure of selecting a statistical distribution that best fits to a data set generated by some random process. In other words, if you have some random data available, and would like to know what particular distribution can be used to describe your data, then distribution fitting is what you are looking for. The principle behind fitting distributions to data is to find the type of distribution (normal, lognormal, gamma, beta, etc) and the value of the parameters (mean, variance, etc) that give the highest probability of producing the observed data. Random factors affect all areas of our life, and businesses striving to succeed in today's highly competitive environment need a tool to deal with risk and uncertainty involved. Using probability distributions is a scientific way of dealing with uncertainty and making informed business decisions. In practice, probability distributions are applied in such diverse fields as actuarial science and insurance, risk analysis, investment, market research, business and economic research, customer support, mining, reliability engineering, chemical engineering, hydrology, image processing, physics, medicine, sociology, demography etc. Probability distributions can be viewed as a tool for dealing with uncertainty. Distributions fitting can be used to perform specific calculations, and apply the results to make well-grounded decisions. However, if you use a wrong tool, you will get wrong results. If you select and apply an inappropriate distribution (the one that doesn't fit to your data well), your subsequent calculations will be incorrect, and that will certainly result in wrong decisions.

In other to fit probability distributions to consumption expenditure, this research work employed easy fit statistical software. Easy fit software is a data analysis and simulation application that allows fitting probability distributions to sample data, it selects the best model, and applies the analysis results to make better decisions. Easy

Fit can be used as a stand-alone Windows application or with Microsoft Excel and other third party Excel-based simulation tools, leaving the complex technical details behind the scenes and enabling you to focus on your business goals. Easy fit combines the classical statistical analysis methods and innovative data analysis techniques to fit a tool of choice for anyone dealing with probability data.

The distributions were selected from non-negative distributions. The selected distributions are: log -normal, log logistic, gamma and frechet distributions. Also Easy Fit estimates the parameters of the distributions using the Maximum Likelihood Estimation method.

Duangkamon C. & William E. (2008) in 'Estimating Income Distributions Using a Mixture of Gamma Densities', Used a sample of Canadian income data, and applied Bayesian inference to estimate gamma mixtures with two and three components. They describe how to obtain a predictive density and distribution function for income and also illustrated the flexibility of the mixture.

The gamma, or Pearson (1895) Type III, distribution has been used to model a wide range of data types in many disciplines, especially in the context of reliability modeling, life testing and fatigue testing. For example, Birnbaum and Saunders (1958) introduced the gamma distribution for modeling the life-length of certain materials, and the use of this distribution for various reliability problems is noted by both Herd (1959) and Drenick (1960). Gupta and Groll (1961) discuss acceptance sampling based on this distribution, and they derive the operating characteristic function, producer's risk, failure rates and minimum sample sizes for this problem.

3.2 Gamma Distribution

The gamma distribution arises in situations where one is concerned about the waiting time for a finite number of independent events to occur, assuming that events occur at a constant rate and chances that more than one event occurs in a small interval of time are negligible. The probability density function of the gamma distribution can be expressed in terms of the parameterized in terms of a shape parameter k and scale parameter θ. Both k and θ will be positive values.

The equation defining the probability density function of a gamma-distributed random variable *x* is

$$f(x;k,\theta) = \frac{1}{\theta^k}\frac{1}{\Gamma(k)}x^{k-1}e^{-\frac{x}{\theta}}$$
$$\text{for } x \geq 0 \text{ and } k,\theta > 0 \qquad 3.2.1$$

The cumulative distribution function is the regularized gamma function

$$F(x;k,\theta) = \int_0^x f(u;k,\theta)\,du = \frac{\gamma\left(k,\frac{x}{\theta}\right)}{\Gamma(k)} \qquad 3.2.2$$

where $\gamma(k, x/\theta)$is the lower incomplete gamma function.

Parameter estimation

Maximum likelihood estimation

The likelihood function for N iid observations (x_1, ..., x_N) is

$$L(k,\theta) = \prod_{i=1}^{N} f(x_i;k,\theta) \qquad 3.2.3$$

from which we calculate the log-likelihood function

$$l(k,\theta) = (k-1)\sum_{i=1}^{N} ln(x_i) - \sum_{i=1}^{N} x_i/\theta - NK\ ln(\theta) - N\ ln\,\Gamma(k) \qquad 3.2.4$$

Finding the maximum with respect to θ by taking the derivative and setting it equal to zero yields the maximum likelihood estimator of the θ parameter:

$$\hat{\theta} = \frac{1}{kN}\sum_{i=1}^{N} x_i \qquad 3.2.5$$

Substituting this into the log-likelihood function gives

$$\ell = (k-1)\sum_{i=1}^{N}\ln(x_i) - Nk - Nk\ln\left(\frac{\sum x_i}{kN}\right) - N\ln[\Gamma(k)] \qquad 3.2.6$$

Finding the maximum with respect to *k* by taking the derivative and setting it equal to zero yields

$$\ln(k) - \psi(k) = \ln\left(\frac{1}{N}\sum_{i=1}^{N} x_i\right) - \frac{1}{N}\sum_{i=1}^{N}\ln(x_i) \qquad 3.2.7$$

where

$$\psi(k) = \frac{\Gamma'(k)}{\Gamma(k)} \qquad 3.2.8$$

is the digamma function..

3. 3 Log Logistic Distribution

The log-logistic distribution is the probability distribution of a random variable whose logarithm has a logistic distribution . It is similar in shape to the lognormal but has heavier tails. Its cumulative distribution function can be written in closed form, unlike that of the log- normal. The log-logistic has been used as a simple model of the distribution of wealth or income in economics, where it is known as the Fisk distribution. Its Gini coefficient is 1 / β. The log-logistic distribution has found use in a variety of disciplines. The log-logistic distribution (known as the Fisk distribution in economics) is a continuous probability distribution for a non-negative . It is used in survival analysis as a parametric model for events whose rate increases initially and decreases later, for example mortality from cancer following diagnosis or treatment. It has also been used in hydrology to model stream flow and precipitation, and in economics as a simple model of the distribution of wealth or income.

The cumulative distribution function is

$$F(x;\alpha,\beta) = \frac{1}{1+(x/\alpha)^{-\beta}}$$

$$= \frac{(x/\alpha)^{\beta}}{1+(x/\alpha)^{\beta}}$$

$$= \frac{x^{\beta}}{\alpha^{\beta}+x^{\beta}} \qquad 3.3.1$$

where x > 0, α > 0, β > 0.

The probability density function is

$$f(x;\alpha,\beta) = \frac{(\beta/\alpha)(x/\alpha)^{\beta-1}}{\left[1+(x/\alpha)^{\beta}\right]^{2}}$$

3.3.2

The parameter $\alpha > 0$ is a scale parameter and is also the median of the distribution. The parameter $\beta > 0$ is a shape parameter. The distribution is unimodal when $\beta > 1$ and its dispersion decrease as β increases.

Parameter estimation

Let $X_1 \ldots X_n$ be an i. i. d. sample from the generalized logistic distribution. Then the log-likelihood is given by

$$I(b, \theta, \sigma; x_{1,\ldots} x_n) = n\ln(b) - n\ln(\sigma) - \frac{1}{\sigma}\sum_i (x_i - \theta) - (b+1)\sum_i \ln\left(1 + e^{-\frac{1}{\sigma}(\infty_i - \theta)}\right) \quad 3.3.3$$

A closed-form expression for estimating *b* is as follows

$$\hat{b} = \frac{n}{\sum_i ln\left(1+e^{-\frac{1}{\sigma}(\infty_i - \theta)}\right)}$$

3.3.4

Plugging in this estimator into the log-likelihood gives the concentrated log-likelihood

$$l_c(\theta, \sigma_i, x_{1,}, \ldots, x_n) = \frac{n\theta}{\sigma} - \sum_i ln\left(1 + e^{-\frac{1}{\sigma}(\infty_i - \theta)}\right) - nln\sum_i ln\left(1 + e^{-\frac{1}{\sigma}(\infty_i - \theta)}\right) + H(\sigma, x)$$

3.3.5

with *H* a function not depending on θ or *b*. The concentrated log-likelihood function is maximized for $\theta \to -\infty$ (Zelterman (1987) p.180). That means the concentrated log-likelihood diverges to infinity and the global maximum is not a consistent estimator of the parameters under consideration. This is a very interesting behaviour which results from introducing a scale parameter and a shape parameter. There is for example no equivalent problem in the location-scale model of the usual logistic distribution.

3.4 Lognormal Distribution

A log-normal distribution is a probability distribution of a random variable whose logarithm is normally distributed. If *X* is a random variable with a normal distribution, then $Y = \exp(X)$ has a log-normal distribution; likewise, if *Y* is log-normally distributed, then $X = \log(Y)$ has a normal distribution. The log-normal distribution is the distribution of a random variable that takes only positive real values, like in

finance. The distribution is occasionally referred to as the Galton distribution or Galton's distribution, after Francis Galton, and other names such as McAlister, Gibrat and Cobb–Douglas been associated. Lognormal distribution is the maximum entropy distribution for a random variate, X for which the mean and variance of ln(X) is fixed.

Probability density function

The probability density function of a log-normal distribution is:

$$f_X(x;\mu,\sigma) = \frac{1}{x\sigma\sqrt{2\pi}}\, e^{-\frac{(\ln x-\mu)^2}{2\sigma^2}}, \quad x > 0 \qquad 3.4.1$$

This follows by applying the change of variable rules on the density function of a normal distribution.

Cumulative distribution function

The cumulative distribution function is

$$F_x(x;\mu,\sigma) = \tfrac{1}{2} erfc\left[\tfrac{lnx-\mu}{\sigma\sqrt{2}}\right] = \Phi\left(\tfrac{lnx-\mu}{\sigma}\right) \qquad 3.4.2$$

Where erfc is the complementary error function, and Φ is the cumulative distribution function of the normal standard distribution.

Parameter estimation

For determining the maximum likelihood estimators of the log-normal distribution parameters μ and σ, we can use the same procedure as for the normal distribution. To avoid repetition, we observe that

$$f_L(x;\mu,\sigma) = \prod_{i=1}^{n}\left(\frac{1}{x_i}\right) f_N(\ln x;\mu,\sigma) \qquad 3.4.3$$

where by f_L we denote the probability density function of the log-normal distribution and by f_N that of the normal distribution. Therefore, using the same indices to denote distributions, we can write the log-likelihood function thus:

$$\begin{aligned}\ell_L(\mu,\sigma|x_1,x_2,\ldots,x_n) &= -\sum_k \ln x_k + \ell_N(\mu,\sigma|\ln x_1,\ln x_2,\ldots,\ln x_n)\\ &= \text{constant} + \ell_N(\mu,\sigma|\ln x_1,\ln x_2,\ldots,\ln x_n). \qquad 3.4.4\end{aligned}$$

Since the first term is constant with regard to μ and σ, both logarithmic likelihood functions, ℓ_L and ℓ_N, reach their maximum with the same μ and σ. Hence, using the

formulas for the normal distribution maximum likelihood parameter estimators and the equality above, we deduce that for the log-normal distribution it holds that

$$\hat{\mu} = \frac{\sum_k \ln x_k}{n}, \hat{\sigma}^2 = \frac{\sum_k (\ln x_k - \hat{\mu})^2}{n}.$$

3.5 Fréchet distribution

The Fréchet distribution is a special case of the generalized extreme value distribution. It has the cumulative distribution function

$$Pr(X \leq x) = e^{-x^{-\alpha}} \; if \; x > 0$$

where α>0 is a shape parameter. It can be generalised to include a location parameter *m* (the minimum) and a scale parameter *s*>0 with the cumulative distribution function

$$Pr(X \leq x) = e^{-\left(\frac{x-m}{s}\right)^{-\alpha}} \; if \; x>m$$

Parameter Estimation

If *x1, x2,....xn* is a random sample from the Exponentiated Frechet distribution GF $(\alpha, \lambda, \sigma)$, then the likelihood function corresponding to this sample is given by

$$\prod_{i=1}^{n} f(x_i, \alpha, \lambda, \sigma) = \prod_{i=1}^{n} \left[\alpha\lambda\sigma^{\lambda} \left[1 - \exp\left\{ -\left(\frac{\sigma}{x_i}\right)^{\lambda} \right\} \right]^{\alpha-1} x_i^{-(\lambda+1)} \exp\left\{ -\left(\frac{\sigma}{x_i}\right)^{\lambda} \right\} \right] \quad 3.5.3$$

The log likelihood function is

$$\ln L = n\ln(\alpha\lambda) + n\lambda \ln\sigma + (\alpha-1)\sum_{i=1}^{n} \ln\left[1 - \exp\left\{ -\left(\frac{\sigma}{x_i}\right)^{\lambda} \right\} \right] - \left[(1+\lambda)\sum_{i=1}^{n} \ln x_i + \sum_{i=1}^{n} \left(\frac{\sigma}{x_i}\right)^{\lambda} \right] \quad 3.5.4$$

When the parameter λ is known, we differentiate the log likelihood function with respect to α and σ respectively to obtain the likelihood equations

Therefore

$$\frac{\partial \ln L}{\partial \alpha} = \frac{n}{\alpha} + \sum_{i=1}^{n} \ln\left[1 - \exp\left\{-\left(\frac{\sigma}{x_i}\right)\right\}\right] = 0 \qquad 3.5.5$$

And

$$\frac{\partial \ln L}{\partial \sigma} = \frac{n}{\sigma} + (\alpha - 1)\sum_{i=1}^{n} \frac{\exp\left\{-\left(\frac{\sigma}{x_i}\right)\right\}\left(\frac{1}{x_i}\right)}{\left[1 - \exp\left\{-\left(\frac{\sigma}{x_i}\right)\right\}\right]} - \sum_{i=1}^{n}\left(\frac{1}{x_i}\right) = 0 \qquad 3.5.6$$

Then, the maximum likelihood estimator of α as a function of σ is obtained from (3) as

$$\hat{\alpha}(\sigma) = \frac{-n}{\sum_{i=1}^{n} \ln\left[1 - \exp\left[-\left(\frac{\sigma}{x_i}\right)\right]\right]} \qquad 3.5.7$$

Substitute from (5) in (4) and solve for σ, we obtain

$$\frac{n}{\hat{\sigma}} + (\hat{\alpha}(\sigma) - 1)\sum_{i=1}^{n} \frac{\exp\left\{-\left(\frac{\hat{\sigma}}{x_i}\right)\right\}\left(\frac{1}{x_i}\right)}{\left[1 - \exp\left\{-\left(\frac{\hat{\sigma}}{x_i}\right)\right\}\right]} - \sum_{i=1}^{n}\left(\frac{1}{x_i}\right) = 0 \qquad 3.5.8$$

We apply iterative procedure to find the solution of (6), once we obtain $\hat{\sigma}$, The maximum likelihood estimators of a can be obtained from (5).

3.6 Goodness of Fit Tests

The goodness of fit (GOF) tests measures the compatibility of a random sample with a theoretical probability distribution function. In other words, these tests show how well the distribution selected fits a given data set. The general procedure consists of defining a test statistic which is some function of the data measuring the distance between the hypothesis and the data, and then calculating the probability of obtaining

data which have a still larger value of this test statistic than the value observed, assuming the hypothesis is true.

For the purpose of this work, we choose Kolmogorov-Smirnov test statistic because it is an exact test (the chi-square goodness-of-fit test depends on an adequate sample size for the approximations to be valid) and also the Anderson-Darling test is only available for a few specific distributions.

Kolmogorov-Smirnov Test

This test is used to decide if a sample comes from a hypothesized continuous distribution. It is based on the empirical cumulative distribution function (ECDF). Assume that we have a random sample x_1, ... , x_n from some distribution with CDF $F(x)$. The empirical CDF is denoted by

$$F_n(X) = \frac{1}{n} \cdot [Number\ of\ observations \leq x] \quad 3.6.1$$

Definition

The Kolmogorov-Smirnov statistic (D) is based on the largest vertical difference between the theoretical and the empirical cumulative distribution function:

$$D = \max_{0 \leq x \leq 1} \left(F(x_i) - \frac{i-1}{n}, \frac{i}{n} - F(x_i) \right) \quad 3.6.2$$

i= 1, 2,…,n. If the observed maximum departure d is small, then the assumed F(x) may be reasonable as that distribution that generated the data. But if this d is "large" then it is unlikely that F(x) is the underlying data distribution. The critical region for the KS test is d ≥ CV (α , n) and the probability of d ≥ CV (α , n) is α.

Hypothesis Testing

The null and the alternative hypotheses are:

H_0: the data follow the specified distribution;

H_A: the data do not follow the specified distribution.

The hypothesis regarding the distributional form is rejected at the chosen significance level if the test statistic, D, is greater than the critical value obtained from a table. The

fixed values of (0.01, 0.05 etc.) are generally used to evaluate the null hypothesis (H_0) at various significance levels. A value of 0.05 is typically used for most applications, however, in some critical industries; a lower value may be applied. The standard tables of critical values used for this test are only valid when testing whether a data set is from a completely specified distribution. If one or more distribution parameters are estimated, the results will be conservative: the actual significance level will be smaller than that given by the standard table, and the probability that the fit will be rejected in error will be lower.

3.7 Poverty Line Estimation

A poverty line typically specifies the income (or level of spending) required for purchasing a bundle of essential goods (typically food, clothing, shelter, water, electricity, schooling, and reliable healthcare). Identifying the poor as those with income (or expenditures) below a given line brings clarity and focus to policy making and analysis. Having a poverty line allows experts to count the poor, target resources, and monitor progress against a clear benchmark. Communicating the extent of poverty becomes easier, and explaining the notion of deprivation simpler.In determining the poverty line, we normally consider the two concepts of poverty; absolute and relative poverty. Absolute poverty describes a situation where an individual is unable to meet the subsistence basic needs. This implies that what is meant for somebody to be poor does not change with variation of time and space even when the society becomes richer or poorer. But for the relative concept, what is meant for somebody to be poor can change with variation in time and space as the society becomes richer or poorer, since it reflects the standard of living for the society as a whole.

By using the median of the per capita expenditure, the steps for computing this line are outlined below:

a) Aggregate the food expenditures
b) Aggregated the non-food expenditure
c) Obtain total household expenditure (Food + Non-Food),

d) Compute per capita household expenditure: Total household expenditure divided by the household size. All persons with per capita expenditure less than the median of per capita expenditure are considered poor and otherwise, non-poor.

3.8 Poverty distribution

As mentioned earlier, Foster, Greer, and Thorbecke index (1984) and reviewed by World Bank (1990) will be applied for determination of distribution of poverty for sectors as well as the country as a whole. The formulae is given by

$$P(\alpha) = \frac{1}{N}\sum_{1}^{q}\left(\frac{Z-Y_i}{Z}\right)^{\alpha} \qquad 3.8.1$$

Where α is the FGT parameter, N is the population size, Z is the poverty line, q is the number of persons / households below the poverty line, and Y_i the expenditure of the household, and α takes the values 0, 1, and 2, depending on the degree of concern about poverty. By increasing the value of α, the "aversion "to poverty as measured by the index, is increased. Where there is no aversion to poverty, α = 0, the index is simply

$$P(0) = \frac{1}{N}\sum I = \frac{q}{N} \qquad 3.8.2$$

Which is equal to the poverty headcount ratio, the index measures the incidence of poverty. As mentioned above, poverty headcount ratio expresses poverty in a single index. It measures the proportion of the population that is counted as poor.

If the degree of aversion to poverty is increased such that

α = 1, the index becomes

$$P(1) = \frac{1}{N}\sum_{1}^{q}\left(\frac{Z-Y_i}{Z}\right) \qquad 3.8.3$$

The above index measures the depth of poverty and is referred to as the income gap measure. If α =2, the index allows for concern about the poorest of the poor through

attaching greater weight to the poverty of the poorest than those jus below the poverty line. This is done by squaring the income gap to capture the severity of poverty.

$$P(2) = \frac{1}{N}\sum\left(\frac{Z-Y_i}{Z}\right)^2$$

3.8.4

Another advantage of FGT index is that overall poverty can be expressed as the sum of groups poverty weighted by the population share of each of each group thus,

$$P(\alpha) = \sum K_j P\alpha_j,$$

3.8.5

where j = 1, 2…m groups, k_J is the population share of each group, and $P\alpha_j$ is the poverty measures for each group. The contribution of each group, C_j to the overall poverty can then be calculated.

3.9: Sampling distribution of the difference between two proportions

The sampling distribution of the difference between the two proportions $\hat{P}_1 - \hat{P}_2$, is approximately normal, with mean $\mu_{\hat{P}_1-\hat{P}_2}$ = *p1-p2*. When testing a hypothesis made about two population proportions, the null hypothesis is p1= p2. There is no need to estimate the individual parameters p1and p2, but we can estimate their common value with the pooled sample proportion. Weighted estimate of p1and p2 is

$$\bar{P} = \frac{x_1+x_2}{n_1+n_2}$$

3.9.1

and the standard deviation

$$\boldsymbol{\sigma_{\hat{P}_1-\hat{P}_2}} = \sqrt{\frac{\hat{p}\hat{q}}{n_1} + \frac{\hat{p}\hat{q}}{n_2}} \qquad 3.9.2$$

The test statistic for two proportions with H0: p1 = p2 is

$$Z = \frac{\hat{P}_1 - \hat{P}_2}{\sqrt{\frac{\hat{p}\hat{q}}{n_1} + \frac{\hat{p}\hat{q}}{n_2}}} \qquad 3.9.3$$

Disparity between the highest poor state and the lowest poor state was checked. This was achieved by using the Z test.

Because of the central limit theorem, many test statistics are approximately normally distributed for large samples. For each significance level, the Z-test has a single critical value (for example, 1.96 for 5% two tailed) which makes it more convenient than the Student's t-test which has separate critical values for each sample size. Therefore, many statistical tests can be conveniently performed as approximate Z-tests if the sample size is large or the population variance known. If the population variance is unknown (and therefore has to be estimated from the sample itself) and the sample size is not large, the Student t-test may be more appropriate. If T is a statistic that is approximately normally distributed under the null hypothesis, the next step in performing a Z-test is to estimate the expected value θ of T under the null hypothesis, and then obtain an estimate s of the standard deviation of T. We then calculate the standard score $Z = (T - \theta) / s$, from which one-tailed and two-tailed p-values can be calculated as $\Phi(-|Z|)$ and $2\Phi(-|Z|)$, respectively, where Φ is the standard normal cumulative distribution function.

Therefore, with the assumption of large sample size, P value less than .05 will show that there is disparity between the poor and the non poor.

3.10 Bootstrapping

In poverty analysis, most of the attention focuses on the identification and aggregation of problems. Statistical inference for poverty measures on the other hand is widely ignored. Conclusions about poverty however are typically based on information obtained from sample surveys. These conclusions are subject to sampling and non sampling errors. Statistical inference deals with sampling errors and allows us to determine to what extent the estimated poverty measures represent the true population

parameters. Poverty indices are complex in nature and this would not make for easy analytic solution of statistical distribution of their generalized estimators even when the estimators of the base parameters of income / expenditure are known or assumed. Alternative numerical solution is possible using bootstrapping simulation experiment. Bootstrapping technique was invented by Bradley Efron (1979, 1981, 1982) and further developed by Efron and Tibshirani (1993). "Bootstrap" means that one available sample gives rise to many others by resampling (a concept reminiscent of pulling yourself up by your own bootstrap). While the original objective of cross-validation is to verify replicability of results and that of Jack knife is to detect outliers, Efron (1981, 1982) developed bootstrap with inferential purposes.

Bootstrapping is a statistical method for estimating the sampling distribution of an estimator by sampling with replacement from the original sample, most often with the purpose of deriving robust estimates of standard errors and confidence intervals of a population parameter like a mean, median, proportion, odds ratio, correlation coefficient or regression coefficient.. It may also be used for constructing hypothesis tests. Bootstrapping is most useful as an alternative to parametric estimates when the assumptions of those methods are in doubt (as in the case of regression models with heteroscedastic residual fit to small samples), or where parametric inference is impossible or requires very complicated formulas for the calculation of standard errors (as in the case of computing confidence intervals for the median, quartiles, and other percentiles). Bootstrap is generally useful for estimating the distribution of a statistic (e.g. mean, variance) without using normal theory (e.g. z-statistic, t-statistic). Bootstrap comes in handy when there is no analytical form or normal theory to help estimate the distribution of the statistics of interest, since bootstrap method can apply to most random quantities, e.g., the ratio of variance and mean Resampling stats for excel was used in this research work to perform the bootstrap simulation.

The poverty incidence P(0) $= \frac{q}{N}$ using both median per capita expenditure and two – third mean per capita expenditure were calculated from the original data, 16716 household. We first resample the data to obtain a bootstrap resample from the per capita expenditure data of size 10,000 households and P (0) $= \frac{q}{N}$ were calculated for the 10,000 simulated samples for household expenditure.

Repeat and score the re sampled per capita expenditure data using 1000 iterations to produce the biased estimates of the statistics. From these statistics, we compared the precision of the median per capita and two-third of mean per capita expenditure respectively. All these were obtained using Resampling Stats for Excel statistical package.

CHAPTER FOUR

ANALYSIS AND RESULTS

4.0 Introduction

In this chapter, we discus the results of the analysis. This include the result of the distribution fitting, poverty line estimation, distribution of poverty and bootstrap simulation.

4.1 Distribution Fitting

Table 4.1 shows the fitted distributions and their parameter estimates. It shows the frechet, Gamma, log logistic and lognormal distributions and their respective shape and scale parameter estimates.

Table 4.2A - 4.2D shows goodness of fit details for all the four non-negative distributions fitted to per capita expenditure. All the four distributions fitted to the expenditure data, but among them (frechet, gamma, log logistic, and lognormal), log logistic distribution with parameter estimates (α=1.0452, β=3169.2) and (p-value < 0.0000014805) performed best, lognormal distribution with parameter estimates (□=1.5299 □=8.1028) and p-value < 0.00014853, ranked second. Frechet distribution with parameter estimates (□□= 0.75171 □□= 1485.7) and p-value = 0 ranked third and Gamma distribution with parameter estimates □□= 0.01408 □□= 3.5962 X 10^6 and p-value = 0 ranked fourth.

Table 4.3 also presents the descriptive statistics for fitting the distributions to per capita expenditure in Nigeria. The table shows the range, mean, variance, standard deviation, Coefficient of variation, Standard Error, skewness and Excess kurtosis for per capita expenditure. The table also presents the minimum and maximum values and the percentiles. Looking at the Minimum and Maximum values, the values that are unexpectedly large and small. There is also positive skewness as well as high peakedness in the expenditure.

Figures 4.1-4.4 was used to further explain the descriptive statistics as well as view the distribution of expenditure data. Figures 4.1 and 4.2 shows the log logistic and

lognormal distribution. Figures 4.3 and 4.4 also shows the frechet and gamma distributions respectively.

Table 4.4 shows the frequency distribution of per capita expenditure. The table presents the bin, frequency and cumulative percentage of per capita expenditure.

Table 4.1 : Fitted Distributions and their parameter estimates

#	**Distribution**	**Parameters**
1	Frechet	□□= 0.75171 □□= 1485.7
2	Gamma	□□= 0.01408 □□= 3.5962 X 10^6
3	Log-Logistic	□=1.0452 □=3169.2
4	Lognormal	□=1.5299 □=8.1028

□□is a scale parameter, □□is a shape parameter, and □□is a location parameter.

Table 4.2A : Goodness of Fit details for Log-Logistic distribution

Kolmogorov-Smirnov					
Sample Size Statistic P-Value Rank	16710 0.01824 1.4805×10^{-5} 1				
□□□□level of significance)	0.2	0.1	0.05	0.02	0.01
Critical Value	0.0083	0.00946	0.01051	0.01174	0.0126
Reject?	Yes	Yes	Yes	Yes	Yes

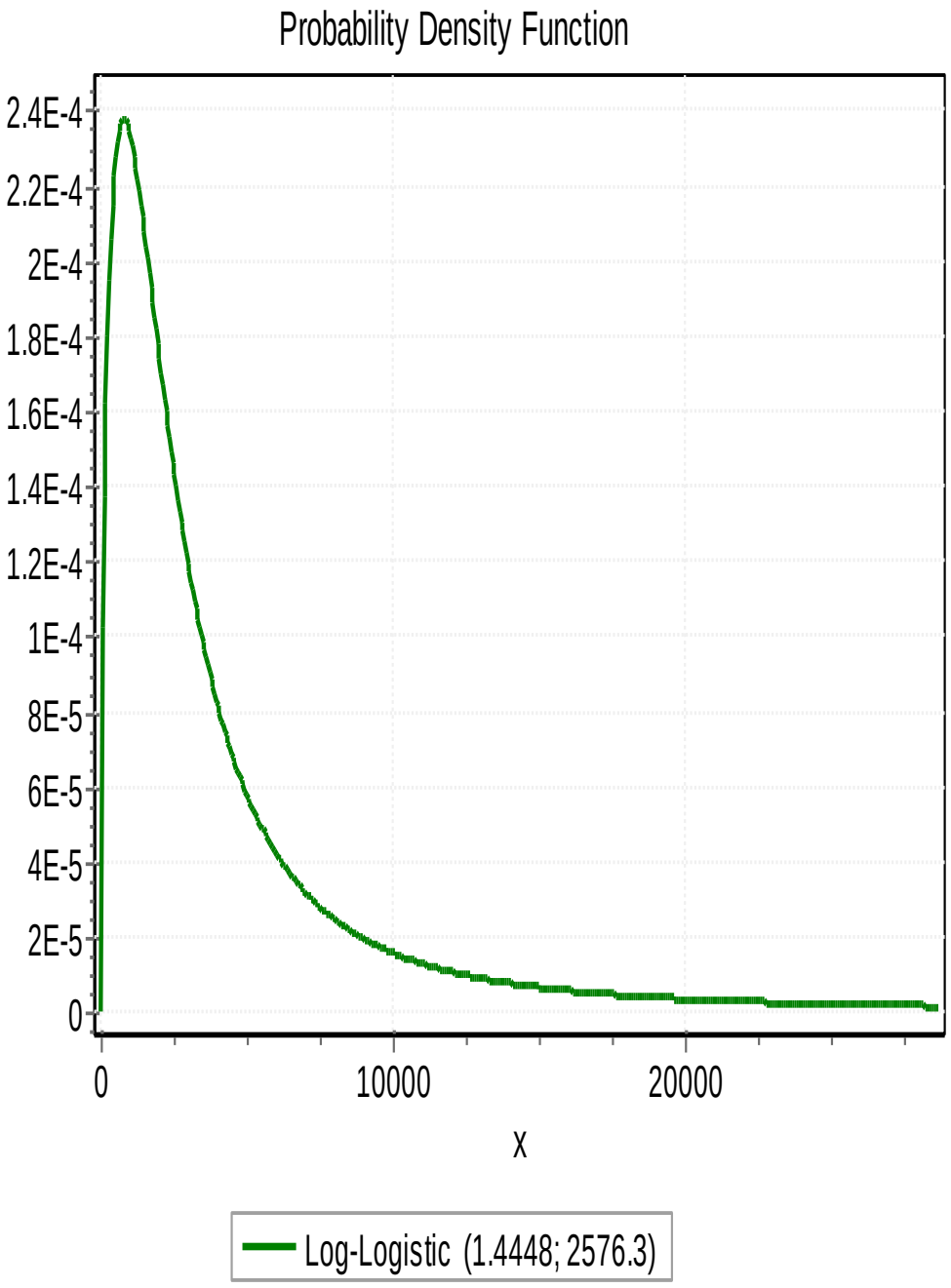

Figure 4.1: PROBABILITY DENSITY FUNCTION FOR LOG LOGISTIC DISTRIBUTION

Table 4.2B: Goodness of fit details for lognormal distribution

Kolmogorov-Smirnov					
Sample Size Statistic P-Value Rank	16710 0.02054 $1.4853 X10^{-6}$ 2				
□□□level of significance)	0.2	0.1	0.05	0.02	0.01
Critical Value	0.0083	0.00946	0.01051	0.01174	0.0126
Reject?	Yes	Yes	Yes	Yes	Yes

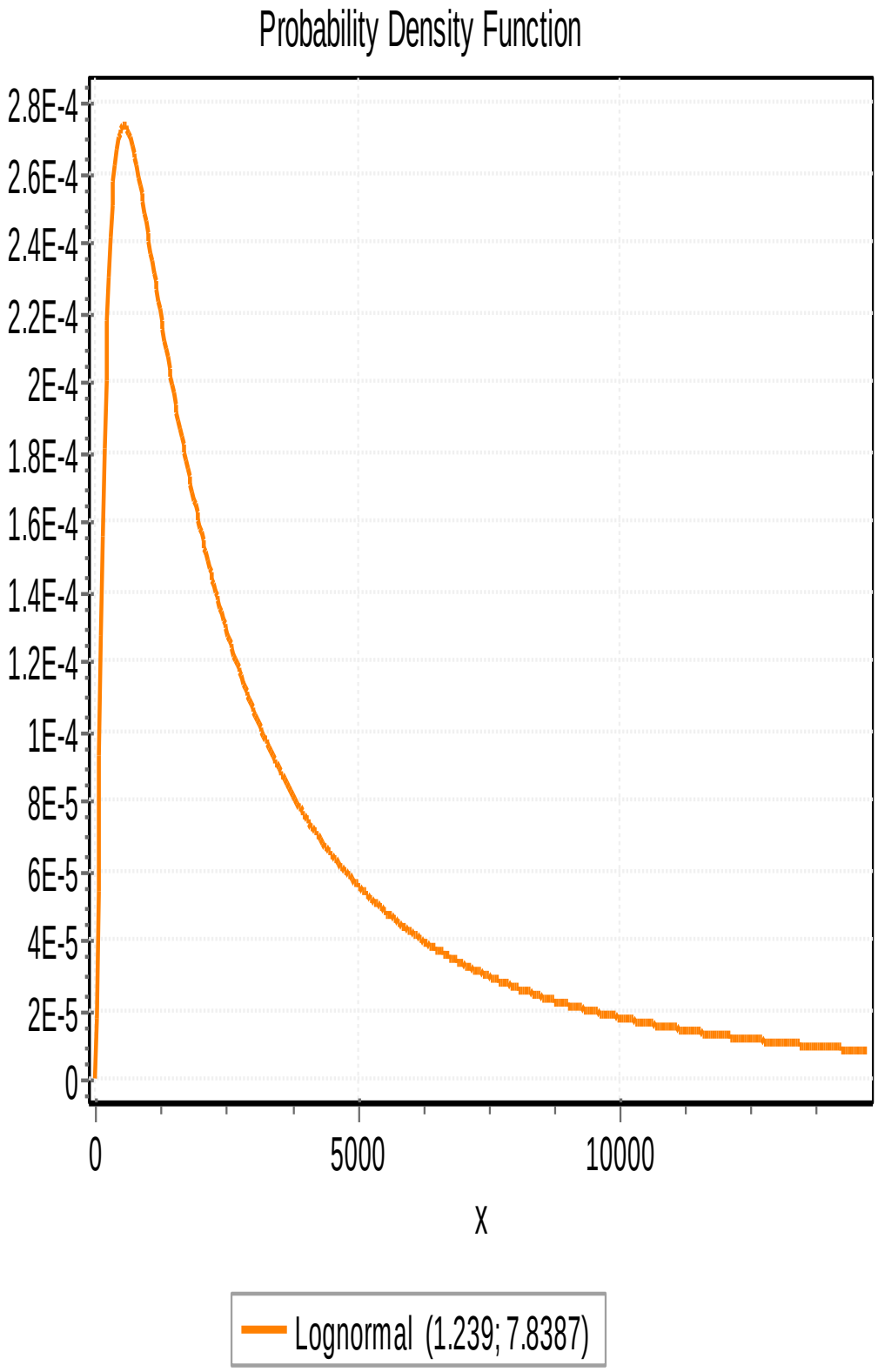
Probability Density Function
2.8E-4
2.6E-4
2.4E-4
2.2E-4
2E-4
1.8E-4
1.6E-4
1.4E-4
1.2E-4
1E-4
8E-5
6E-5
4E-5
2E-5
0
0
5000
10000
X
Lognormal (1.239; 7.8387)

Figure 4.2: PROBABILITY DENSITY FUNCTION FOR LOGNORMAL DISTRIBUTION

Table 4.2C : Goodness of Fit details for Frechet distribution

Kolmogorov-Smirnov					
Sample Size Statistic P-Value Rank	16710 0.08516 0 3				
□□□level of significance)	0.2	0.1	0.05	0.02	0.01
Critical Value	0.0083	0.00946	0.01051	0.01174	0.0126
Reject?	Yes	Yes	Yes	Yes	Yes

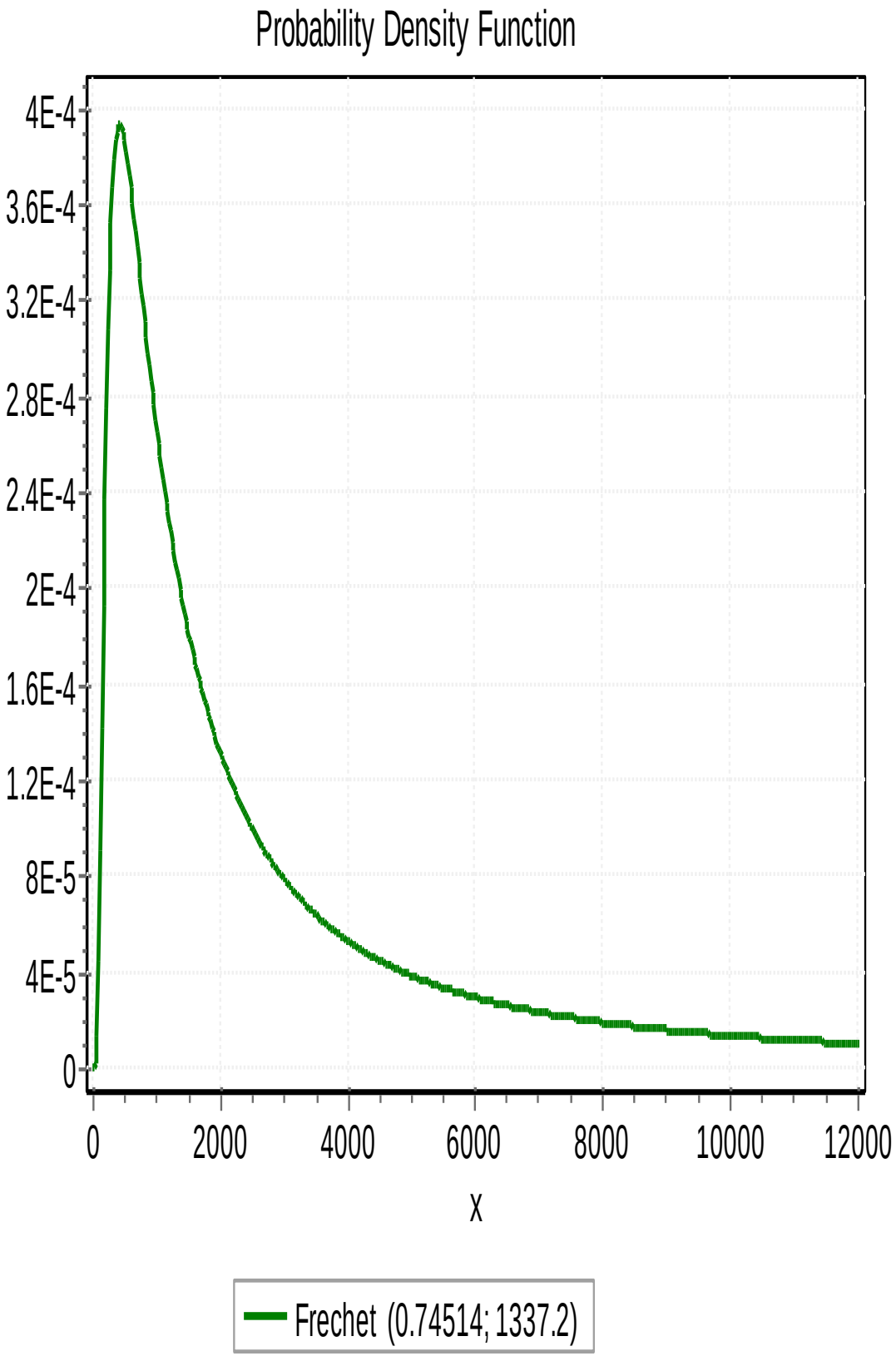
Probability Density Function
4E-4
3.6E-4
3.2E-4
2.8E-4
2.4E-4
2E-4
1.6E-4
1.2E-4
8E-5
4E-5
0
0
2000
4000
6000
8000
10000
12000
X
Frechet (0.74514; 1337.2)

Figure 4.3: PROBABILITY DENSITY FUNCTION FOR FRECHET DISTRIBUTION

Table 4.2D : Goodness of Fit details for Gamma distribution

Kolmogorov-Smirnov					
Sample Size Statistic P-Value Rank	16710 0.09731 0 7				
□□□level of significance)	0.2	0.1	0.05	0.02	0.01
Critical Value	0.0083	0.00946	0.01051	0.01174	0.0126
Reject?	Yes	Yes	Yes	Yes	Yes

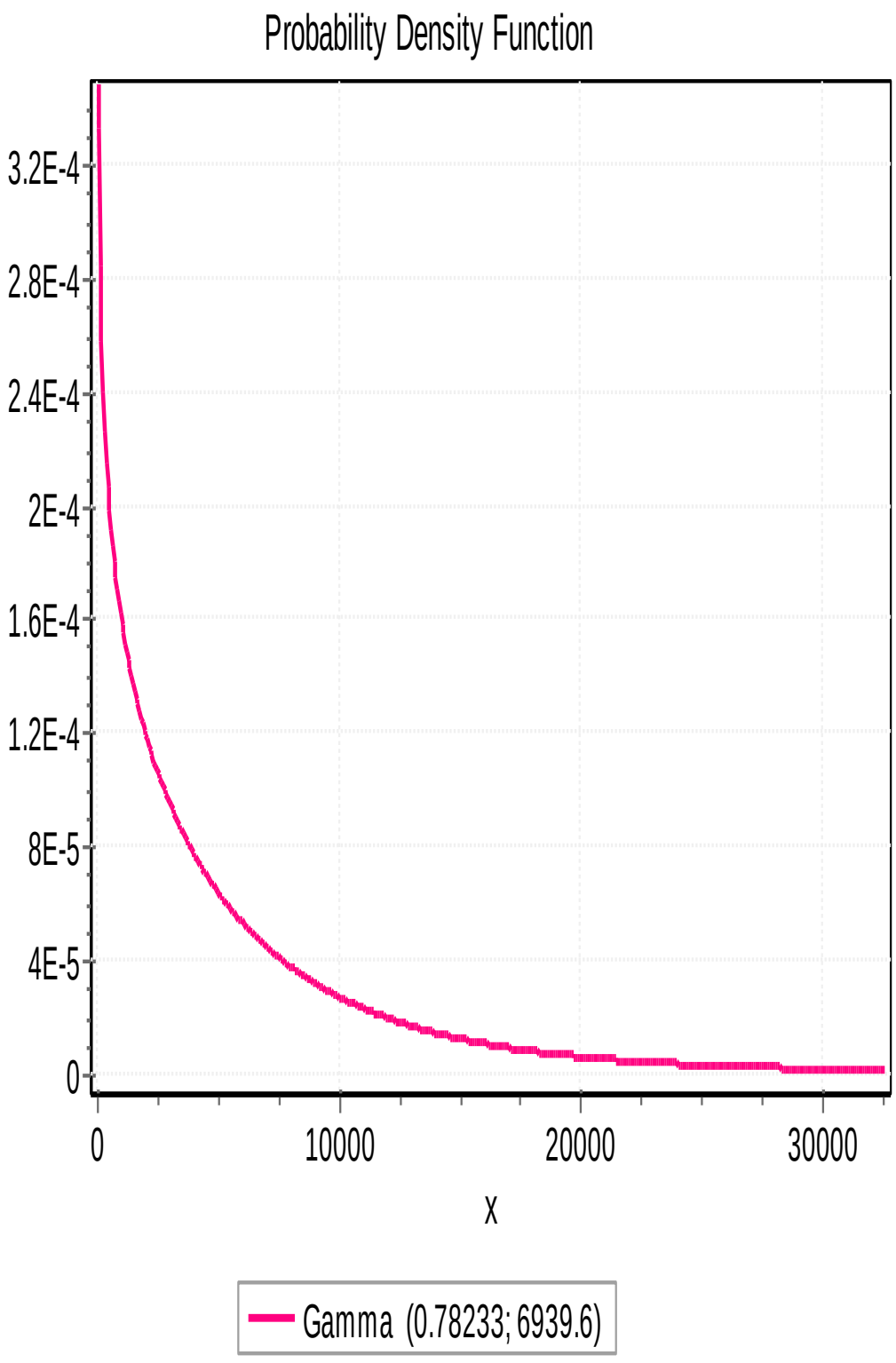

Figure 4.4: PROBABILITY DENSITY FUNCTION FOR GAMMA DISTRIBUTION

Table 4.3: Descriptive Statistics for per capita expenditure in Nigeria

Statistic	Value	Percentile	Value
Sample Size	16710	Min	0
Range	8.5764×10^5	5%	333.33
Mean	5420.6	10%	550
Variance	2.0461×10^8	25% (Q1)	1166.7
Std. Deviation	14304.0	50% (Median)	2550
Coef. of Variation	2.6389	75% (Q3)	5750
Std. Error	110.66	90%	11700
Skewness	28.321	95%	18000
Excess Kurtosis	1286.6	Max	8.5764×10^5

Q1 =25th percentile, Q2 = median, Q3 = 75th percentile

Table 4.4: Frequency Distribution of per capita expenditure

Bin	*Frequency*	*Cumulative %*	*Bin*	*Frequency*	*Cumulative %*
1000	3651	21.85%	5000	8304	49.70%
5000	8304	71.55%	1000	3651	71.55%
10000	2697	87.69%	10000	2697	87.69%
15000	923	93.21%	15000	923	93.21%
20000	462	95.98%	20000	462	95.98%
25000	220	97.29%	25000	220	97.29%
30000	143	98.15%	30000	143	98.15%
35000	81	98.64%	35000	81	98.64%
40000	44	98.90%	75000	67	99.04%
50000	63	99.28%	50000	63	99.41%
75000	67	99.68%	40000	44	99.68%
100000	27	99.84%	100000	27	99.84%
120000	10	99.90%	120000	10	99.90%
150000	3	99.92%	200000	6	99.93%
200000	6	99.95%	150000	3	99.95%
250000	1	99.96%	500000	3	99.97%
300000	0	99.96%	1000000	3	99.99%
500000	3	99.98%	250000	1	99.99%
550000	1	99.98%	550000	1	100.00%
1000000	3	100.00%	300000	0	100.00%
More	0	100.00%	More	0	100.00%

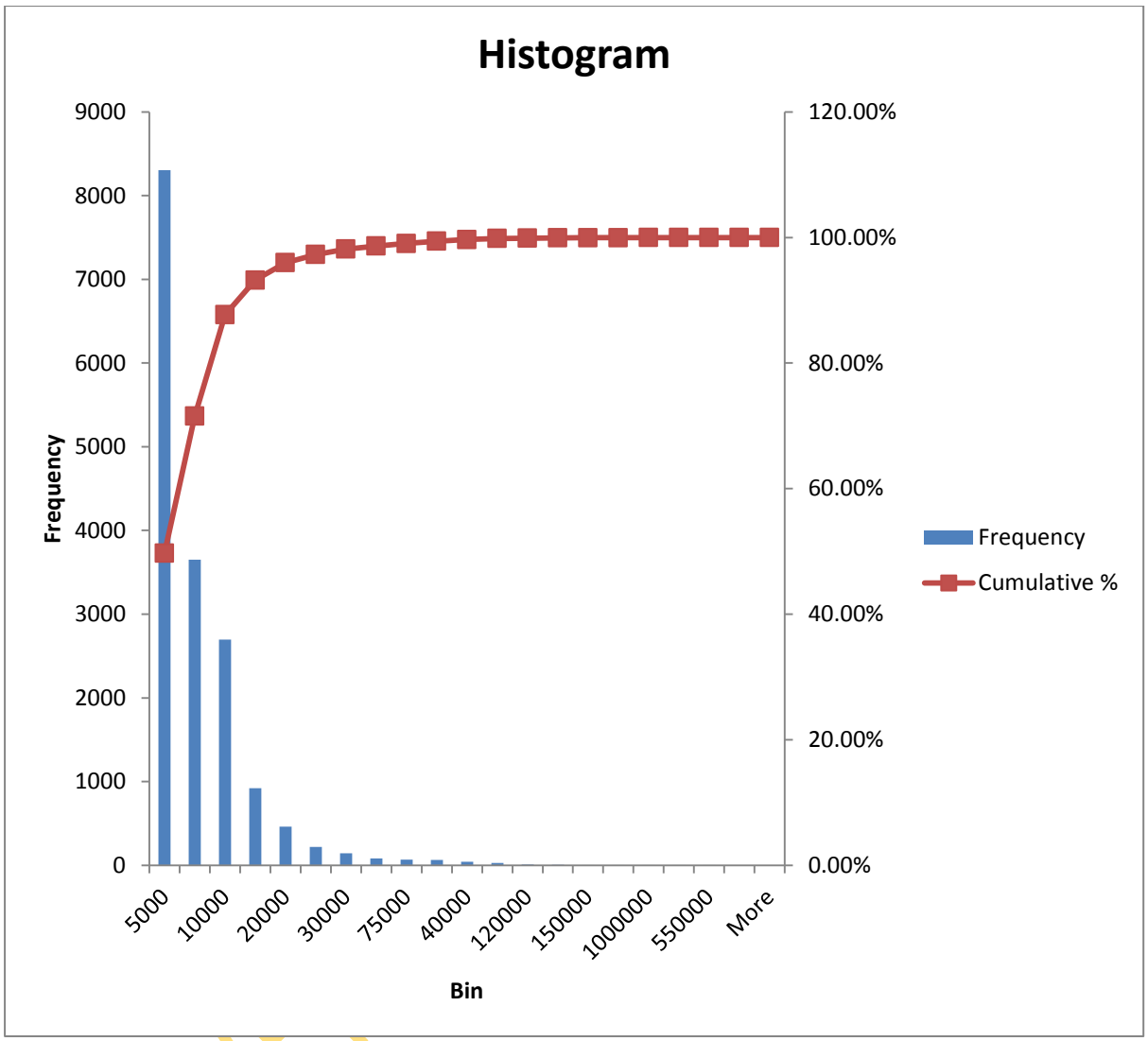

Figure 4.5: HISTOGRAM OF PER CAPITA EXPENDITURE

4.2 Poverty Line Estimation

The poverty line using the proposed method, median of per capita expenditure (MPCE) was computed as well as the corresponding poverty line using two – third mean per capita expenditure (TMPCE) to estimate cost of living with respect to food and non food consumption in Nigeria. The MPCE was ₦2, 550.00 while the Two-third Mean Per Capita Expenditure (TMPCE) was ₦3, 613.75 per month respectively. The proportion of the poor was 50.1% using MPCE but rose to 61.6% when TMPCE was used.

Table 4.5 shows the poverty line for the states using MPCE and TMPCE respectively. Poverty lines obtained for the states in Nigeria varied across states and sectors (urban and rural), this provides justification for the use of state specific poverty line. The use of a single poverty line for all states would lead to under estimation of poverty in some states and over estimation in some others.

With MPCE, the result shows that Katsina state has the lowest poverty line of ₦1150.00 per month, and FCT has the highest poverty line of ₦5857.14 per month. TMPCE also shows that Ogun state has the lowest poverty line of ₦1438.21 per month, and FCT have the highest poverty line of ₦8417.54 per month.

Poverty lines for the states in the south east (Anambra, Imo, and Abia) and south south (Akwaibom, Bayelsa, and Delta) were generally higher than the poverty lines for the states in the Northern zones and South western zone.
These poverty lines are reflections of the cost of living with respect to food and non food consumptions in the states.
This result shows that TMPCE assigned higher Poverty lines to the states than MPCE.

Table 4.5: States with their poverty lines using MPCE and TMPCE

State	Poverty line (MPCE)	Poverty line (TMPCE)
Abia	3833.333	4405.666
Adamawa	3866.667	5020.876
Akwa ibom	4900	5142.63
Anambra	5300	6211.144
Bauchi	2225	2443.177
Bayelsa	5200	5648.84
Benue	2737.5	4115.983
Borno	2000	2576.279
Cross_rivers	2500	2988.814
Delta	4500	5935.646
Ebonyi	1900	2296.196
Edo	3000	3974.204
Ekiti	1500	2339.136
Enugu	2950.833	5863.844
Gombe	2575	2869.408
Imo	4183.333	6245.927
Jigawa	2066.667	2353.158
Kaduna	2505	2953.126
Kano	2250	2640.481
Katsina	**1150**	1772.845
Kebbi	2700	3024.582
Kogi	2187.5	3514.612
Kwara	1716.667	3203.053
Lagos	3800	5450.926
Nassarawa	2800	3069.572
Niger	4966.667	5543.891
Ogun	1158.333	**1438.208**
Ondo	1600	2417.11
Osun	2071.429	2421.271
Oyo	2000	3659.112
Plateau	2416	3600.091
Rivers	5500	5976.527
Sokoto	2400	2758.682
Taraba	2312	2819.496
Yobe	2800	3641.282
Zamfara	1883.333	2206.91
FCT	**5857.143**	**8417.54**

4.3: Difference in poverty proportion

Using the difference in proportion and assuming large sample, Z = 2.963 and P < 0.003 for the highest poor state, Katsina and the lowest poor state, Anambra state using the MPCE, while Z =1.188 and P < 0.246 for the highest poor state and the lowest poor state using TMPCE.

4.4: Distribution of Poverty (Incidence, Depth, and Severity of poverty) for Nigeria as well as the states and sectors

The result of the Foster, Greer and Thorbeck poverty index, shows that at national level, the poverty headcount, Poverty gap, and severity of poverty are 0.501, 0.260, and 0.171 respectively using the median per capita expenditure (MPCE) and 0.616, 0.349 and 0.181, respectively using two-third mean per capita expenditure (TMPCE). This means that while approximately, 50 percent of the population was in poverty, 26% of the poverty line would be needed to lift the poor to or above the poverty line using the proposed method, (MPCE), the proportion rose to 62%, and 35% of the poverty line to move the poor to or above the poverty line using the conventional method, (TMPCE).

Tables 4.6 presents the FGT poverty index for 36 states and FCT using MPCE and TMPCE respectively. The result of MPCE shows highest poverty incidence in Katsina states with 53% of the population in poverty and lowest poverty proportion in Anambra state with 43%. This implies that 43 per cent of the population were in poverty. It can also be seen that the depth of poverty was highest in Zamfara state 46%.This implies that 46 per cent of the poverty line will be needed to lift those in poverty above or to the poverty line, and lowest depth of poverty in Anambra state,18% , also implying that 18 per cent of the poverty line will be needed to lift those in poverty above or to the poverty line. Also severity of poverty was highest in Zamfara state (28%) and lowest in Anambra state (10%).

TMPCE shows highest poverty proportion in Kwara states with 73% of the population in poverty and lowest proportion in Anambra state with 48% of the population in poverty. Also, it can be seen that the depth of poverty was highest in Kaduna state with 54%, meaning that 55 per cent of the poverty line will be needed to lift those in poverty, above or to the poverty line, and lowest, 21% in Akwa ibom state, also

meaning that 21 per cent of the poverty line will be needed to lift those in poverty above or to the poverty line. The severity of poverty was highest in Enugu state, 33% and lowest in Akwa ibom state, 12%.

Poverty lines, poverty proportions, poverty depth and poverty severity in the states using MPCE and TMPCE are further illustrated in figures 4.6 - 4.13.

Table 4.7 and 4.8 present the urban and rural distribution of poverty for the states, it shows that Ondo state had highest urban poverty proportion (52%) while Oyo had lowest (49%) urban proportion. Cross-river had the highest rural poverty proportion (53%) while Anambra had the lowest (36%) rural proportion. The urban poverty depth was highest in Borno state (32%), i.e. 32 per cent of the poverty line will be required to lift those in poverty above or to the poverty line and lowest in Akwa Ibom state (22%), only 22 per cent of the poverty line to lift those in poverty above or to the poverty line. The highest rural poverty depth of poverty was in Enugu (33%), i.e 33 per cent of the poverty line to lift those in poverty above or to the poverty line and the lowest was in Imo state (17%), only 17 per cent of the poverty line to lift those in poverty above or to the poverty line. Highest urban poverty depth was in Borno (31%), 31 per cent of the poverty line to lift those in poverty above or to the poverty line and the lowest was in Ebonyi (16%), only 16 per cent of the poverty line to lift those in poverty above or to the poverty line. Highest severity of poverty was in Enugu state (25%) and the lowest was in Imo state (9%).

Table 4.6: Distribution of poverty (Incidence, Depth, and Severity of poverty) using MPCE and TMPCE for the states

	MPCE			TMPCE		
State	p(0)	p(1)	p(2)	p(0)	p(1)	p(2)
Abia	0.497283	0.235352	0.143503	0.548913	0.273085	0.170595
Adamawa	0.501916	0.264136	0.168746	0.605364	0.331251	0.222109
Akwa ibom	0.469484	0.19674	0.103443	0.502347	**0.21054**	**0.125533**
Anambra	**0.429234**	**0.178012**	**0.098707**	**0.483221**	0.218219	0.125833
Bauchi	0.5	0.241486	0.152896	0.538	0.268979	0.172309
Bayelsa	0.47451	0.24835	0.169069	0.529412	0.278064	0.18955
Benue	0.5	0.265031	0.172737	0.631481	0.367073	0.256077
Borno	0.511521	0.296645	0.2131	0.56682	0.351038	0.258015
Cross_rivers	0.479592	0.219781	0.133242	0.540816	0.24353	0.2346 7024
Delta	0.501538	0.235003	0.142955	0.593846	0.309978	0.199296
Ebonyi	0.467611	0.236736	0.149421	0.530364	0.282137	0.18474
Edo	0.507553	0.250521	0.161037	0.55287	0.319815	0.215977
Ekiti	0.506796	0.303529	0.229529	0.648544	0.403468	0.305459
Enugu	0.498952	0.286081	0.196853	0.704403	0.45057	**0.336899**
FCT	0.5	0.254499	0.161543	0.583012	0.269743	0.159318
Gombe	0.492278	0.217035	0.121876	0.633197	0.360659	0.248141
Imo	0.5	0.258753	0.165395	0.56378	0.266804	0.161657
Jigawa	0.491339	0.215585	0.126063	0.552756	**0.536318**	0.32947
Kaduna	0.489764	0.444519	0.265086	0.589606	0.301478	0.192641
Kano	0.498208	0.246888	0.150739	0.645161	0.377256	0.26285
Katsina	**0.527231**	0.251237	0.161204	0.547619	0.288614	0.187859
Kebbi	0.505495	0.260224	0.165724	0.683186	0.36592	0.243961
Kogi	0.500885	0.235736	0.140606	**0.738722**	0.417355	0.280235
Kwara	0.50188	0.225946	0.134235	0.628032	0.368058	0.265991
Lagos	0.504043	0.280303	0.200104	0.546296	0.269813	0.16804
Nassarawa	0.501852	0.245238	0.149921	0.573896	0.290691	0.188158
Niger	0.50096	0.261982	0.166446	0.581114	0.325909	0.225633
Ogun	0.48184	0.251765	0.168303	0.634387	0.393062	0.293511
Ondo	0.503953	0.303051	0.21806	0.595122	0.336372	0.241967
Osun	0.512195	0.284262	0.202724	0.591078	0.425572	0.330857
Oyo	0.510052	0.299558	0.218774	0.648438	0.356841	0.242242
Plateau	0.501953	0.251161	0.159151	0.56682	0.262067	0.16044
Rivers	0.511521	0.237525	0.143416	0.573333	0.268635	0.159642
Sokoto	0.508571	0.223968	0.128034	0.606	0.308463	0.197232
Taraba	0.5	0.243965	0.149659	0.614481	0.324292	0.214915
Yobe	0.510763	0.253252	0.162328	0.570423	0.283233	0.17705
Zamfara	0.484155	**0.462406**	**0.287846**	0.646154	0.355943	0.238251

P(0) = poverty headcount, p(1) = depth of poverty, p(2) = severity of poverty

Table 4.7: Distribution of poverty by urban sector (Median per capita

State	p(0)	p(1)	p(2)	Poverty line
Abia	0.5	0.235562	0.145697	4183.333
Adamawa	0.501241	0.256971	0.16241	4371.667
Akwa ibom	0.5	0.224027	0.123601	5587.5
Anambra	0.503906	0.288796	0.131359	6700
Bauchi	0.501155	0.248365	0.15851	2425
Bayelsa	0.5	0.252901	0.172354	6645.833
Benue	0.502041	0.248244	0.156532	3166.667
Borno	0.504695	0.314124	0.233135	2350
Cross_rivers	0.5	0.244156	0.152958	2945.833
Delta	0.5	0.248495	0.153705	5166.667
Ebonyi	0.5	0.175024	0.169237	2125
Edo	0.5	0.225637	0.135034	2721.667
Ekiti	0.508658	0.302536	0.224332	1700
Enugu	0.501587	0.282681	0.195117	2960
Gombe	0.504451	0.225524	0.129583	3200
Imo	0.5	0.264156	0.171927	4812.5
Jigawa	0.500982	0.233086	0.140961	2500
Kaduna	0.500994	0.238595	0.14678	3053
Kano	0.5	0.236534	0.141485	2725
Katsina	0.5	0.254771	0.160666	1442.857
Kebbi	0.5	0.253047	0.158558	3270.833
Kogi	0.500921	0.243186	0.147124	2640
Kwara	0.499006	0.233038	0.140702	2071.429
Lagos	0.50495	0.285002	0.202437	4000
Nassarawa	0.501211	0.243706	0.14814	3375
Niger	0.504587	0.264233	0.169389	6250
Ogun	0.502717	0.273439	0.191132	1300
Ondo	0.517621	0.307505	0.224564	2000
Osun	0.503448	0.262499	0.176805	2125
Oyo	0.49363	0.288696	0.213872	2233.333
Plateau	0.509025	0.256906	0.164363	3000
Rivers	0.5	0.258653	0.172032	5520
Sokoto	0.5	0.255245	0.165026	2550
Taraba	0.506266	0.237463	0.142219	2560
Yobe	0.5	0.251259	0.160397	3658.333
Zamfara	0.502033	0.237806	0.142368	2800
FCT	0.5	0.27463	0.178176	7880

Table 4.8: Distribution of poverty by rural sector (Median per capita

expenditure)

State	Poverty line	p(0)	p(1)	p(2)
Abia	3633.333	0.5	0.220221	0.123937
Adamawa	6000	0.520661	0.280757	0.191827
Akwa ibom	7500	0.532258	0.236045	0.13273
Anambra	8666.667	0.365854	0.263987	0.16529
Bauchi	3320	0.507463	0.270687	0.172401
Bayelsa	5014.286	0.454545	0.184903	0.125423
Benue	4333.333	0.490566	0.306137	0.2211
Borno	2500	0.421053	0.215747	0.145979
Cross_rivers	2375	0.533333	0.163021	0.098903
Delta	6175	0.515152	0.232749	0.130551
Ebonyi	3198.333	0.5	0.236233	0.152242
Edo	3783.333	0.496855	0.2435	0.16074
Ekiti	1466.667	0.5	0.312846	0.242232
Enugu	3175	0.5	0.332171	0.254599
Gombe	3166.667	0.502513	0.209529	0.119749
Imo	4000	0.52381	0.161729	0.091876
Jigawa	2325	0.507246	0.211816	0.119136
Kaduna	3178.333	0.5	0.282021	0.197583
Kano	2700	0.506329	0.232575	0.150506
Katsina	1575	0.5	0.291883	0.207192
Kebbi	3000	0.510638	0.218249	0.127681
Kogi	4233.333	0.483871	0.213113	0.122375
Kwara	1860.417	0.5	0.226368	0.130711
Lagos	4500	0.507246	0.267783	0.187471
Nassarawa	3325	0.5	0.212705	0.121635
Niger	5500	0.50116	0.250392	0.158028
Ogun	916.6667	0.5	0.304311	0.237204
Ondo	2100	0.505747	0.280838	0.205669
Osun	2733.333	0.5	0.286639	0.208165
Oyo	2400	0.507692	0.314936	0.243641
Plateau	2540.5	0.504167	0.235123	0.138551
Rivers	6350	0.51087	0.203079	0.105551
Sokoto	2725	0.5	0.20468	0.109067
Taraba	3500	0.504274	0.265772	0.167477
Yobe	3875	0.5	0.258565	0.16897
Zamfara	3416.667	0.5	0.234614	0.135313
FCT	6666.667	0.515152	0.202406	0.10489

4.5: Bootstrap simulation

Tables 4.9 shows the descriptive statistics of bootstrap simulation of poverty head count using median per capita and two-third mean per capita expenditure respectively. The table shows the mean, standard error, median, mode, standard deviation, sample variance, kurtosis, skewness and range. Emphasis was on the variances which was used to measure precision estimates. The precision estimate (variances) obtained through the bootstrap simulation was 2.49637×10^{-05} for the median method and 9.77929×10^{-05} for the two-third of mean per capita expenditure.

The relative gain in efficiency of the median method over two-third of mean method was 25%.

Table 4.9: Descriptive statistics of bootstrap simulation (using MPCE and TMPCE)

	MPCE	TMPCE
Mean	0.25617189	0.52956734
Standard Error	0.000485291	0.000312719
Median	0.25525	0.52948905
Mode	#N/A	#N/A
Standard Deviation	0.004996373	0.009889028
Sample Variance	2.49637E-05	9.77929E-05
Kurtosis	0	0.021707515
Skewness	0.379010818	0.090130421
Range	0.023333333	0.060734991
Minimum	0.246666667	0.501590124
Maximum	0.27	0.562325115
Sum	27.1542203	529.5673403
Count	106	1000

CHAPTER FIVE

FINDINGS AND SUMMARY, LIMITATIONS AND RECOMMENDATIONS

5.1 Findings and Summary

Among the distributions fitted to the per capita expenditure, log logistic distribution with parameter estimates (α =1.0452, β =3169.2) with (p-value, < 0.0000014805) performed best. The results indicate the plausibility of Log logistic probability density function to poverty estimation in the states of Nigeria, The Log logistic distribution can be used to model per capita expenditure in Nigeria

From the descriptive statistics for fitting the distributions to per capita expenditure in Nigeria, the Minimum and Maximum values are unexpectedly large and small. In other words, there are outliers in the data set. The sampling distribution of expenditure data is positively skewed, high peaked and also unimodal. The measure of variability in the expenditure was high. All the above description indicates that the expenditure data are not normally distributed and also the mean is not the best value to report or describe the central tendency of expenditure data.

Poverty line estimate of ₦2, 550.00 obtained using the new approach as proposed in the research work (MPCE) was lower compared to ₦3,613.75, obtained using the two-third of mean per capita expenditure method (TMPCE). This is as a result of the extreme values / outliers present in the data set, which was not considered by mean.

Poverty lines obtained for the states in Nigeria varied across states and sectors (urban and rural). This provides justification for the use of state specific poverty line. The use of a single poverty line for all states would lead to under estimation of poverty in some states and over estimation in some others.

Using MPCE, Katsina state had the lowest poverty line of ₦1150.00 per month, and FCT had the highest poverty line of ₦5857.14 per month. Also with TMPCE, poverty line also varied across the state with Ogun state having the lowest poverty line of ₦1438.21 per month, and FCT have the highest poverty line of ₦8417.54 per

month. These poverty lines are reflections of the cost of living with respect to food and non food consumption in the states.

The result shows that majority of the states in the Northern region like Zamfara, Taraba, Sokoto, Katsina, Kano, Kano, Jigawa, Borno, and Bauchi states had poverty lines lower than the national poverty line, while majority of the states in the southern region like Bayelsa, Anambra, Rivers, Akwa ibom, Delta, Imo, and Abia states had poverty lines above the national poverty line.

From the research, poverty proportion for Nigeria is 50.1%. This implies that approximately half of Nigerian population were in poverty using MPCE method while using TMPCE the poverty proportion is 61.6%, this also implies that the approximately 62% of Nigeria population were living in poverty.
Poverty depth of 0.260 implies that 26 per cent of the poverty line would be needed to lift the poor to or above the poverty line using the proposed method, (MPCE), also, 0.349 implies that approximately 35 per cent of the poverty line to move the poor to or above the poverty line using the conventional method, (TMPCE).

Poverty incidence was higher in the Katsina, Yobe and Borno. Also depth of poverty was highest in Zamfara state and also high in Kaduna state .High poverty incidence and depths were also found in states like: Osun, Oyo and Rivers states.

In this work, it was confirmed that poverty incidence was higher in rural sectors than in the urban sectors as suggested by Oshewolo, Seun (2010), NBS report, (2010), and host of other researchers that have worked on different aspects of poverty. The result shows that Poverty line was also higher in the urban sectors than in the rural sectors.

The precision estimate (variances) obtained through the bootstrap simulation gave 2.49637×10^{-05} for the MPCE method and 9.77929×10^{-05} for the TMPCE. This shows clearly that the MPCE is more efficient than the TMPCE

Using the difference in proportion and assuming large sample, $Z = 2.963$ and $P < 0.003$ for the highest poor state, Katsina and the lowest poor state, Anambra state using the MPCE, also $Z = 1.188$ and $P < 0.246$ for the highest poor state and the

lowest poor state using TMPCE. The difference was highly significant using the proposed method, while with TMPCE, the difference was not significant.

The frequency distribution of per capita expenditure also revealed that majority of wealth in Nigeria is in the hands of few individuals. In other words, there is inequality in expenditure pattern. This is an iniquitous practice, which the Nigerian state must redress.

From the result bootstrap simulation and the relative gain in efficiency, it can be seen that the median rather than two-third of mean per capita expenditure is a better method for measuring poverty.

The inevitable conclusion from the foregoing is that for improved precision of poverty measurement in Nigeria, median per capita expenditure (MPCE) method would be a better approach.

5.2 Limitations

a) There was no availability of recent data as at the time of this research, thus the result is based on the most recent data that was available.

b) The survey data (GHS) used for the research work did not dwell much on food related information, thereby restricting exploration level of the research work

5.3 Contributions of the Study

a) The study showed the log logistic distribution to be the appropriate probability density for fitting expenditure data for poverty analysis

b) That median per capita expenditure was better than two-third mean per capita expenditure in computing a poverty line.

c) That a single poverty line fails to capture the level of poverty in all the states: derived state-specific poverty lines.

d) Estimated 50.1 percent of Nigerians to be grappling with poverty and 26 per cent of the poverty line to move the poor to or above the poverty line.

e) Confirmed that the poor were still more in the rural than in the urban areas of Nigeria.

5.4 Recommendations

- The ideas presented in this study should be extended in a multivariate setting since poverty is perceived to be multidimensional.
- Researchers have concentrated on poverty analysis leaving the related issues on inequality and vulnerability. The ideas presented on this study should be extended to these areas as well.
- Further research should be carried out using MPCE method as well as with recent data in order to have update of the poverty situation in Nigeria. This will aid the Nigerian Nation in achieving the 1st Millennium Development goal by the year 2015.

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APPENDIX A: EXCEL COMPUTATION OF PROPORTIONS,DEPTH AND SEVERITY OF POVERTY USING TMPCE AND MPCE METHODS RESPECTIVELY

State	Memnum	Total Hhexp	Per capita	TMPCE			MPCE		
				I	P1	P2	I	P1	P2
Abia	1	9000	9000	0	0	0	0	0	0
Abia	2	47000	23500	0	0	0	0	0	0
Abia	1	8000	8000	0	0	0	0	0	0
Abia	2	38500	19250	0	0	0	0	0	0
Abia	3	18400	6133.333	0	0	0	0	0	0
Abia	4	19000	4750	0	0	0	0	0	0
Abia	5	29000	5800	0	0	0	0	0	0
Abia	6	22000	3666.667	0	0	0	0	0	0
Abia	7	13000	1857.143	1	0.271709	0.073826	1	0.486125	0.11488
Abia	8	17000	2125	1	0.166667	0.027778	1	0.412009	0.069939
Abia	9	5200	577.7778	1	0.77342	0.598179	1	0.840128	0.592975
Abia	1	24000	24000	0	0	0	0	0	0
Abia	1	1600	1600	1	0.372549	0.138793	1	0.557277	0.173067
Abia	2	5500	2750	0	0	0	1	0.23907	0.013664
Abia	3	6400	2133.333	1	0.163399	0.026699	1	0.409703	0.068771
Abia	4	7900	1975	1	0.22549	0.050846	1	0.453514	0.093277
Abia	1	4800	4800	0	0	0	0	0	0
Abia	2	2300	1150	1	0.54902	0.301423	1	0.681793	0.316926
Abia	3	12000	4000	0	0	0	0	0	0
Abia	4	7550	1887.5	1	0.259804	0.067498	1	0.477726	0.109027
Abia	5	9400	1880	1	0.262745	0.069035	1	0.479801	0.110454

EXCEL COMPUTATION OF PROPORTIONS,DEPTH AND SEVERITY OF POVERTY USING TMPCE AND MPCE METHODS RESPECTIVELY CONT.									
Abia	1	29000	29000	0	0	0	0	0	0
Abia	1	8400	8400	0	0	0	0	0	0
Abia	3	7900	2633.333	0	0	0	1	0.271352	0.01998
Abia	4	16700	4175	0	0	0	0	0	0
Abia	5	16500	3300	0	0	0	1	0.086884	0.000656
Abia	6	11300	1883.333	1	0.261438	0.06835	1	0.478878	0.109819
Abia	1	7700	7700	0	0	0	0	0	0
Abia	2	7200	3600	0	0	0	1	0.003874	5.81E-08
Abia	3	11500	3833.333	0	0	0	0	0	0
Abia	4	10700	2675	0	0	0	1	0.259823	0.01754
Abia	5	12500	2500	1	0.019608	0.000384	1	0.308246	0.029288
Abia	6	12580	2096.667	1	0.177778	0.031605	1	0.419849	0.074008
Abia	7	8000	1142.857	1	0.551821	0.304506	1	0.683769	0.31969
Abia	8	8000	1000	1	0.607843	0.369473	1	0.723298	0.378401
Abia	1	12950	12950	0	0	0	0	0	0
Abia	2	5100	2550	1	0	0	1	0.294411	0.025519
Abia	3	10000	3333.333	0	0	0	1	0.077661	0.000468
Abia	4	8200	2050	1	0.196078	0.038447	1	0.432761	0.081049
Abia	5	6200	1240	1	0.513725	0.263914	1	0.65689	0.283451
Abia	1	5500	5500	0	0	0	0	0	0
Abia	1	40000	40000	0	0	0	0	0	0
Abia	2	16000	8000	0	0	0	0	0	0
Abia	1	27500	27500	0	0	0	0	0	0
Abia	2	26000	13000	0	0	0	0	0	0

EXCEL COMPUTATION OF PROPORTIONS,DEPTH AND SEVERITY OF POVERTY USING TMPCE AND MPCE METHODS RESPECTIVELY CONT.									
Abia	3	5670	1890	1	0.258824	0.06699	1	0.477034	0.108554
Abia	4	28000	7000	0	0	0	0	0	0
Abia	5	3100	620	1	0.756863	0.572841	1	0.828445	0.568579
Abia	6	12000	2000	1	0.215686	0.046521	1	0.446597	0.089073
Abia	1	9300	9300	0	0	0	0	0	0
Abia	2	45000	22500	0	0	0	0	0	0
Adamawa	1	7900	7900	0	0	0	0	0	0
Adamawa	2	11500	5750	0	0	0	0	0	0
Adamawa	3	10000	3333.333	0	0	0	1	0.077661	0.000468
Adamawa	1	20300	20300	0	0	0	0	0	0
Adamawa	2	3955	1977.5	1	0.22451	0.050405	1	0.452822	0.09285
Adamawa	1	13000	13000	0	0	0	0	0	0
Adamawa	2	69000	34500	0	0	0	0	0	0
Adamawa	1	7450	7450	0	0	0	0	0	0
Adamawa	2	4360	2180	1	0.145098	0.021053	1	0.39679	0.062472
Adamawa	3	11000	3666.667	0	0	0	0	0	0
Adamawa	4	17000	4250	0	0	0	0	0	0
Adamawa	5	6100	1220	1	0.521569	0.272034	1	0.662424	0.290675
Adamawa	1	10505	10505	0	0	0	0	0	0
Adamawa	2	8032	4016	0	0	0	0	0	0
Adamawa	1	11300	11300	0	0	0	0	0	0
Adamawa	2	5900	2950	0	0	0	1	0.18373	0.006202
Adamawa	3	5600	1866.667	1	0.267974	0.07181	1	0.48349	0.113022
Adamawa	1	87000	87000	0	0	0	0	0	0

EXCEL COMPUTATION OF PROPORTIONS,DEPTH AND SEVERITY OF POVERTY USING TMPCE AND MPCE METHODS RESPECTIVELY CONT.									
Adamawa	2	20000	10000	0	0	0	0	0	0
Adamawa	1	30000	30000	0	0	0	0	0	0
Adamawa	2	12000	6000	0	0	0	0	0	0
Adamawa	1	17000	17000	0	0	0	0	0	0
Adamawa	1	14000	14000	0	0	0	0	0	0
Adamawa	1	17000	17000	0	0	0	0	0	0
Adamawa	1	19000	19000	0	0	0	0	0	0
Adamawa	2	14000	7000	0	0	0	0	0	0
Adamawa	1	17000	17000	0	0	0	0	0	0
Adamawa	2	20000	10000	0	0	0	0	0	0
Adamawa	3	8500	2833.333	0	0	0	1	0.216012	0.010079
Adamawa	1	95650	95650	0	0	0	0	0	0
Adamawa	2	5690	2845	0	0	0	1	0.212784	0.009634
Adamawa	3	22500	7500	0	0	0	0	0	0
Adamawa	4	8100	2025	1	0.205882	0.042388	1	0.439679	0.084998
Adamawa	5	2500	500	1	0.803922	0.64629	1	0.861649	0.639722
Adamawa	1	5700	5700	0	0	0	0	0	0
Adamawa	2	8500	4250	0	0	0	0	0	0
Adamawa	3	22200	7400	0	0	0	0	0	0
Adamawa	4	21500	5375	0	0	0	0	0	0
Adamawa	1	9500	9500	0	0	0	0	0	0
Adamawa	2	4700	2350	1	0.078431	0.006151	1	0.349751	0.042784
Adamawa	1	94800	94800	0	0	0	0	0	0
Adamawa	2	5150	2575	0	0	0	1	0.287493	0.023762

EXCEL COMPUTATION OF PROPORTIONS,DEPTH AND SEVERITY OF POVERTY USING TMPCE AND MPCE METHODS RESPECTIVELY CONT.									
Adamawa	3	5300	1766.667	1	0.30719	0.094365	1	0.51116	0.133558
Adamawa	4	5500	1375	1	0.460784	0.212322	1	0.619535	0.237792
Adamawa	5	5500	1100	1	0.568627	0.323337	1	0.695628	0.336613
Adamawa	6	10500	1750	1	0.313725	0.098424	1	0.515772	0.137206
Adamawa	7	6200	885.7143	1	0.652661	0.425966	1	0.754921	0.430234
Adamawa	1	7600	7600	0	0	0	0	0	0
Adamawa	2	5650	2825	0	0	0	1	0.218318	0.010406
Adamawa	3	16000	5333.333	0	0	0	0	0	0
Adamawa	4	10000	2500	1	0.019608	0.000384	1	0.308246	0.029288
Adamawa	1	14200	14200	0	0	0	0	0	0
Adamawa	1	10200	10200	0	0	0	0	0	0
Adamawa	2	16000	8000	0	0	0	0	0	0
Adamawa	3	9000	3000	0	0	0	1	0.169895	0.004904
Akwa ibom	1	40000	40000	0	0	0	0	0	0
Akwa ibom	2	27000	13500	0	0	0	0	0	0
Akwa ibom	3	12500	4166.667	0	0	0	0	0	0
Akwa ibom	4	13000	3250	0	0	0	1	0.100719	0.001022
Akwa ibom	5	8110	1622	1	0.363922	0.132439	1	0.55119	0.167457
Akwa ibom	6	18050	3008.333	0	0	0	1	0.167589	0.004707
Akwa ibom	7	12900	1842.857	1	0.277311	0.076901	1	0.490078	0.117705
Akwa ibom	1	18200	18200	0	0	0	0	0	0
Akwa ibom	2	33900	16950	0	0	0	0	0	0
Akwa ibom	3	27900	9300	0	0	0	0	0	0
Akwa ibom	4	10100	2525	1	0.009804	9.61E-05	1	0.301328	0.02736

EXCEL COMPUTATION OF PROPORTIONS,DEPTH AND SEVERITY OF POVERTY USING TMPCE AND MPCE METHODS RESPECTIVELY CONT.									
Akwa ibom	1	4500	4500	0	0	0	0	0	0
Akwa ibom	2	27000	13500	0	0	0	0	0	0
Akwa ibom	1	14000	14000	0	0	0	0	0	0
Akwa ibom	2	28000	14000	0	0	0	0	0	0
Akwa ibom	3	46000	15333.33	0	0	0	0	0	0
Akwa ibom	1	21000	21000	0	0	0	0	0	0
Akwa ibom	2	22000	11000	0	0	0	0	0	0
Akwa ibom	3	30000	10000	0	0	0	0	0	0
Akwa ibom	1	23000	23000	0	0	0	0	0	0
Akwa ibom	2	23000	11500	0	0	0	0	0	0
Akwa ibom	1	3220	3220	0	0	0	1	0.10902	0.001296
Akwa ibom	2	16000	8000	0	0	0	0	0	0
Akwa ibom	3	11000	3666.667	0	0	0	0	0	0
Akwa ibom	1	12000	12000	0	0	0	0	0	0
Akwa ibom	2	18000	9000	0	0	0	0	0	0
Akwa ibom	3	7000	2333.333	1	0.084967	0.007219	1	0.354363	0.044498
Akwa ibom	4	16300	4075	0	0	0	0	0	0
Akwa ibom	1	14000	14000	0	0	0	0	0	0
Akwa ibom	2	13500	6750	0	0	0	0	0	0
Akwa ibom	3	11550	3850	0	0	0	0	0	0
Akwa ibom	4	11009	2752.25	0	0	0	1	0.238448	0.013557
Akwa ibom	5	13000	2600	0	0	0	1	0.280576	0.022088
Akwa ibom	6	10500	1750	1	0.313725	0.098424	1	0.515772	0.137206
Akwa ibom	7	10000	1428.571	1	0.439776	0.193403	1	0.604712	0.221129

EXCEL COMPUTATION OF PROPORTIONS,DEPTH AND SEVERITY OF POVERTY USING TMPCE AND MPCE METHODS RESPECTIVELY CONT.									
Akwa ibom	8	12000	1500	1	0.411765	0.16955	1	0.584947	0.200148
Akwa ibom	1	9000	9000	0	0	0	0	0	0
Akwa ibom	2	6700	3350	0	0	0	1	0.073049	0.00039
Akwa ibom	3	20400	6800	0	0	0	0	0	0
Akwa ibom	4	5400	1350	1	0.470588	0.221453	1	0.626453	0.245847
Akwa ibom	5	15400	3080	0	0	0	1	0.147759	0.003226
Akwa ibom	6	14400	2400	1	0.058824	0.00346	1	0.335916	0.037905
Akwa ibom	7	10100	1442.857	1	0.434174	0.188507	1	0.600759	0.216821
Akwa ibom	8	2900	362.5	1	0.857843	0.735895	1	0.899696	0.728261
Akwa ibom	1	14400	14400	0	0	0	0	0	0
Akwa ibom	2	15000	7500	0	0	0	0	0	0
Akwa ibom	3	10000	3333.333	0	0	0	1	0.077661	0.000468
Akwa ibom	1	5000	5000	0	0	0	0	0	0
Akwa ibom	2	10000	5000	0	0	0	0	0	0
Akwa ibom	3	23000	7666.667	0	0	0	0	0	0
Akwa ibom	4	27000	6750	0	0	0	0	0	0
Akwa ibom	5	21600	4320	0	0	0	0	0	0
Akwa ibom	1	13200	13200	0	0	0	0	0	0
Akwa ibom	2	15300	7650	0	0	0	0	0	0
Akwa ibom	1	10000	10000	0	0	0	0	0	0
Anambra	3	12000	4000	0	0	0	0	0	0
Anambra	4	8400	2100	1	0.176471	0.031142	1	0.418926	0.073521
Anambra	1	11950	11950	0	0	0	0	0	0
Anambra	2	17200	8600	0	0	0	0	0	0

EXCEL COMPUTATION OF PROPORTIONS,DEPTH AND SEVERITY OF POVERTY USING TMPCE AND MPCE METHODS RESPECTIVELY CONT.									
Anambra	1	14000	14000	0	0	0	0	0	0
Anambra	2	20800	10400	0	0	0	0	0	0
Anambra	3	17000	5666.667	0	0	0	0	0	0
Anambra	4	9000	2250	1	0.117647	0.013841	1	0.377421	0.053762
Anambra	5	17400	3480	0	0	0	1	0.037078	5.1E-05
Anambra	13	14300	1100	1	0.568627	0.323337	1	0.695628	0.336613
Anambra	2	11300	5650	0	0	0	0	0	0
Anambra	3	17500	5833.333	0	0	0	0	0	0
Anambra	1	34100	34100	0	0	0	0	0	0
Anambra	2	13800	6900	0	0	0	0	0	0
Anambra	3	13680	4560	0	0	0	0	0	0
Anambra	4	19950	4987.5	0	0	0	0	0	0
Anambra	5	10300	2060	1	0.192157	0.036924	1	0.429994	0.079504
Anambra	6	8295	1382.5	1	0.457843	0.20962	1	0.61746	0.235411
Anambra	7	10040	1434.286	1	0.437535	0.191437	1	0.603131	0.219399
Anambra	8	11200	1400	1	0.45098	0.203383	1	0.612618	0.229916
Anambra	9	13550	1505.556	1	0.409586	0.167761	1	0.58341	0.198574
Anambra	1	9050	9050	0	0	0	0	0	0
Anambra	1	19500	19500	0	0	0	0	0	0
Anambra	2	11000	5500	0	0	0	0	0	0
Anambra	3	12000	4000	0	0	0	0	0	0
Anambra	4	8250	2062.5	1	0.191176	0.036548	1	0.429303	0.079121
Anambra	5	8000	1600	1	0.372549	0.138793	1	0.557277	0.173067
Anambra	1	8700	8700	0	0	0	0	0	0

EXCEL COMPUTATION OF PROPORTIONS,DEPTH AND SEVERITY OF POVERTY USING TMPCE AND MPCE METHODS RESPECTIVELY CONT.									
Anambra	2	11100	5550	0	0	0	0	0	0
Anambra	1	11950	11950	0	0	0	0	0	0
Anambra	2	10000	5000	0	0	0	0	0	0
Anambra	3	12500	4166.667	0	0	0	0	0	0
Anambra	4	14000	3500	0	0	0	1	0.031544	3.14E-05
Anambra	5	10100	2020	1	0.207843	0.043199	1	0.441063	0.085803
Anambra	1	14500	14500	0	0	0	0	0	0
Anambra	2	10900	5450	0	0	0	0	0	0
Anambra	3	6300	2100	1	0.176471	0.031142	1	0.418926	0.073521
Anambra	4	67500	16875	0	0	0	0	0	0
Anambra	5	49300	9860	0	0	0	0	0	0
Anambra	1	59000	59000	0	0	0	0	0	0
Anambra	2	67000	33500	0	0	0	0	0	0
Anambra	3	59000	19666.67	0	0	0	0	0	0
Anambra	4	41500	10375	0	0	0	0	0	0
Anambra	5	33000	6600	0	0	0	0	0	0
Anambra	1	73500	73500	0	0	0	0	0	0
Anambra	2	43600	21800	0	0	0	0	0	0
Anambra	3	28500	9500	0	0	0	0	0	0
Anambra	4	9100	2275	1	0.107843	0.01163	1	0.370504	0.05086
Bauchi	2	10500	5250	0	0	0	0	0	0
Bauchi	3	2400	800	1	0.686275	0.470973	1	0.778639	0.472072
Bauchi	4	3280	820	1	0.678431	0.460269	1	0.773105	0.462077
Bauchi	5	3450	690	1	0.729412	0.532042	1	0.809076	0.529624

EXCEL COMPUTATION OF PROPORTIONS,DEPTH AND SEVERITY OF POVERTY USING TMPCE AND MPCE METHODS RESPECTIVELY CONT.									
Bauchi	1	3500	3500	0	0	0	1	0.031544	3.14E-05
Bauchi	2	6930	3465	0	0	0	1	0.041229	7.01E-05
Bauchi	3	4280	1426.667	1	0.440523	0.19406	1	0.605239	0.221708
Bauchi	1	2480	2480	1	0.027451	0.000754	1	0.31378	0.030894
Bauchi	2	4800	2400	1	0.058824	0.00346	1	0.335916	0.037905
Bauchi	1	9300	9300	0	0	0	0	0	0
Bauchi	2	9000	4500	0	0	0	0	0	0
Bauchi	3	6200	2066.667	1	0.189542	0.035926	1	0.42815	0.078485
Bauchi	4	7000	1750	1	0.313725	0.098424	1	0.515772	0.137206
Bauchi	1	5500	5500	0	0	0	0	0	0
Bauchi	2	3500	1750	1	0.313725	0.098424	1	0.515772	0.137206
Bauchi	3	8500	2833.333	0	0	0	1	0.216012	0.010079
Bauchi	4	6200	1550	1	0.392157	0.153787	1	0.571112	0.186279
Bauchi	5	7000	1400	1	0.45098	0.203383	1	0.612618	0.229916
Bauchi	1	4800	4800	0	0	0	0	0	0
Bauchi	2	5800	2900	0	0	0	1	0.197565	0.007711
Bauchi	3	3700	1233.333	1	0.51634	0.266607	1	0.658735	0.285845
Bauchi	4	5200	1300	1	0.490196	0.240292	1	0.640288	0.262498
Bauchi	1	5700	5700	0	0	0	0	0	0
Bauchi	1	5700	5700	0	0	0	0	0	0
Bauchi	2	9000	4500	0	0	0	0	0	0
Bauchi	3	3300	1100	1	0.568627	0.323337	1	0.695628	0.336613
Bauchi	4	3700	925	1	0.637255	0.406094	1	0.744051	0.411915
Bauchi	5	4100	820	1	0.678431	0.460269	1	0.773105	0.462077

EXCEL COMPUTATION OF PROPORTIONS,DEPTH AND SEVERITY OF POVERTY USING TMPCE AND MPCE METHODS RESPECTIVELY CONT.									
Bauchi	1	4200	4200	0	0	0	0	0	0
Bauchi	2	3900	1950	1	0.235294	0.055363	1	0.460432	0.09761
Bauchi	3	2900	966.6667	1	0.620915	0.385535	1	0.732522	0.393062
Bauchi	4	3450	862.5	1	0.661765	0.437933	1	0.761345	0.44131
Bauchi	1	4400	4400	0	0	0	0	0	0
Bauchi	2	9100	4550	0	0	0	0	0	0
Bauchi	1	2600	2600	0	0	0	1	0.280576	0.022088
Bauchi	2	5100	2550	1	0	0	1	0.294411	0.025519
Bauchi	3	3650	1216.667	1	0.522876	0.273399	1	0.663346	0.291891
Bauchi	4	3100	775	1	0.696078	0.484525	1	0.785556	0.484766
Bauchi	5	1250	250	1	0.901961	0.813533	1	0.930825	0.806498
Bauchi	6	1100	183.3333	1	0.928105	0.861378	1	0.949271	0.855404
Bauchi	7	450	64.28571	1	0.97479	0.950215	1	0.982212	0.94758
Bauchi	8	2590	323.75	1	0.873039	0.762197	1	0.910418	0.754609
Bauchi	1	650	650	1	0.745098	0.555171	1	0.820144	0.551658
Bauchi	1	3250	3250	0	0	0	1	0.100719	0.001022
Bauchi	2	1850	925	1	0.637255	0.406094	1	0.744051	0.411915
Bayelsa	1	11200	11200	0	0	0	0	0	0
Bayelsa	2	11500	5750	0	0	0	0	0	0
Bayelsa	3	28500	9500	0	0	0	0	0	0
Bayelsa	4	17800	4450	0	0	0	0	0	0
Bayelsa	1	21000	21000	0	0	0	0	0	0
Bayelsa	2	17500	8750	0	0	0	0	0	0
Bayelsa	3	12500	4166.667	0	0	0	0	0	0

EXCEL COMPUTATION OF PROPORTIONS,DEPTH AND SEVERITY OF POVERTY USING TMPCE AND MPCE METHODS RESPECTIVELY CONT.									
Bayelsa	4	7000	1750	1	0.313725	0.098424	1	0.515772	0.137206
Bayelsa	1	36000	36000	0	0	0	0	0	0
Bayelsa	2	22000	11000	0	0	0	0	0	0
Bayelsa	3	38000	12666.67	0	0	0	0	0	0
Bayelsa	4	9300	2325	1	0.088235	0.007785	1	0.356669	0.045373
Bayelsa	5	46000	9200	0	0	0	0	0	0
Bayelsa	6	30400	5066.667	0	0	0	0	0	0
Bayelsa	7	31000	4428.571	0	0	0	0	0	0
Bayelsa	1	7456	7456	0	0	0	0	0	0
Bayelsa	2	19000	9500	0	0	0	0	0	0
Bayelsa	1	9400	9400	0	0	0	0	0	0
Bayelsa	2	10300	5150	0	0	0	0	0	0
Bayelsa	3	19550	6516.667	0	0	0	0	0	0
Bayelsa	1	25500	25500	0	0	0	0	0	0
Bayelsa	2	7650	3825	0	0	0	0	0	0
Bayelsa	3	17000	5666.667	0	0	0	0	0	0
Bayelsa	4	17500	4375	0	0	0	0	0	0
Bayelsa	1	9050	9050	0	0	0	0	0	0
Bayelsa	2	44000	22000	0	0	0	0	0	0
Bayelsa	3	18000	6000	0	0	0	0	0	0
Bayelsa	4	3950	987.5	1	0.612745	0.375457	1	0.726757	0.383856
Bayelsa	5	13900	2780	0	0	0	1	0.230769	0.012289
Bayelsa	6	10900	1816.667	1	0.287582	0.082703	1	0.497325	0.123005
Bayelsa	7	8500	1214.286	1	0.52381	0.274376	1	0.664005	0.292762

EXCEL COMPUTATION OF PROPORTIONS,DEPTH AND SEVERITY OF POVERTY USING TMPCE AND MPCE METHODS RESPECTIVELY CONT.									
Bayelsa	1	8000	8000	0	0	0	0	0	0
Bayelsa	2	9000	4500	0	0	0	0	0	0
Bayelsa	3	30000	10000	0	0	0	0	0	0
Bayelsa	1	36900	36900	0	0	0	0	0	0
Bayelsa	2	14500	7250	0	0	0	0	0	0
Bayelsa	3	1780	593.3333	1	0.76732	0.58878	1	0.835824	0.583907
Bayelsa	4	96000	24000	0	0	0	0	0	0
Bayelsa	1	27000	27000	0	0	0	0	0	0
Bayelsa	2	16900	8450	0	0	0	0	0	0
Bayelsa	3	18500	6166.667	0	0	0	0	0	0
Bayelsa	4	24	6	1	0.997647	0.9953	1	0.99834	0.995028
Bayelsa	5	33090	6618	0	0	0	0	0	0
Bayelsa	6	31000	5166.667	0	0	0	0	0	0
Bayelsa	7	7000	1000	1	0.607843	0.369473	1	0.723298	0.378401
Bayelsa	8	43200	5400	0	0	0	0	0	0
Bayelsa	9	15000	1666.667	1	0.346405	0.119997	1	0.53883	0.156443
Bayelsa	10	30200	3020	0	0	0	1	0.164361	0.00444
Bayelsa	11	25000	2272.727	1	0.108734	0.011823	1	0.371132	0.05112
Bayelsa	1	28050	28050	0	0	0	0	0	0
Bayelsa	2	30100	15050	0	0	0	0	0	0
Benue	8	3200	400	1	0.843137	0.71088	1	0.889319	0.703353
Benue	9	4100	455.5556	1	0.821351	0.674617	1	0.873947	0.667506
Benue	10	13000	1300	1	0.490196	0.240292	1	0.640288	0.262498
Benue	11	8200	745.4545	1	0.707665	0.50079	1	0.793731	0.500058

EXCEL COMPUTATION OF PROPORTIONS,DEPTH AND SEVERITY OF POVERTY USING TMPCE AND MPCE METHODS RESPECTIVELY CONT.									
Benue	12	9000	750	1	0.705882	0.49827	1	0.792474	0.497685
Benue	1	10800	10800	0	0	0	0	0	0
Benue	2	8000	4000	0	0	0	0	0	0
Benue	3	8700	2900	0	0	0	1	0.197565	0.007711
Benue	4	4600	1150	1	0.54902	0.301423	1	0.681793	0.316926
Benue	5	16000	3200	0	0	0	1	0.114555	0.001503
Benue	6	10350	1725	1	0.323529	0.104671	1	0.52269	0.142801
Benue	7	3500	500	1	0.803922	0.64629	1	0.861649	0.639722
Benue	3	26000	8666.667	0	0	0	0	0	0
Benue	7	19700	2814.286	0	0	0	1	0.221282	0.010835
Benue	10	8800	880	1	0.654902	0.428897	1	0.756502	0.432943
Benue	1	2000	2000	1	0.215686	0.046521	1	0.446597	0.089073
Benue	2	18000	9000	0	0	0	0	0	0
Benue	4	3200	800	1	0.686275	0.470973	1	0.778639	0.472072
Benue	5	3900	780	1	0.694118	0.481799	1	0.784173	0.482209
Benue	6	5800	966.6667	1	0.620915	0.385535	1	0.732522	0.393062
Benue	1	3100	3100	0	0	0	1	0.142225	0.002877
Benue	2	7500	3750	0	0	0	0	0	0
Benue	3	6000	2000	1	0.215686	0.046521	1	0.446597	0.089073
Benue	4	4650	1162.5	1	0.544118	0.296064	1	0.678334	0.312127
Benue	5	18500	3700	0	0	0	0	0	0
Benue	1	23500	23500	0	0	0	0	0	0
Benue	2	2700	1350	1	0.470588	0.221453	1	0.626453	0.245847
Benue	3	25000	8333.333	0	0	0	0	0	0

EXCEL COMPUTATION OF PROPORTIONS,DEPTH AND SEVERITY OF POVERTY USING TMPCE AND MPCE METHODS RESPECTIVELY CONT.									
Benue	4	90700	22675	0	0	0	0	0	0
Benue	5	29000	5800	0	0	0	0	0	0
Benue	1	67000	67000	0	0	0	0	0	0
Benue	2	194000	97000	0	0	0	0	0	0
Benue	3	61050	20350	0	0	0	0	0	0
Benue	4	79180	19795	0	0	0	0	0	0
Benue	5	23500	4700	0	0	0	0	0	0
Benue	6	83005	13834.17	0	0	0	0	0	0
Benue	7	139100	19871.43	0	0	0	0	0	0
Benue	1	8850	8850	0	0	0	0	0	0
Benue	2	1900	950	1	0.627451	0.393695	1	0.737133	0.400533
Benue	3	10550	3516.667	0	0	0	1	0.026932	1.95E-05
Benue	4	11950	2987.5	0	0	0	1	0.173354	0.00521
Benue	5	2150	430	1	0.831373	0.69118	1	0.881018	0.68384
Borno	10	7700	770	1	0.698039	0.487259	1	0.78694	0.487331
Borno	11	7900	718.1818	1	0.71836	0.516041	1	0.801278	0.514457
Borno	12	16000	1333.333	1	0.477124	0.227647	1	0.631064	0.251316
Borno	14	13400	957.1429	1	0.62465	0.390187	1	0.735157	0.39732
Borno	1	10700	10700	0	0	0	0	0	0
Borno	1	15900	15900	0	0	0	0	0	0
Borno	2	11430	5715	0	0	0	0	0	0
Borno	3	12600	4200	0	0	0	0	0	0
Borno	4	5000	1250	1	0.509804	0.2599	1	0.654123	0.279884
Borno	5	6000	1200	1	0.529412	0.280277	1	0.667958	0.298021

EXCEL COMPUTATION OF PROPORTIONS,DEPTH AND SEVERITY OF POVERTY USING TMPCE AND MPCE METHODS RESPECTIVELY CONT.									
Borno	6	3000	500	1	0.803922	0.64629	1	0.861649	0.639722
Borno	7	5300	757.1429	1	0.703081	0.494323	1	0.790497	0.493971
Borno	1	5400	5400	0	0	0	0	0	0
Borno	2	10900	5450	0	0	0	0	0	0
Borno	3	6000	2000	1	0.215686	0.046521	1	0.446597	0.089073
Borno	4	4400	1100	1	0.568627	0.323337	1	0.695628	0.336613
Borno	1	19000	19000	0	0	0	0	0	0
Borno	2	14000	7000	0	0	0	0	0	0
Borno	1	17000	17000	0	0	0	0	0	0
Borno	2	17000	8500	0	0	0	0	0	0
Borno	3	18300	6100	0	0	0	0	0	0
Borno	4	18500	4625	0	0	0	0	0	0
Borno	5	13000	2600	0	0	0	1	0.280576	0.022088
Borno	1	14500	14500	0	0	0	0	0	0
Borno	2	18800	9400	0	0	0	0	0	0
Borno	3	2300	766.6667	1	0.699346	0.489085	1	0.787862	0.489047
Borno	1	4100	4100	0	0	0	0	0	0
Borno	2	5700	2850	0	0	0	1	0.2114	0.009447
Borno	3	1700	566.6667	1	0.777778	0.604938	1	0.843202	0.599509
Borno	4	5000	1250	1	0.509804	0.2599	1	0.654123	0.279884
Borno	5	1100	220	1	0.913725	0.834894	1	0.939126	0.828268
Borno	1	3000	3000	0	0	0	1	0.169895	0.004904
Borno	2	2400	1200	1	0.529412	0.280277	1	0.667958	0.298021
Borno	3	3000	1000	1	0.607843	0.369473	1	0.723298	0.378401

EXCEL COMPUTATION OF PROPORTIONS,DEPTH AND SEVERITY OF POVERTY USING TMPCE AND MPCE METHODS RESPECTIVELY CONT.									
Borno	4	11500	2875	0	0	0	1	0.204483	0.00855
Borno	5	12000	2400	1	0.058824	0.00346	1	0.335916	0.037905
Borno	1	20500	20500	0	0	0	0	0	0
Borno	2	7800	3900	0	0	0	0	0	0
Borno	3	10600	3533.333	0	0	0	1	0.022321	1.11E-05
Borno	4	17500	4375	0	0	0	0	0	0
Borno	5	10500	2100	1	0.176471	0.031142	1	0.418926	0.073521
Borno	6	8100	1350	1	0.470588	0.221453	1	0.626453	0.245847
Cross_rivers	5	10500	2100	1	0.176471	0.031142	1	0.418926	0.073521
Cross_rivers	6	5000	833.3333	1	0.673203	0.453202	1	0.769415	0.455494
Cross_rivers	1	8500	8500	0	0	0	0	0	0
Cross_rivers	2	3900	1950	1	0.235294	0.055363	1	0.460432	0.09761
Cross_rivers	3	6500	2166.667	1	0.150327	0.022598	1	0.40048	0.06423
Cross_rivers	4	12100	3025	0	0	0	1	0.162977	0.004329
Cross_rivers	5	60000	12000	0	0	0	0	0	0
Cross_rivers	6	9600	1600	1	0.372549	0.138793	1	0.557277	0.173067
Cross_rivers	1	17000	17000	0	0	0	0	0	0
Cross_rivers	2	12405	6202.5	0	0	0	0	0	0
Cross_rivers	3	2000	666.6667	1	0.738562	0.545474	1	0.815532	0.542405
Cross_rivers	4	10000	2500	1	0.019608	0.000384	1	0.308246	0.029288
Cross_rivers	1	2500	2500	1	0.019608	0.000384	1	0.308246	0.029288
Cross_rivers	2	4400	2200	1	0.137255	0.018839	1	0.391256	0.059894
Cross_rivers	3	12000	4000	0	0	0	0	0	0
Cross_rivers	4	8500	2125	1	0.166667	0.027778	1	0.412009	0.069939

EXCEL COMPUTATION OF PROPORTIONS,DEPTH AND SEVERITY OF POVERTY USING TMPCE AND MPCE METHODS RESPECTIVELY CONT.									
Cross_rivers	5	9700	1940	1	0.239216	0.057224	1	0.463199	0.099381
Cross_rivers	1	9500	9500	0	0	0	0	0	0
Cross_rivers	2	3500	1750	1	0.313725	0.098424	1	0.515772	0.137206
Cross_rivers	3	27400	9133.333	0	0	0	0	0	0
Cross_rivers	4	17000	4250	0	0	0	0	0	0
Cross_rivers	5	7200	1440	1	0.435294	0.189481	1	0.60155	0.217678
Cross_rivers	6	5700	950	1	0.627451	0.393695	1	0.737133	0.400533
Cross_rivers	7	3300	471.4286	1	0.815126	0.66443	1	0.869555	0.657493
Cross_rivers	1	1350	1350	1	0.470588	0.221453	1	0.626453	0.245847
Cross_rivers	2	10400	5200	0	0	0	0	0	0
Cross_rivers	3	18100	6033.333	0	0	0	0	0	0
Cross_rivers	4	4050	1012.5	1	0.602941	0.363538	1	0.71984	0.372998
Cross_rivers	5	9250	1850	1	0.27451	0.075356	1	0.488102	0.116287
Cross_rivers	6	5200	866.6667	1	0.660131	0.435773	1	0.760192	0.439309
Cross_rivers	1	8000	8000	0	0	0	0	0	0
Cross_rivers	2	4700	2350	1	0.078431	0.006151	1	0.349751	0.042784
Cross_rivers	3	17000	5666.667	0	0	0	0	0	0
Cross_rivers	4	8900	2225	1	0.127451	0.016244	1	0.384339	0.056773
Cross_rivers	5	6250	1250	1	0.509804	0.2599	1	0.654123	0.279884
Cross_rivers	6	28100	4683.333	0	0	0	0	0	0
Cross_rivers	7	3400	485.7143	1	0.809524	0.655329	1	0.865602	0.648567
Cross_rivers	8	4000	500	1	0.803922	0.64629	1	0.861649	0.639722
Cross_rivers	9	8900	988.8889	1	0.6122	0.374789	1	0.726373	0.383247
Cross_rivers	1	9000	9000	0	0	0	0	0	0

EXCEL COMPUTATION OF PROPORTIONS,DEPTH AND SEVERITY OF POVERTY USING TMPCE AND MPCE METHODS RESPECTIVELY CONT.									
Cross_rivers	2	2800	1400	1	0.45098	0.203383	1	0.612618	0.229916
Cross_rivers	3	8595	2865	0	0	0	1	0.20725	0.008902
Cross_rivers	4	12000	3000	0	0	0	1	0.169895	0.004904
Cross_rivers	5	2500	500	1	0.803922	0.64629	1	0.861649	0.639722
Cross_rivers	6	17350	2891.667	0	0	0	1	0.199871	0.007985
Cross_rivers	7	9550	1364.286	1	0.464986	0.216212	1	0.6225	0.241222
Cross_rivers	1	3000	3000	0	0	0	1	0.169895	0.004904
Cross_rivers	2	1800	900	1	0.647059	0.418685	1	0.750968	0.423511
Cross_rivers	3	4430	1476.667	1	0.420915	0.177169	1	0.591404	0.206848
Cross_rivers	4	1500	375	1	0.852941	0.727509	1	0.896237	0.719894
Cross_rivers	5	20000	4000	0	0	0	0	0	0
Cross_rivers	6	4000	666.6667	1	0.738562	0.545474	1	0.815532	0.542405
Cross_rivers	1	4850	4850	0	0	0	0	0	0
Cross_rivers	2	9000	4500	0	0	0	0	0	0
Cross_rivers	3	90300	30100	0	0	0	0	0	0
Cross_rivers	4	29000	7250	0	0	0	0	0	0
Cross_rivers	5	3000	600	1	0.764706	0.584775	1	0.833979	0.58005
Cross_rivers	6	9480	1580	1	0.380392	0.144698	1	0.562811	0.178274
Cross_rivers	1	7420	7420	0	0	0	0	0	0
Cross_rivers	2	14000	7000	0	0	0	0	0	0
Cross_rivers	1	4000	4000	0	0	0	0	0	0
Cross_rivers	2	7500	3750	0	0	0	0	0	0
Cross_rivers	3	2000	666.6667	1	0.738562	0.545474	1	0.815532	0.542405
Cross_rivers	4	16310	4077.5	0	0	0	0	0	0

EXCEL COMPUTATION OF PROPORTIONS,DEPTH AND SEVERITY OF POVERTY USING TMPCE AND MPCE METHODS RESPECTIVELY CONT.									
Cross_rivers	21	9500	452.381	1	0.822596	0.676664	1	0.874825	0.669521
Delta	3	8960	2986.667	0	0	0	1	0.173584	0.00523
Delta	4	11400	2850	0	0	0	1	0.2114	0.009447
Delta	5	5000	1000	1	0.607843	0.369473	1	0.723298	0.378401
Delta	6	39400	6566.667	0	0	0	0	0	0
Delta	7	11000	1571.429	1	0.383754	0.147267	1	0.565183	0.180537
Delta	8	9500	1187.5	1	0.534314	0.285491	1	0.671417	0.302675
Delta	1	8200	8200	0	0	0	0	0	0
Delta	1	14200	14200	0	0	0	0	0	0
Delta	1	18600	18600	0	0	0	0	0	0
Delta	2	21000	10500	0	0	0	0	0	0
Delta	3	14600	4866.667	0	0	0	0	0	0
Delta	1	8800	8800	0	0	0	0	0	0
Delta	1	4100	4100	0	0	0	0	0	0
Delta	2	15000	7500	0	0	0	0	0	0
Delta	3	16500	5500	0	0	0	0	0	0
Delta	4	8750	2187.5	1	0.142157	0.020209	1	0.394715	0.061497
Delta	1	81000	81000	0	0	0	0	0	0
Delta	2	6000	3000	0	0	0	1	0.169895	0.004904
Delta	3	21200	7066.667	0	0	0	0	0	0
Delta	4	10900	2725	0	0	0	1	0.245988	0.014885
Delta	1	9000	9000	0	0	0	0	0	0
Delta	2	6800	3400	0	0	0	1	0.059214	0.000208
Delta	3	9000	3000	0	0	0	1	0.169895	0.004904

EXCEL COMPUTATION OF PROPORTIONS,DEPTH AND SEVERITY OF POVERTY USING TMPCE AND MPCE METHODS RESPECTIVELY CONT.									
Delta	4	23000	5750	0	0	0	0	0	0
Delta	5	24900	4980	0	0	0	0	0	0
Delta	6	15300	2550	1	0	0	1	0.294411	0.025519
Delta	7	18500	2642.857	0	0	0	1	0.268717	0.019404
Delta	1	4500	4500	0	0	0	0	0	0
Delta	2	24000	12000	0	0	0	0	0	0
Delta	3	2300	766.6667	1	0.699346	0.489085	1	0.787862	0.489047
Delta	4	9500	2375	1	0.068627	0.00471	1	0.342833	0.040295
Delta	1	5900	5900	0	0	0	0	0	0
Delta	2	7400	3700	0	0	0	0	0	0
Delta	3	4300	1433.333	1	0.437908	0.191764	1	0.603394	0.219687
Delta	4	5300	1325	1	0.480392	0.230777	1	0.63337	0.254081
Delta	5	5300	1060	1	0.584314	0.341423	1	0.706696	0.352938
Delta	6	5600	933.3333	1	0.633987	0.401939	1	0.741745	0.408098
Delta	7	1500	214.2857	1	0.915966	0.838994	1	0.940707	0.832459
Delta	8	13200	1650	1	0.352941	0.124567	1	0.543442	0.160494
Delta	9	27000	3000	0	0	0	1	0.169895	0.004904
Delta	10	3350	335	1	0.868627	0.754514	1	0.907305	0.746895
Delta	2	3700	1850	1	0.27451	0.075356	1	0.488102	0.116287
Delta	1	9780	9780	0	0	0	0	0	0
Delta	1	27000	27000	0	0	0	0	0	0
Delta	2	2070	1035	1	0.594118	0.352976	1	0.713614	0.363404
Delta	3	7500	2500	1	0.019608	0.000384	1	0.308246	0.029288
Delta	4	16000	4000	0	0	0	0	0	0

EXCEL COMPUTATION OF PROPORTIONS,DEPTH AND SEVERITY OF POVERTY USING TMPCE AND MPCE METHODS RESPECTIVELY CONT.									
Delta	5	21800	4360	0	0	0	0	0	0
Delta	6	29000	4833.333	0	0	0	0	0	0
Delta	7	13000	1857.143	1	0.271709	0.073826	1	0.486125	0.11488
Delta	8	20000	2500	1	0.019608	0.000384	1	0.308246	0.029288
Delta	9	10500	1166.667	1	0.542484	0.294289	1	0.677181	0.310538
Ebonyi	1	10660	10660	0	0	0	0	0	0
Ebonyi	1	7500	7500	0	0	0	0	0	0
Ebonyi	2	9600	4800	0	0	0	0	0	0
Ebonyi	1	4300	4300	0	0	0	0	0	0
Ebonyi	2	9400	4700	0	0	0	0	0	0
Ebonyi	3	2900	966.6667	1	0.620915	0.385535	1	0.732522	0.393062
Ebonyi	1	9500	9500	0	0	0	0	0	0
Ebonyi	2	1700	850	1	0.666667	0.444444	1	0.764804	0.447352
Ebonyi	3	2800	933.3333	1	0.633987	0.401939	1	0.741745	0.408098
Ebonyi	4	4300	1075	1	0.578431	0.334583	1	0.702546	0.346756
Ebonyi	5	5900	1180	1	0.537255	0.288643	1	0.673492	0.30549
Ebonyi	1	2500	2500	1	0.019608	0.000384	1	0.308246	0.029288
Ebonyi	2	2200	1100	1	0.568627	0.323337	1	0.695628	0.336613
Ebonyi	3	4900	1633.333	1	0.359477	0.129224	1	0.548054	0.164615
Ebonyi	5	7600	1520	1	0.403922	0.163153	1	0.579413	0.194521
Ebonyi	6	8000	1333.333	1	0.477124	0.227647	1	0.631064	0.251316
Ebonyi	7	12000	1714.286	1	0.327731	0.107408	1	0.525654	0.145245
Ebonyi	8	6000	750	1	0.705882	0.49827	1	0.792474	0.497685
Ebonyi	1	7800	7800	0	0	0	0	0	0

EXCEL COMPUTATION OF PROPORTIONS,DEPTH AND SEVERITY OF POVERTY USING TMPCE AND MPCE METHODS RESPECTIVELY CONT.									
Ebonyi	1	7100	7100	0	0	0	0	0	0
Ebonyi	2	6700	3350	0	0	0	1	0.073049	0.00039
Ebonyi	3	6460	2153.333	1	0.155556	0.024198	1	0.404169	0.066022
Ebonyi	4	8200	2050	1	0.196078	0.038447	1	0.432761	0.081049
Ebonyi	5	6700	1340	1	0.47451	0.22516	1	0.62922	0.249119
Ebonyi	1	3800	3800	0	0	0	0	0	0
Ebonyi	2	3000	1500	1	0.411765	0.16955	1	0.584947	0.200148
Ebonyi	3	2700	900	1	0.647059	0.418685	1	0.750968	0.423511
Ebonyi	1	2400	2400	1	0.058824	0.00346	1	0.335916	0.037905
Ebonyi	2	4400	2200	1	0.137255	0.018839	1	0.391256	0.059894
Ebonyi	3	3200	1066.667	1	0.581699	0.338374	1	0.704852	0.350181
Ebonyi	4	2200	550	1	0.784314	0.615148	1	0.847814	0.609399
Ebonyi	5	7000	1400	1	0.45098	0.203383	1	0.612618	0.229916
Ebonyi	6	12000	2000	1	0.215686	0.046521	1	0.446597	0.089073
Ebonyi	7	9800	1400	1	0.45098	0.203383	1	0.612618	0.229916
Ebonyi	8	9120	1140	1	0.552941	0.305744	1	0.68456	0.3208
Ebonyi	9	11450	1272.222	1	0.501089	0.251091	1	0.647974	0.272065
Ebonyi	10	9150	915	1	0.641176	0.411107	1	0.746818	0.416528
Ebonyi	11	6500	590.9091	1	0.768271	0.59024	1	0.836494	0.585314
Ebonyi	1	7085	7085	0	0	0	0	0	0
Ebonyi	2	11200	5600	0	0	0	0	0	0
Ebonyi	3	16000	5333.333	0	0	0	0	0	0
Ebonyi	4	2600	650	1	0.745098	0.555171	1	0.820144	0.551658
Edo	3	25000	8333.333	0	0	0	0	0	0

EXCEL COMPUTATION OF PROPORTIONS,DEPTH AND SEVERITY OF POVERTY USING TMPCE AND MPCE METHODS RESPECTIVELY CONT.									
Edo	4	2800	700	1	0.72549	0.526336	1	0.806309	0.524209
Edo	5	21000	4200	0	0	0	0	0	0
Edo	1	14000	14000	0	0	0	0	0	0
Edo	2	3600	1800	1	0.294118	0.086505	1	0.501937	0.126458
Edo	1	10000	10000	0	0	0	0	0	0
Edo	2	57600	28800	0	0	0	0	0	0
Edo	3	20000	6666.667	0	0	0	0	0	0
Edo	4	16200	4050	0	0	0	0	0	0
Edo	5	8400	1680	1	0.341176	0.116401	1	0.535141	0.153252
Edo	6	5100	850	1	0.666667	0.444444	1	0.764804	0.447352
Edo	7	18600	2657.143	0	0	0	1	0.264764	0.01856
Edo	8	9500	1187.5	1	0.534314	0.285491	1	0.671417	0.302675
Edo	9	6100	677.7778	1	0.734205	0.539057	1	0.812458	0.536293
Edo	10	7800	780	1	0.694118	0.481799	1	0.784173	0.482209
Edo	11	21950	1995.455	1	0.217469	0.047293	1	0.447854	0.089828
Edo	12	1250	104.1667	1	0.95915	0.919969	1	0.971177	0.915999
Edo	14	20400	1457.143	1	0.428571	0.183673	1	0.596806	0.212569
Edo	15	8460	564	1	0.778824	0.606566	1	0.84394	0.601084
Edo	16	18200	1137.5	1	0.553922	0.306829	1	0.685252	0.321774
Edo	1	9700	9700	0	0	0	0	0	0
Edo	2	15900	7950	0	0	0	0	0	0
Edo	3	10600	3533.333	0	0	0	1	0.022321	1.11E-05
Edo	4	11000	2750	0	0	0	1	0.23907	0.013664
Edo	5	11100	2220	1	0.129412	0.016747	1	0.385722	0.057388

EXCEL COMPUTATION OF PROPORTIONS,DEPTH AND SEVERITY OF POVERTY USING TMPCE AND MPCE METHODS RESPECTIVELY CONT.									
Edo	1	5000	5000	0	0	0	0	0	0
Edo	2	61000	30500	0	0	0	0	0	0
Edo	1	12600	12600	0	0	0	0	0	0
Edo	1	4730	4730	0	0	0	0	0	0
Edo	2	420	210	1	0.917647	0.842076	1	0.941893	0.835611
Edo	1	27300	27300	0	0	0	0	0	0
Edo	2	9830	4915	0	0	0	0	0	0
Edo	3	15000	5000	0	0	0	0	0	0
Edo	4	6000	1500	1	0.411765	0.16955	1	0.584947	0.200148
Edo	1	13600	13600	0	0	0	0	0	0
Edo	2	6650	3325	0	0	0	1	0.079967	0.000511
Edo	3	34000	11333.33	0	0	0	0	0	0
Edo	4	6000	1500	1	0.411765	0.16955	1	0.584947	0.200148
Edo	5	9900	1980	1	0.223529	0.049965	1	0.452131	0.092425
Edo	1	4360	4360	0	0	0	0	0	0
Edo	2	7500	3750	0	0	0	0	0	0
Edo	3	15300	5100	0	0	0	0	0	0
Edo	1	18300	18300	0	0	0	0	0	0
Edo	2	5000	2500	1	0.019608	0.000384	1	0.308246	0.029288
Ekiti	1	8000	8000	0	0	0	0	0	0
Ekiti	2	11400	5700	0	0	0	0	0	0
Ekiti	3	3800	1266.667	1	0.503268	0.253279	1	0.649511	0.274006
Ekiti	4	3500	875	1	0.656863	0.431469	1	0.757886	0.435323
Ekiti	1	13300	13300	0	0	0	0	0	0

EXCEL COMPUTATION OF PROPORTIONS,DEPTH AND SEVERITY OF POVERTY USING TMPCE AND MPCE METHODS RESPECTIVELY CONT.									
Ekiti	1	14500	14500	0	0	0	0	0	0
Ekiti	2	6900	3450	0	0	0	1	0.045379	9.34E-05
Ekiti	3	12000	4000	0	0	0	0	0	0
Ekiti	4	3150	787.5	1	0.691176	0.477725	1	0.782097	0.47839
Ekiti	1	2300	2300	1	0.098039	0.009612	1	0.363586	0.048064
Ekiti	2	1600	800	1	0.686275	0.470973	1	0.778639	0.472072
Ekiti	3	2900	966.6667	1	0.620915	0.385535	1	0.732522	0.393062
Ekiti	4	5400	1350	1	0.470588	0.221453	1	0.626453	0.245847
Ekiti	5	4200	840	1	0.670588	0.449689	1	0.767571	0.452225
Ekiti	6	5000	833.3333	1	0.673203	0.453202	1	0.769415	0.455494
Ekiti	7	9200	1314.286	1	0.484594	0.234831	1	0.636335	0.257666
Ekiti	1	4100	4100	0	0	0	0	0	0
Ekiti	1	14000	14000	0	0	0	0	0	0
Ekiti	2	8806	4403	0	0	0	0	0	0
Ekiti	3	8100	2700	0	0	0	1	0.252905	0.016176
Ekiti	4	4000	1000	1	0.607843	0.369473	1	0.723298	0.378401
Ekiti	5	10400	2080	1	0.184314	0.033972	1	0.42446	0.076474
Ekiti	1	25000	25000	0	0	0	0	0	0
Ekiti	2	5700	2850	0	0	0	1	0.2114	0.009447
Ekiti	9	16400	1822.222	1	0.285403	0.081455	1	0.495788	0.121868
Ekiti	4	10600	2650	0	0	0	1	0.26674	0.018979
Ekiti	5	4700	940	1	0.631373	0.398631	1	0.7399	0.40506
Ekiti	1	4000	4000	0	0	0	0	0	0
Ekiti	1	17600	17600	0	0	0	0	0	0

EXCEL COMPUTATION OF PROPORTIONS,DEPTH AND SEVERITY OF POVERTY USING TMPCE AND MPCE METHODS RESPECTIVELY CONT.									
Ekiti	2	17300	8650	0	0	0	0	0	0
Ekiti	3	2300	766.6667	1	0.699346	0.489085	1	0.787862	0.489047
Ekiti	4	8000	2000	1	0.215686	0.046521	1	0.446597	0.089073
Ekiti	5	2380	476	1	0.813333	0.661511	1	0.86829	0.654628
Ekiti	6	5200	866.6667	1	0.660131	0.435773	1	0.760192	0.439309
Ekiti	1	7500	7500	0	0	0	0	0	0
Ekiti	2	12000	6000	0	0	0	0	0	0
Ekiti	3	5100	1700	1	0.333333	0.111111	1	0.529607	0.148546
Ekiti	4	8000	2000	1	0.215686	0.046521	1	0.446597	0.089073
Ekiti	1	3900	3900	0	0	0	0	0	0
Ekiti	2	17000	8500	0	0	0	0	0	0
Ekiti	3	7400	2466.667	1	0.03268	0.001068	1	0.317469	0.031997
Ekiti	1	7500	7500	0	0	0	0	0	0
Ekiti	2	2000	1000	1	0.607843	0.369473	1	0.723298	0.378401
Ekiti	3	4900	1633.333	1	0.359477	0.129224	1	0.548054	0.164615
Ekiti	4	1000	250	1	0.901961	0.813533	1	0.930825	0.806498
Ekiti	5	200	40	1	0.984314	0.968874	1	0.988932	0.967162
Ekiti	6	1000	166.6667	1	0.934641	0.873553	1	0.953883	0.867931
Ekiti	1	1700	1700	1	0.333333	0.111111	1	0.529607	0.148546
Ekiti	2	3000	1500	1	0.411765	0.16955	1	0.584947	0.200148
Ekiti	3	2500	833.3333	1	0.673203	0.453202	1	0.769415	0.455494
Ekiti	4	400	100	1	0.960784	0.923106	1	0.97233	0.919265
Ekiti	5	1000	200	1	0.921569	0.849289	1	0.94466	0.842997
Ekiti	1	16400	16400	0	0	0	0	0	0

EXCEL COMPUTATION OF PROPORTIONS,DEPTH AND SEVERITY OF POVERTY USING TMPCE AND MPCE METHODS RESPECTIVELY CONT.									
Ekiti	1	19000	19000	0	0	0	0	0	0
Ekiti	2	1300	650	1	0.745098	0.555171	1	0.820144	0.551658
Ekiti	3	18000	6000	0	0	0	0	0	0
Ekiti	4	14300	3575	0	0	0	1	0.010791	1.26E-06
Ekiti	5	12000	2400	1	0.058824	0.00346	1	0.335916	0.037905
Ekiti	1	6207	6207	0	0	0	0	0	0
Ekiti	1	23480	23480	0	0	0	0	0	0
Ekiti	1	24500	24500	0	0	0	0	0	0
Ekiti	2	5250	2625	0	0	0	1	0.273658	0.020494
Ekiti	3	3700	1233.333	1	0.51634	0.266607	1	0.658735	0.285845
Ekiti	1	3750	3750	0	0	0	0	0	0
Ekiti	1	8100	8100	0	0	0	0	0	0
Ekiti	1	5700	5700	0	0	0	0	0	0
Ekiti	2	11900	5950	0	0	0	0	0	0
Ekiti	3	2400	800	1	0.686275	0.470973	1	0.778639	0.472072
Ekiti	4	32800	8200	0	0	0	0	0	0
Ekiti	1	3300	3300	0	0	0	1	0.086884	0.000656
Ekiti	1	3700	3700	0	0	0	0	0	0
Ekiti	1	700	700	1	0.72549	0.526336	1	0.806309	0.524209
Enugu	2	7500	3750	0	0	0	0	0	0
Enugu	3	1400	466.6667	1	0.816993	0.667478	1	0.870873	0.660486
Enugu	4	1800	450	1	0.823529	0.678201	1	0.875484	0.671035
Enugu	5	1000	200	1	0.921569	0.849289	1	0.94466	0.842997
Enugu	1	3200	3200	0	0	0	1	0.114555	0.001503

EXCEL COMPUTATION OF PROPORTIONS,DEPTH AND SEVERITY OF POVERTY USING TMPCE AND MPCE METHODS RESPECTIVELY CONT.									
Enugu	2	6300	3150	0	0	0	1	0.12839	0.002116
Enugu	3	2950	983.3333	1	0.614379	0.377462	1	0.72791	0.385685
Enugu	4	2606	651.5	1	0.74451	0.554295	1	0.819729	0.550821
Enugu	5	800	160	1	0.937255	0.878447	1	0.955728	0.872977
Enugu	6	7240	1206.667	1	0.526797	0.277515	1	0.666113	0.295559
Enugu	7	2800	400	1	0.843137	0.71088	1	0.889319	0.703353
Enugu	1	7900	7900	0	0	0	0	0	0
Enugu	1	6000	6000	0	0	0	0	0	0
Enugu	2	6600	3300	0	0	0	1	0.086884	0.000656
Enugu	3	13560	4520	0	0	0	0	0	0
Enugu	1	3800	3800	0	0	0	0	0	0
Enugu	2	5000	2500	1	0.019608	0.000384	1	0.308246	0.029288
Enugu	3	8800	2933.333	0	0	0	1	0.188342	0.006681
Enugu	4	17000	4250	0	0	0	0	0	0
Enugu	1	19800	19800	0	0	0	0	0	0
Enugu	2	6000	3000	0	0	0	1	0.169895	0.004904
Enugu	3	2600	866.6667	1	0.660131	0.435773	1	0.760192	0.439309
Enugu	4	4800	1200	1	0.529412	0.280277	1	0.667958	0.298021
Enugu	5	6200	1240	1	0.513725	0.263914	1	0.65689	0.283451
Enugu	6	4900	816.6667	1	0.679739	0.462045	1	0.774027	0.463733
Enugu	1	11000	11000	0	0	0	0	0	0
Enugu	2	3700	1850	1	0.27451	0.075356	1	0.488102	0.116287
Enugu	3	4600	1533.333	1	0.398693	0.158956	1	0.575724	0.190828
Enugu	1	3620	3620	0	0	0	0	0	0

EXCEL COMPUTATION OF PROPORTIONS,DEPTH AND SEVERITY OF POVERTY USING TMPCE AND MPCE METHODS RESPECTIVELY CONT.									
Kaduna	6	14200	2366.667	1	0.071895	0.005169	1	0.345139	0.041113
Kaduna	1	9000	9000	0	0	0	0	0	0
Kaduna	2	5500	2750	0	0	0	1	0.23907	0.013664
Kaduna	3	12200	4066.667	0	0	0	0	0	0
Kaduna	4	6000	1500	1	0.411765	0.16955	1	0.584947	0.200148
Kaduna	5	14000	2800	0	0	0	1	0.225235	0.011426
Kaduna	6	6000	1000	1	0.607843	0.369473	1	0.723298	0.378401
Kaduna	7	9200	1314.286	1	0.484594	0.234831	1	0.636335	0.257666
Kaduna	1	12700	12700	0	0	0	0	0	0
Kaduna	2	12600	6300	0	0	0	0	0	0
Kano	1	38000	38000	0	0	0	0	0	0
Kano	2	34000	17000	0	0	0	0	0	0
Kano	3	35000	11666.67	0	0	0	0	0	0
Kano	4	59000	14750	0	0	0	0	0	0
Kano	5	25000	5000	0	0	0	0	0	0
Kano	6	33000	5500	0	0	0	0	0	0
Kano	1	51000	51000	0	0	0	0	0	0
Kano	2	3200	1600	1	0.372549	0.138793	1	0.557277	0.173067
Kano	3	3150	1050	1	0.588235	0.346021	1	0.709463	0.3571
Kano	4	2600	650	1	0.745098	0.555171	1	0.820144	0.551658
Kano	5	6200	1240	1	0.513725	0.263914	1	0.65689	0.283451
Kano	6	6000	1000	1	0.607843	0.369473	1	0.723298	0.378401
Kano	1	3400	3400	0	0	0	1	0.059214	0.000208
Kano	2	2700	1350	1	0.470588	0.221453	1	0.626453	0.245847

EXCEL COMPUTATION OF PROPORTIONS,DEPTH AND SEVERITY OF POVERTY USING TMPCE AND MPCE METHODS RESPECTIVELY CONT.									
Kano	3	3000	1000	1	0.607843	0.369473	1	0.723298	0.378401
Kano	4	6100	1525	1	0.401961	0.161572	1	0.57803	0.193131
Kano	1	4200	4200	0	0	0	0	0	0
Kano	2	8500	4250	0	0	0	0	0	0
Kano	3	9000	3000	0	0	0	1	0.169895	0.004904
Kano	4	13500	3375	0	0	0	1	0.066132	0.000289
Kano	1	9100	9100	0	0	0	0	0	0
Kano	2	13000	6500	0	0	0	0	0	0
Kano	3	11000	3666.667	0	0	0	0	0	0
Katsina	3	3150	1050	1	0.588235	0.346021	1	0.709463	0.3571
Katsina	1	2200	2200	1	0.137255	0.018839	1	0.391256	0.059894
Katsina	2	4350	2175	1	0.147059	0.021626	1	0.398174	0.063127
Katsina	3	3510	1170	1	0.541176	0.292872	1	0.676259	0.309271
Katsina	4	5000	1250	1	0.509804	0.2599	1	0.654123	0.279884
Katsina	1	5100	5100	0	0	0	0	0	0
Katsina	2	3600	1800	1	0.294118	0.086505	1	0.501937	0.126458
Katsina	3	3630	1210	1	0.52549	0.27614	1	0.665191	0.294333
Katsina	4	5050	1262.5	1	0.504902	0.254926	1	0.650664	0.275468
Katsina	5	4100	820	1	0.678431	0.460269	1	0.773105	0.462077
Katsina	6	6100	1016.667	1	0.601307	0.36157	1	0.718687	0.371209
Katsina	1	12000	12000	0	0	0	0	0	0
Katsina	2	4500	2250	1	0.117647	0.013841	1	0.377421	0.053762
Katsina	3	5500	1833.333	1	0.281046	0.078987	1	0.492714	0.119614
Katsina	4	11000	2750	0	0	0	1	0.23907	0.013664

EXCEL COMPUTATION OF PROPORTIONS,DEPTH AND SEVERITY OF POVERTY USING TMPCE AND MPCE METHODS RESPECTIVELY CONT.									
Katsina	5	5500	1100	1	0.568627	0.323337	1	0.695628	0.336613
Katsina	1	8500	8500	0	0	0	0	0	0
Katsina	2	5500	2750	0	0	0	1	0.23907	0.013664
Katsina	3	6500	2166.667	1	0.150327	0.022598	1	0.40048	0.06423
Katsina	7	9506	1358	1	0.467451	0.21851	1	0.624239	0.24325
Katsina	8	67600	8450	0	0	0	0	0	0
Katsina	1	21200	21200	0	0	0	0	0	0
Katsina	2	7000	3500	0	0	0	1	0.031544	3.14E-05
Katsina	3	5500	1833.333	1	0.281046	0.078987	1	0.492714	0.119614
Katsina	4	10000	2500	1	0.019608	0.000384	1	0.308246	0.029288
Katsina	5	6700	1340	1	0.47451	0.22516	1	0.62922	0.249119
Katsina	6	4500	750	1	0.705882	0.49827	1	0.792474	0.497685
Katsina	7	7000	1000	1	0.607843	0.369473	1	0.723298	0.378401
Katsina	8	9700	1212.5	1	0.52451	0.275111	1	0.664499	0.293416
Katsina	1	6100	6100	0	0	0	0	0	0
Katsina	2	19000	9500	0	0	0	0	0	0
Kebbi	2	17000	8500	0	0	0	0	0	0
Kebbi	3	14000	4666.667	0	0	0	0	0	0
Kebbi	4	15000	3750	0	0	0	0	0	0
Kebbi	1	16000	16000	0	0	0	0	0	0
Kebbi	2	13000	6500	0	0	0	0	0	0
Kebbi	1	19500	19500	0	0	0	0	0	0
Kebbi	2	17000	8500	0	0	0	0	0	0
Kebbi	3	18000	6000	0	0	0	0	0	0

EXCEL COMPUTATION OF PROPORTIONS,DEPTH AND SEVERITY OF POVERTY USING TMPCE AND MPCE METHODS RESPECTIVELY CONT.									
Kebbi	4	10000	2500	1	0.019608	0.000384	1	0.308246	0.029288
Kebbi	1	10000	10000	0	0	0	0	0	0
Kebbi	2	19000	9500	0	0	0	0	0	0
Kebbi	3	28000	9333.333	0	0	0	0	0	0
Kebbi	4	14000	3500	0	0	0	1	0.031544	3.14E-05
Kebbi	1	9000	9000	0	0	0	0	0	0
Kebbi	2	19000	9500	0	0	0	0	0	0
Kebbi	3	5850	1950	1	0.235294	0.055363	1	0.460432	0.09761
Kebbi	4	10000	2500	1	0.019608	0.000384	1	0.308246	0.029288
Kebbi	5	22100	4420	0	0	0	0	0	0
Kebbi	1	30000	30000	0	0	0	0	0	0
Kebbi	2	14500	7250	0	0	0	0	0	0
Kebbi	3	5060	1686.667	1	0.338562	0.114624	1	0.533296	0.151672
Kebbi	1	24000	24000	0	0	0	0	0	0
Kebbi	2	7000	3500	0	0	0	1	0.031544	3.14E-05
Kebbi	1	27000	27000	0	0	0	0	0	0
Kebbi	2	31000	15500	0	0	0	0	0	0
Kebbi	3	10620	3540	0	0	0	1	0.020476	8.58E-06
Kebbi	1	4400	4400	0	0	0	0	0	0
Kebbi	2	9060	4530	0	0	0	0	0	0
Kebbi	3	800	266.6667	1	0.895425	0.801786	1	0.926213	0.794571
Kebbi	5	4700	940	1	0.631373	0.398631	1	0.7399	0.40506
Kebbi	1	3300	3300	0	0	0	1	0.086884	0.000656
Kebbi	2	1500	750	1	0.705882	0.49827	1	0.792474	0.497685

EXCEL COMPUTATION OF PROPORTIONS,DEPTH AND SEVERITY OF POVERTY USING TMPCE AND MPCE METHODS RESPECTIVELY CONT.									
Kebbi	3	7700	2566.667	0	0	0	1	0.289799	0.024338
Kebbi	4	3200	800	1	0.686275	0.470973	1	0.778639	0.472072
Kebbi	5	9060	1812	1	0.289412	0.083759	1	0.498616	0.123965
Kebbi	6	18000	3000	0	0	0	1	0.169895	0.004904
Kebbi	7	13000	1857.143	1	0.271709	0.073826	1	0.486125	0.11488
Kebbi	8	14000	1750	1	0.313725	0.098424	1	0.515772	0.137206
Kebbi	9	14000	1555.556	1	0.389978	0.152083	1	0.569575	0.184779
Kebbi	10	15000	1500	1	0.411765	0.16955	1	0.584947	0.200148
Kebbi	4	8000	2000	1	0.215686	0.046521	1	0.446597	0.089073
Kebbi	5	8000	1600	1	0.372549	0.138793	1	0.557277	0.173067
Kebbi	6	6000	1000	1	0.607843	0.369473	1	0.723298	0.378401
Kebbi	7	5590	798.5714	1	0.686835	0.471742	1	0.779034	0.472791
Kebbi	1	1800	1800	1	0.294118	0.086505	1	0.501937	0.126458
Kebbi	2	4800	2400	1	0.058824	0.00346	1	0.335916	0.037905
Kebbi	3	3700	1233.333	1	0.51634	0.266607	1	0.658735	0.285845
Kebbi	4	2820	705	1	0.723529	0.523495	1	0.804925	0.521515
Kebbi	5	4360	872	1	0.658039	0.433016	1	0.758716	0.436755
Kebbi	6	2950	491.6667	1	0.80719	0.651555	1	0.863955	0.644872
Kebbi	7	2900	414.2857	1	0.837535	0.701465	1	0.885366	0.694015
Kogi	1	10000	10000	0	0	0	0	0	0
Kogi	2	11000	5500	0	0	0	0	0	0
Kogi	3	9100	3033.333	0	0	0	1	0.160671	0.004148
Kogi	4	11106	2776.5	0	0	0	1	0.231738	0.012445
Kogi	5	16000	3200	0	0	0	1	0.114555	0.001503

EXCEL COMPUTATION OF PROPORTIONS,DEPTH AND SEVERITY OF POVERTY USING TMPCE AND MPCE METHODS RESPECTIVELY CONT.									
Kogi	6	12400	2066.667	1	0.189542	0.035926	1	0.42815	0.078485
Kogi	1	7600	7600	0	0	0	0	0	0
Kogi	2	6000	3000	0	0	0	1	0.169895	0.004904
Kogi	1	13800	13800	0	0	0	0	0	0
Kogi	2	4000	2000	1	0.215686	0.046521	1	0.446597	0.089073
Kogi	3	3000	1000	1	0.607843	0.369473	1	0.723298	0.378401
Kogi	4	15400	3850	0	0	0	0	0	0
Kogi	1	4900	4900	0	0	0	0	0	0
Kogi	2	9150	4575	0	0	0	0	0	0
Kogi	1	14250	14250	0	0	0	0	0	0
Kogi	2	5100	2550	1	0	0	1	0.294411	0.025519
Kogi	3	3950	1316.667	1	0.48366	0.233927	1	0.635676	0.256867
Kogi	4	5250	1312.5	1	0.485294	0.23551	1	0.636829	0.258267
Kogi	1	3450	3450	0	0	0	1	0.045379	9.34E-05
Kogi	2	9500	4750	0	0	0	0	0	0
Kogi	3	31000	10333.33	0	0	0	0	0	0
Kogi	4	12750	3187.5	0	0	0	1	0.118013	0.001644
Kogi	5	15800	3160	0	0	0	1	0.125623	0.001982
Kogi	6	1200	200	1	0.921569	0.849289	1	0.94466	0.842997
Kogi	7	8400	1200	1	0.529412	0.280277	1	0.667958	0.298021
Kogi	8	10800	1350	1	0.470588	0.221453	1	0.626453	0.245847
Kogi	9	7900	877.7778	1	0.655773	0.430039	1	0.757117	0.434
Kogi	10	6200	620	1	0.756863	0.572841	1	0.828445	0.568579
Kwara	7	4000	571.4286	1	0.77591	0.602037	1	0.841885	0.596703

EXCEL COMPUTATION OF PROPORTIONS,DEPTH AND SEVERITY OF POVERTY USING TMPCE AND MPCE METHODS RESPECTIVELY CONT.									
Kwara	8	6000	750	1	0.705882	0.49827	1	0.792474	0.497685
Kwara	9	2500	277.7778	1	0.891068	0.794001	1	0.923138	0.786684
Kwara	1	9020	9020	0	0	0	0	0	0
Kwara	2	44200	22100	0	0	0	0	0	0
Kwara	3	5000	1666.667	1	0.346405	0.119997	1	0.53883	0.156443
Kwara	4	12700	3175	0	0	0	1	0.121472	0.001792
Kwara	5	10400	2080	1	0.184314	0.033972	1	0.42446	0.076474
Kwara	6	11500	1916.667	1	0.248366	0.061686	1	0.469655	0.103595
Kwara	1	15900	15900	0	0	0	0	0	0
Kwara	2	5400	2700	0	0	0	1	0.252905	0.016176
Kwara	3	4100	1366.667	1	0.464052	0.215345	1	0.621841	0.240457
Kwara	4	31900	7975	0	0	0	0	0	0
Kwara	4	4500	1125	1	0.558824	0.312284	1	0.688711	0.326671
Kwara	6	2500	416.6667	1	0.836601	0.699902	1	0.884708	0.692467
Kwara	1	600	600	1	0.764706	0.584775	1	0.833979	0.58005
Kwara	2	1600	800	1	0.686275	0.470973	1	0.778639	0.472072
Kwara	3	5200	1733.333	1	0.320261	0.102567	1	0.520384	0.140919
Kwara	5	7340	1468	1	0.424314	0.180042	1	0.593802	0.209375
Kwara	6	600	100	1	0.960784	0.923106	1	0.97233	0.919265
Kwara	1	270	270	1	0.894118	0.799446	1	0.925291	0.792199
Kwara	12	1050	87.5	1	0.965686	0.93255	1	0.975789	0.92911
Kwara	3	5600	1866.667	1	0.267974	0.07181	1	0.48349	0.113022
Kwara	1	2500	2500	1	0.019608	0.000384	1	0.308246	0.029288
Kwara	2	1500	750	1	0.705882	0.49827	1	0.792474	0.497685

EXCEL COMPUTATION OF PROPORTIONS,DEPTH AND SEVERITY OF POVERTY USING TMPCE AND MPCE METHODS RESPECTIVELY CONT.									
Kwara	3	2100	700	1	0.72549	0.526336	1	0.806309	0.524209
Kwara	4	5500	1375	1	0.460784	0.212322	1	0.619535	0.237792
Kwara	5	1500	300	1	0.882353	0.778547	1	0.916989	0.771069
Kwara	6	760	126.6667	1	0.950327	0.903121	1	0.964951	0.898496
Kwara	3	2500	833.3333	1	0.673203	0.453202	1	0.769415	0.455494
Kwara	5	4060	812	1	0.681569	0.464536	1	0.775318	0.466058
Kwara	6	3500	583.3333	1	0.771242	0.594814	1	0.838591	0.589726
Kwara	1	2500	2500	1	0.019608	0.000384	1	0.308246	0.029288
Kwara	2	8300	4150	0	0	0	0	0	0
Kwara	3	8700	2900	0	0	0	1	0.197565	0.007711
Kwara	4	17000	4250	0	0	0	0	0	0
Kwara	1	6000	6000	0	0	0	0	0	0
Lagos	1	16500	16500	0	0	0	0	0	0
Lagos	2	4500	2250	1	0.117647	0.013841	1	0.377421	0.053762
Lagos	3	28000	9333.333	0	0	0	0	0	0
Lagos	4	26000	6500	0	0	0	0	0	0
Lagos	1	8500	8500	0	0	0	0	0	0
Lagos	7	700	100	1	0.960784	0.923106	1	0.97233	0.919265
Lagos	3	11500	3833.333	0	0	0	0	0	0
Lagos	1	4000	4000	0	0	0	0	0	0
Lagos	2	7500	3750	0	0	0	0	0	0
Lagos	3	1200	400	1	0.843137	0.71088	1	0.889319	0.703353
Lagos	4	200	50	1	0.980392	0.961169	1	0.986165	0.959066
Lagos	1	15000	15000	0	0	0	0	0	0

EXCEL COMPUTATION OF PROPORTIONS,DEPTH AND SEVERITY OF POVERTY USING TMPCE AND MPCE METHODS RESPECTIVELY CONT.									
Lagos	2	1500	750	1	0.705882	0.49827	1	0.792474	0.497685
Lagos	3	2000	666.6667	1	0.738562	0.545474	1	0.815532	0.542405
Lagos	4	3750	937.5	1	0.632353	0.39987	1	0.740592	0.406198
Lagos	5	19000	3800	0	0	0	0	0	0
Lagos	1	12000	12000	0	0	0	0	0	0
Lagos	2	12000	6000	0	0	0	0	0	0
Lagos	3	3	1	1	0.999608	0.999216	1	0.999723	0.99917
Lagos	1	24000	24000	0	0	0	0	0	0
Lagos	2	24000	12000	0	0	0	0	0	0
Lagos	3	32000	10666.67	0	0	0	0	0	0
Lagos	4	38000	9500	0	0	0	0	0	0
Lagos	5	39500	7900	0	0	0	0	0	0
Lagos	6	14200	2366.667	1	0.071895	0.005169	1	0.345139	0.041113
Lagos	1	15201	15201	0	0	0	0	0	0
Lagos	2	22300	11150	0	0	0	0	0	0
Lagos	3	29000	9666.667	0	0	0	0	0	0
Lagos	2	700	350	1	0.862745	0.744329	1	0.903154	0.736692
Lagos	3	7000	2333.333	1	0.084967	0.007219	1	0.354363	0.044498
Lagos	4	8300	2075	1	0.186275	0.034698	1	0.425844	0.077224
Lagos	5	25000	5000	0	0	0	0	0	0
Lagos	6	22000	3666.667	0	0	0	0	0	0
Lagos	7	12700	1814.286	1	0.288515	0.083241	1	0.497984	0.123494
Lagos	1	21000	21000	0	0	0	0	0	0
Lagos	1	14000	14000	0	0	0	0	0	0

EXCEL COMPUTATION OF PROPORTIONS,DEPTH AND SEVERITY OF POVERTY USING TMPCE AND MPCE METHODS RESPECTIVELY CONT.									
Lagos	2	32000	16000	0	0	0	0	0	0
Lagos	3	53500	17833.33	0	0	0	0	0	0
Lagos	4	13600	3400	0	0	0	1	0.059214	0.000208
Lagos	5	7500	1500	1	0.411765	0.16955	1	0.584947	0.200148
Lagos	1	23000	23000	0	0	0	0	0	0
Lagos	2	6000	3000	0	0	0	1	0.169895	0.004904
Nassarawa	2	6000	3000	0	0	0	1	0.169895	0.004904
Nassarawa	3	7800	2600	0	0	0	1	0.280576	0.022088
Nassarawa	4	3700	925	1	0.637255	0.406094	1	0.744051	0.411915
Nassarawa	1	6500	6500	0	0	0	0	0	0
Nassarawa	2	4500	2250	1	0.117647	0.013841	1	0.377421	0.053762
Nassarawa	3	10560	3520	0	0	0	1	0.02601	1.76E-05
Nassarawa	4	9500	2375	1	0.068627	0.00471	1	0.342833	0.040295
Nassarawa	5	12000	2400	1	0.058824	0.00346	1	0.335916	0.037905
Nassarawa	6	9000	1500	1	0.411765	0.16955	1	0.584947	0.200148
Nassarawa	1	4100	4100	0	0	0	0	0	0
Nassarawa	2	4000	2000	1	0.215686	0.046521	1	0.446597	0.089073
Nassarawa	19	6200	326.3158	1	0.872033	0.760442	1	0.909708	0.752845
Nassarawa	6	6700	1116.667	1	0.562092	0.315947	1	0.691016	0.329963
Nassarawa	7	2850	407.1429	1	0.840336	0.706165	1	0.887343	0.698674
Nassarawa	8	3200	400	1	0.843137	0.71088	1	0.889319	0.703353
Nassarawa	9	8200	911.1111	1	0.642702	0.413065	1	0.747894	0.418331
Nassarawa	10	9500	950	1	0.627451	0.393695	1	0.737133	0.400533
Nassarawa	1	5450	5450	0	0	0	0	0	0

EXCEL COMPUTATION OF PROPORTIONS,DEPTH AND SEVERITY OF POVERTY USING TMPCE AND MPCE METHODS RESPECTIVELY CONT.									
Nassarawa	2	16800	8400	0	0	0	0	0	0
Nassarawa	3	24400	8133.333	0	0	0	0	0	0
Nassarawa	4	9100	2275	1	0.107843	0.01163	1	0.370504	0.05086
Nassarawa	5	19700	3940	0	0	0	0	0	0
Nassarawa	6	10600	1766.667	1	0.30719	0.094365	1	0.51116	0.133558
Nassarawa	7	11600	1657.143	1	0.35014	0.122598	1	0.541466	0.15875
Nassarawa	8	8050	1006.25	1	0.605392	0.3665	1	0.721569	0.375693
Nassarawa	1	29000	29000	0	0	0	0	0	0
Nassarawa	2	2390	1195	1	0.531373	0.282357	1	0.669341	0.299877
Nassarawa	3	1600	533.3333	1	0.79085	0.625443	1	0.852426	0.619398
Nassarawa	4	7800	1950	1	0.235294	0.055363	1	0.460432	0.09761
Nassarawa	5	10500	2100	1	0.176471	0.031142	1	0.418926	0.073521
Nassarawa	6	13700	2283.333	1	0.104575	0.010936	1	0.368198	0.049916
Nassarawa	7	11100	1585.714	1	0.378151	0.142998	1	0.56123	0.176776
Nassarawa	8	10200	1275	1	0.5	0.25	1	0.647205	0.271098
Nassarawa	9	9400	1044.444	1	0.590414	0.348589	1	0.711	0.359426
Nassarawa	10	10200	1020	1	0.6	0.36	1	0.717764	0.369782
Nassarawa	1	6800	6800	0	0	0	0	0	0
Nassarawa	2	7000	3500	0	0	0	1	0.031544	3.14E-05
Nassarawa	3	5000	1666.667	1	0.346405	0.119997	1	0.53883	0.156443
Nassarawa	4	21900	5475	0	0	0	0	0	0
Nassarawa	5	3500	700	1	0.72549	0.526336	1	0.806309	0.524209
Nassarawa	1	2900	2900	0	0	0	1	0.197565	0.007711
Nassarawa	3	6757	2252.333	1	0.116732	0.013626	1	0.376776	0.053487

EXCEL COMPUTATION OF PROPORTIONS,DEPTH AND SEVERITY OF POVERTY USING TMPCE AND MPCE METHODS RESPECTIVELY CONT.									
Nassarawa	4	4400	1100	1	0.568627	0.323337	1	0.695628	0.336613
Nassarawa	5	3900	780	1	0.694118	0.481799	1	0.784173	0.482209
Nassarawa	6	4100	683.3333	1	0.732026	0.535862	1	0.81092	0.533255
Nassarawa	7	8000	1142.857	1	0.551821	0.304506	1	0.683769	0.31969
Nassarawa	8	6500	812.5	1	0.681373	0.464269	1	0.77518	0.465809
Nassarawa	9	15500	1722.222	1	0.324619	0.105377	1	0.523458	0.143432
Nassarawa	10	5000	500	1	0.803922	0.64629	1	0.861649	0.639722
Nassarawa	11	14500	1318.182	1	0.483066	0.233353	1	0.635257	0.256359
Nassarawa	12	57500	4791.667	0	0	0	0	0	0
Nassarawa	14	6500	464.2857	1	0.817927	0.669005	1	0.871531	0.661986
Nassarawa	15	4700	313.3333	1	0.877124	0.769347	1	0.9133	0.761799
Nassarawa	16	14000	875	1	0.656863	0.431469	1	0.757886	0.435323
Nassarawa	1	15700	15700	0	0	0	0	0	0
Nassarawa	2	18500	9250	0	0	0	0	0	0
Nassarawa	1	12700	12700	0	0	0	0	0	0
Niger	5	6000	1200	1	0.529412	0.280277	1	0.667958	0.298021
Niger	6	13700	2283.333	1	0.104575	0.010936	1	0.368198	0.049916
Niger	1	20000	20000	0	0	0	0	0	0
Niger	2	9600	4800	0	0	0	0	0	0
Niger	3	12800	4266.667	0	0	0	0	0	0
Niger	4	10000	2500	1	0.019608	0.000384	1	0.308246	0.029288
Niger	5	11600	2320	1	0.090196	0.008135	1	0.358052	0.045903
Niger	1	9600	9600	0	0	0	0	0	0
Niger	2	10360	5180	0	0	0	0	0	0

EXCEL COMPUTATION OF PROPORTIONS,DEPTH AND SEVERITY OF POVERTY USING TMPCE AND MPCE METHODS RESPECTIVELY CONT.									
Niger	3	12200	4066.667	0	0	0	0	0	0
Niger	4	30000	7500	0	0	0	0	0	0
Niger	5	28000	5600	0	0	0	0	0	0
Niger	6	40000	6666.667	0	0	0	0	0	0
Niger	7	28000	4000	0	0	0	0	0	0
Niger	1	24000	24000	0	0	0	0	0	0
Niger	2	26400	13200	0	0	0	0	0	0
Niger	3	21800	7266.667	0	0	0	0	0	0
Niger	1	12400	12400	0	0	0	0	0	0
Niger	2	19200	9600	0	0	0	0	0	0
Niger	3	13600	4533.333	0	0	0	0	0	0
Niger	4	22600	5650	0	0	0	0	0	0
Niger	5	30000	6000	0	0	0	0	0	0
Niger	6	14800	2466.667	1	0.03268	0.001068	1	0.317469	0.031997
Niger	7	11750	1678.571	1	0.341737	0.116784	1	0.535536	0.153591
Niger	8	16700	2087.5	1	0.181373	0.032896	1	0.422385	0.075357
Niger	1	21500	21500	0	0	0	0	0	0
Niger	1	11100	11100	0	0	0	0	0	0
Niger	2	13900	6950	0	0	0	0	0	0
Niger	1	7500	7500	0	0	0	0	0	0
Niger	1	11500	11500	0	0	0	0	0	0
Niger	1	28000	28000	0	0	0	0	0	0
Ogun	3	6300	2100	1	0.176471	0.031142	1	0.418926	0.073521
Ogun	4	3800	950	1	0.627451	0.393695	1	0.737133	0.400533

EXCEL COMPUTATION OF PROPORTIONS,DEPTH AND SEVERITY OF POVERTY USING TMPCE AND MPCE METHODS RESPECTIVELY CONT.									
Ogun	1	5200	5200	0	0	0	0	0	0
Ogun	2	6100	3050	0	0	0	1	0.15606	0.003801
Ogun	3	5100	1700	1	0.333333	0.111111	1	0.529607	0.148546
Ogun	4	2900	725	1	0.715686	0.512207	1	0.799391	0.510832
Ogun	5	4900	980	1	0.615686	0.37907	1	0.728832	0.387153
Ogun	6	4100	683.3333	1	0.732026	0.535862	1	0.81092	0.533255
Ogun	7	4100	585.7143	1	0.770308	0.593375	1	0.837932	0.588337
Ogun	8	3500	437.5	1	0.828431	0.686299	1	0.878943	0.679019
Ogun	1	4500	4500	0	0	0	0	0	0
Ogun	2	6110	3055	0	0	0	1	0.154676	0.003701
Ogun	3	4500	1500	1	0.411765	0.16955	1	0.584947	0.200148
Ogun	1	4400	4400	0	0	0	0	0	0
Ogun	1	5300	5300	0	0	0	0	0	0
Ogun	2	6750	3375	0	0	0	1	0.066132	0.000289
Ogun	3	11100	3700	0	0	0	0	0	0
Ogun	1	7400	7400	0	0	0	0	0	0
Ogun	2	7400	3700	0	0	0	0	0	0
Ogun	3	4500	1500	1	0.411765	0.16955	1	0.584947	0.200148
Ogun	4	7300	1825	1	0.284314	0.080834	1	0.495019	0.121302
Ogun	5	4400	880	1	0.654902	0.428897	1	0.756502	0.432943
Ondo	3	14000	4666.667	0	0	0	0	0	0
Ondo	4	15400	3850	0	0	0	0	0	0
Ondo	1	16000	16000	0	0	0	0	0	0
Ondo	1	9000	9000	0	0	0	0	0	0

EXCEL COMPUTATION OF PROPORTIONS,DEPTH AND SEVERITY OF POVERTY USING TMPCE AND MPCE METHODS RESPECTIVELY CONT.									
Ondo	1	12000	12000	0	0	0	0	0	0
Ondo	2	14000	7000	0	0	0	0	0	0
Ondo	1	1100	1100	1	0.568627	0.323337	1	0.695628	0.336613
Ondo	2	5000	2500	1	0.019608	0.000384	1	0.308246	0.029288
Ondo	4	450	112.5	1	0.955882	0.913711	1	0.968871	0.90949
Ondo	5	1100	220	1	0.913725	0.834894	1	0.939126	0.828268
Ondo	7	900	128.5714	1	0.94958	0.901702	1	0.964424	0.897024
Ondo	9	400	44.44444	1	0.982571	0.965445	1	0.987702	0.963558
Ondo	1	1700	1700	1	0.333333	0.111111	1	0.529607	0.148546
Ondo	2	11500	5750	0	0	0	0	0	0
Ondo	1	10900	10900	0	0	0	0	0	0
Ondo	3	8000	2666.667	0	0	0	1	0.262129	0.018011
Ondo	4	4000	1000	1	0.607843	0.369473	1	0.723298	0.378401
Ondo	6	2400	400	1	0.843137	0.71088	1	0.889319	0.703353
Ondo	7	2400	342.8571	1	0.865546	0.74917	1	0.905131	0.741539
Ondo	1	4800	4800	0	0	0	0	0	0
Ondo	2	8200	4100	0	0	0	0	0	0
Ondo	3	6600	2200	1	0.137255	0.018839	1	0.391256	0.059894
Ondo	4	4400	1100	1	0.568627	0.323337	1	0.695628	0.336613
Ondo	5	7000	1400	1	0.45098	0.203383	1	0.612618	0.229916
Ondo	6	4600	766.6667	1	0.699346	0.489085	1	0.787862	0.489047
Ondo	1	4600	4600	0	0	0	0	0	0
Ondo	2	5600	2800	0	0	0	1	0.225235	0.011426
Ondo	3	2800	933.3333	1	0.633987	0.401939	1	0.741745	0.408098

EXCEL COMPUTATION OF PROPORTIONS,DEPTH AND SEVERITY OF POVERTY USING TMPCE AND MPCE METHODS RESPECTIVELY CONT.									
Ondo	4	8800	2200	1	0.137255	0.018839	1	0.391256	0.059894
Osun	6	14700	2450	1	0.039216	0.001538	1	0.322081	0.033411
Osun	7	25000	3571.429	0	0	0	1	0.01178	1.63E-06
Osun	8	12000	1500	1	0.411765	0.16955	1	0.584947	0.200148
Osun	4	5000	1250	1	0.509804	0.2599	1	0.654123	0.279884
Osun	1	6000	6000	0	0	0	0	0	0
Osun	2	7000	3500	0	0	0	1	0.031544	3.14E-05
Osun	3	10500	3500	0	0	0	1	0.031544	3.14E-05
Osun	4	4500	1125	1	0.558824	0.312284	1	0.688711	0.326671
Osun	5	73000	14600	0	0	0	0	0	0
Osun	6	7300	1216.667	1	0.522876	0.273399	1	0.663346	0.291891
Osun	1	2100	2100	1	0.176471	0.031142	1	0.418926	0.073521
Osun	1	4500	4500	0	0	0	0	0	0
Osun	2	3400	1700	1	0.333333	0.111111	1	0.529607	0.148546
Osun	3	1800	600	1	0.764706	0.584775	1	0.833979	0.58005
Osun	1	1900	1900	1	0.254902	0.064975	1	0.474267	0.106676
Osun	2	1500	750	1	0.705882	0.49827	1	0.792474	0.497685
Osun	3	4000	1333.333	1	0.477124	0.227647	1	0.631064	0.251316
Osun	4	4000	1000	1	0.607843	0.369473	1	0.723298	0.378401
Osun	5	2800	560	1	0.780392	0.609012	1	0.845047	0.603452
Oyo	4	13500	3375	0	0	0	1	0.066132	0.000289
Oyo	1	3500	3500	0	0	0	1	0.031544	3.14E-05
Oyo	2	45100	22550	0	0	0	0	0	0
Oyo	3	53000	17666.67	0	0	0	0	0	0

EXCEL COMPUTATION OF PROPORTIONS,DEPTH AND SEVERITY OF POVERTY USING TMPCE AND MPCE METHODS RESPECTIVELY CONT.									
Oyo	4	73000	18250	0	0	0	0	0	0
Oyo	1	69000	69000	0	0	0	0	0	0
Oyo	2	125000	62500	0	0	0	0	0	0
Oyo	3	57000	19000	0	0	0	0	0	0
Oyo	1	4500	4500	0	0	0	0	0	0
Oyo	2	5000	2500	1	0.019608	0.000384	1	0.308246	0.029288
Oyo	3	3000	1000	1	0.607843	0.369473	1	0.723298	0.378401
Oyo	4	3800	950	1	0.627451	0.393695	1	0.737133	0.400533
Oyo	5	3000	600	1	0.764706	0.584775	1	0.833979	0.58005
Oyo	1	3000	3000	0	0	0	1	0.169895	0.004904
Oyo	2	6000	3000	0	0	0	1	0.169895	0.004904
Oyo	3	1900	633.3333	1	0.751634	0.564954	1	0.824756	0.561017
Oyo	4	11000	2750	0	0	0	1	0.23907	0.013664
Oyo	5	48000	9600	0	0	0	0	0	0
Oyo	6	22000	3666.667	0	0	0	0	0	0
Oyo	1	22000	22000	0	0	0	0	0	0
Oyo	2	2400	1200	1	0.529412	0.280277	1	0.667958	0.298021
Oyo	3	9600	3200	0	0	0	1	0.114555	0.001503
Plateau	3	2900	966.6667	1	0.620915	0.385535	1	0.732522	0.393062
Plateau	4	18700	4675	0	0	0	0	0	0
Plateau	5	59200	11840	0	0	0	0	0	0
Plateau	6	1700	283.3333	1	0.888889	0.790123	1	0.921601	0.782761
Plateau	7	5700	814.2857	1	0.680672	0.463315	1	0.774686	0.464918
Plateau	1	11600	11600	0	0	0	0	0	0

EXCEL COMPUTATION OF PROPORTIONS,DEPTH AND SEVERITY OF POVERTY USING TMPCE AND MPCE METHODS RESPECTIVELY CONT.									
Plateau	2	10000	5000	0	0	0	0	0	0
Plateau	3	7100	2366.667	1	0.071895	0.005169	1	0.345139	0.041113
Plateau	4	1800	450	1	0.823529	0.678201	1	0.875484	0.671035
Plateau	1	3200	3200	0	0	0	1	0.114555	0.001503
Plateau	2	18000	9000	0	0	0	0	0	0
Plateau	3	720	240	1	0.905882	0.820623	1	0.933592	0.813712
Plateau	1	3300	3300	0	0	0	1	0.086884	0.000656
Plateau	2	750	375	1	0.852941	0.727509	1	0.896237	0.719894
Plateau	3	4300	1433.333	1	0.437908	0.191764	1	0.603394	0.219687
Plateau	4	2200	550	1	0.784314	0.615148	1	0.847814	0.609399
Plateau	5	6900	1380	1	0.458824	0.210519	1	0.618152	0.236203
Plateau	1	1650	1650	1	0.352941	0.124567	1	0.543442	0.160494
Plateau	2	260	130	1	0.94902	0.900638	1	0.964029	0.895922
Plateau	3	1200	400	1	0.843137	0.71088	1	0.889319	0.703353
Plateau	4	2700	675	1	0.735294	0.540657	1	0.813226	0.537817
Plateau	5	700	140	1	0.945098	0.89321	1	0.961262	0.888229
Plateau	6	4300	716.6667	1	0.718954	0.516895	1	0.801697	0.515265
Plateau	7	8000	1142.857	1	0.551821	0.304506	1	0.683769	0.31969
Plateau	1	9400	9400	0	0	0	0	0	0
Plateau	2	4700	2350	1	0.078431	0.006151	1	0.349751	0.042784
Plateau	3	10200	3400	0	0	0	1	0.059214	0.000208
Rivers	3	500	166.6667	1	0.934641	0.873553	1	0.953883	0.867931
Rivers	4	10500	2625	0	0	0	1	0.273658	0.020494
Rivers	5	11380	2276	1	0.107451	0.011546	1	0.370227	0.050746

EXCEL COMPUTATION OF PROPORTIONS,DEPTH AND SEVERITY OF POVERTY USING TMPCE AND MPCE METHODS RESPECTIVELY CONT.									
Rivers	1	11250	11250	0	0	0	0	0	0
Rivers	2	12700	6350	0	0	0	0	0	0
Rivers	3	17000	5666.667	0	0	0	0	0	0
Rivers	4	14000	3500	0	0	0	1	0.031544	3.14E-05
Rivers	1	26500	26500	0	0	0	0	0	0
Rivers	2	6500	3250	0	0	0	1	0.100719	0.001022
Rivers	3	8000	2666.667	0	0	0	1	0.262129	0.018011
Rivers	1	23000	23000	0	0	0	0	0	0
Rivers	2	16000	8000	0	0	0	0	0	0
Rivers	3	12500	4166.667	0	0	0	0	0	0
Rivers	1	18000	18000	0	0	0	0	0	0
Rivers	2	11600	5800	0	0	0	0	0	0
Rivers	1	7500	7500	0	0	0	0	0	0
Rivers	2	5500	2750	0	0	0	1	0.23907	0.013664
Rivers	3	16000	5333.333	0	0	0	0	0	0
Rivers	4	30600	7650	0	0	0	0	0	0
Rivers	5	6500	1300	1	0.490196	0.240292	1	0.640288	0.262498
Rivers	6	14000	2333.333	1	0.084967	0.007219	1	0.354363	0.044498
Rivers	1	11500	11500	0	0	0	0	0	0
Rivers	2	6000	3000	0	0	0	1	0.169895	0.004904
Rivers	3	5000	1666.667	1	0.346405	0.119997	1	0.53883	0.156443
Rivers	4	11000	2750	0	0	0	1	0.23907	0.013664
Rivers	1	2500	2500	1	0.019608	0.000384	1	0.308246	0.029288
Rivers	2	10000	5000	0	0	0	0	0	0

EXCEL COMPUTATION OF PROPORTIONS,DEPTH AND SEVERITY OF POVERTY USING TMPCE AND MPCE METHODS RESPECTIVELY CONT.									
Rivers	1	5000	5000	0	0	0	0	0	0
Rivers	2	15000	7500	0	0	0	0	0	0
Rivers	3	22000	7333.333	0	0	0	0	0	0
Rivers	4	22600	5650	0	0	0	0	0	0
Rivers	5	75100	15020	0	0	0	0	0	0
Rivers	1	8000	8000	0	0	0	0	0	0
Rivers	2	11000	5500	0	0	0	0	0	0
Rivers	3	25000	8333.333	0	0	0	0	0	0
Sokoto	4	3400	850	1	0.666667	0.444444	1	0.764804	0.447352
Sokoto	5	4100	820	1	0.678431	0.460269	1	0.773105	0.462077
Sokoto	1	4500	4500	0	0	0	0	0	0
Sokoto	2	3500	1750	1	0.313725	0.098424	1	0.515772	0.137206
Sokoto	1	14000	14000	0	0	0	0	0	0
Sokoto	2	7000	3500	0	0	0	1	0.031544	3.14E-05
Sokoto	3	9000	3000	0	0	0	1	0.169895	0.004904
Sokoto	4	5700	1425	1	0.441176	0.194637	1	0.6057	0.222215
Sokoto	1	9500	9500	0	0	0	0	0	0
Sokoto	1	7000	7000	0	0	0	0	0	0
Sokoto	2	6000	3000	0	0	0	1	0.169895	0.004904
Sokoto	3	6500	2166.667	1	0.150327	0.022598	1	0.40048	0.06423
Sokoto	4	5200	1300	1	0.490196	0.240292	1	0.640288	0.262498
Sokoto	5	3600	720	1	0.717647	0.515017	1	0.800775	0.513489
Sokoto	1	3500	3500	0	0	0	1	0.031544	3.14E-05
Sokoto	2	3500	1750	1	0.313725	0.098424	1	0.515772	0.137206

EXCEL COMPUTATION OF PROPORTIONS,DEPTH AND SEVERITY OF POVERTY USING TMPCE AND MPCE METHODS RESPECTIVELY CONT.									
Sokoto	3	5300	1766.667	1	0.30719	0.094365	1	0.51116	0.133558
Sokoto	4	7100	1775	1	0.303922	0.092368	1	0.508854	0.131759
Sokoto	5	6000	1200	1	0.529412	0.280277	1	0.667958	0.298021
Taraba	6	2500	416.6667	1	0.836601	0.699902	1	0.884708	0.692467
Taraba	7	15000	2142.857	1	0.159664	0.025493	1	0.407068	0.067453
Taraba	8	3000	375	1	0.852941	0.727509	1	0.896237	0.719894
Taraba	10	5000	500	1	0.803922	0.64629	1	0.861649	0.639722
Taraba	11	7000	636.3636	1	0.750446	0.563169	1	0.823917	0.559307
Taraba	12	16000	1333.333	1	0.477124	0.227647	1	0.631064	0.251316
Taraba	14	8900	635.7143	1	0.7507	0.563551	1	0.824097	0.559673
Taraba	15	8200	546.6667	1	0.785621	0.6172	1	0.848736	0.61139
Taraba	16	3200	200	1	0.921569	0.849289	1	0.94466	0.842997
Taraba	28	5800	207.1429	1	0.918768	0.844134	1	0.942683	0.837717
Taraba	1	7600	7600	0	0	0	0	0	0
Taraba	2	6300	3150	0	0	0	1	0.12839	0.002116
Taraba	5	6500	1300	1	0.490196	0.240292	1	0.640288	0.262498
Taraba	4	5600	1400	1	0.45098	0.203383	1	0.612618	0.229916
Taraba	5	6800	1360	1	0.466667	0.217778	1	0.623686	0.242604
Taraba	1	3200	3200	0	0	0	1	0.114555	0.001503
Taraba	2	12400	6200	0	0	0	0	0	0
Taraba	3	10400	3466.667	0	0	0	1	0.040767	6.78E-05
Taraba	4	12400	3100	0	0	0	1	0.142225	0.002877
Taraba	1	8400	8400	0	0	0	0	0	0
Taraba	2	8400	4200	0	0	0	0	0	0

EXCEL COMPUTATION OF PROPORTIONS,DEPTH AND SEVERITY OF POVERTY USING TMPCE AND MPCE METHODS RESPECTIVELY CONT.									
Taraba	3	8000	2666.667	0	0	0	1	0.262129	0.018011
Taraba	4	10400	2600	0	0	0	1	0.280576	0.022088
Taraba	5	5450	1090	1	0.572549	0.327812	1	0.698395	0.340646
Taraba	6	6200	1033.333	1	0.594771	0.353753	1	0.714075	0.364109
Taraba	1	6900	6900	0	0	0	0	0	0
Taraba	2	7950	3975	0	0	0	0	0	0
Taraba	3	12200	4066.667	0	0	0	0	0	0
Taraba	4	11620	2905	0	0	0	1	0.196182	0.00755
Taraba	5	12550	2510	1	0.015686	0.000246	1	0.305479	0.028506
Taraba	1	6350	6350	0	0	0	0	0	0
Taraba	2	8960	4480	0	0	0	0	0	0
Taraba	3	4700	1566.667	1	0.385621	0.148703	1	0.566501	0.181803
Taraba	4	7000	1750	1	0.313725	0.098424	1	0.515772	0.137206
Taraba	5	9000	1800	1	0.294118	0.086505	1	0.501937	0.126458
Taraba	6	5000	833.3333	1	0.673203	0.453202	1	0.769415	0.455494
Taraba	1	7000	7000	0	0	0	0	0	0
Taraba	2	5000	2500	1	0.019608	0.000384	1	0.308246	0.029288
Taraba	3	4900	1633.333	1	0.359477	0.129224	1	0.548054	0.164615
Taraba	4	5200	1300	1	0.490196	0.240292	1	0.640288	0.262498
Taraba	5	12300	2460	1	0.035294	0.001246	1	0.319314	0.032558
Taraba	1	3000	3000	0	0	0	1	0.169895	0.004904
Yobe	1	1700	1700	1	0.333333	0.111111	1	0.529607	0.148546
Yobe	1	6200	6200	0	0	0	0	0	0
Yobe	2	5400	2700	0	0	0	1	0.252905	0.016176

EXCEL COMPUTATION OF PROPORTIONS,DEPTH AND SEVERITY OF POVERTY USING TMPCE AND MPCE METHODS RESPECTIVELY CONT.									
Yobe	3	10200	3400	0	0	0	1	0.059214	0.000208
Yobe	4	8900	2225	1	0.127451	0.016244	1	0.384339	0.056773
Yobe	5	10700	2140	1	0.160784	0.025852	1	0.407858	0.067847
Yobe	6	5600	933.3333	1	0.633987	0.401939	1	0.741745	0.408098
Yobe	1	3900	3900	0	0	0	0	0	0
Yobe	1	2500	2500	1	0.019608	0.000384	1	0.308246	0.029288
Yobe	2	6000	3000	0	0	0	1	0.169895	0.004904
Yobe	3	1600	533.3333	1	0.79085	0.625443	1	0.852426	0.619398
Yobe	4	7800	1950	1	0.235294	0.055363	1	0.460432	0.09761
Yobe	8	5000	625	1	0.754902	0.569877	1	0.827061	0.565735
Yobe	6	9700	1616.667	1	0.366013	0.133966	1	0.552666	0.168806
Yobe	7	10800	1542.857	1	0.394958	0.155992	1	0.573089	0.18822
Yobe	8	12800	1600	1	0.372549	0.138793	1	0.557277	0.173067
Yobe	1	11400	11400	0	0	0	0	0	0
Yobe	2	4100	2050	1	0.196078	0.038447	1	0.432761	0.081049
Yobe	3	4500	1500	1	0.411765	0.16955	1	0.584947	0.200148
Yobe	1	5300	5300	0	0	0	0	0	0
Yobe	1	37100	37100	0	0	0	0	0	0
Zamfara	3	10600	3533.333	0	0	0	1	0.022321	1.11E-05
Zamfara	4	34000	8500	0	0	0	0	0	0
Zamfara	5	7900	1580	1	0.380392	0.144698	1	0.562811	0.178274
Zamfara	6	10800	1800	1	0.294118	0.086505	1	0.501937	0.126458
Zamfara	1	12300	12300	0	0	0	0	0	0
Zamfara	2	16500	8250	0	0	0	0	0	0

EXCEL COMPUTATION OF PROPORTIONS,DEPTH AND SEVERITY OF POVERTY USING TMPCE AND MPCE METHODS RESPECTIVELY CONT.									
Zamfara	3	13600	4533.333	0	0	0	0	0	0
Zamfara	4	9200	2300	1	0.098039	0.009612	1	0.363586	0.048064
Zamfara	1	3190	3190	0	0	0	1	0.117322	0.001615
Zamfara	2	2700	1350	1	0.470588	0.221453	1	0.626453	0.245847
Zamfara	2	2000	1000	1	0.607843	0.369473	1	0.723298	0.378401
Zamfara	4	4200	1050	1	0.588235	0.346021	1	0.709463	0.3571
Zamfara	5	2800	560	1	0.780392	0.609012	1	0.845047	0.603452
Zamfara	6	3300	550	1	0.784314	0.615148	1	0.847814	0.609399
Zamfara	1	6000	6000	0	0	0	0	0	0
Zamfara	2	9200	4600	0	0	0	0	0	0
Zamfara	3	2900	966.6667	1	0.620915	0.385535	1	0.732522	0.393062
Zamfara	4	3600	900	1	0.647059	0.418685	1	0.750968	0.423511
Zamfara	1	3000	3000	0	0	0	1	0.169895	0.004904
Zamfara	2	6300	3150	0	0	0	1	0.12839	0.002116
Zamfara	3	1500	500	1	0.803922	0.64629	1	0.861649	0.639722
Zamfara	4	1950	487.5	1	0.808824	0.654196	1	0.865108	0.647457
Zamfara	5	6800	1360	1	0.466667	0.217778	1	0.623686	0.242604
Zamfara	1	2800	2800	0	0	0	1	0.225235	0.011426
Zamfara	2	6100	3050	0	0	0	1	0.15606	0.003801
Zamfara	3	3000	1000	1	0.607843	0.369473	1	0.723298	0.378401
Zamfara	1	2200	2200	1	0.137255	0.018839	1	0.391256	0.059894
Zamfara	2	5900	2950	0	0	0	1	0.18373	0.006202
Zamfara	3	28540	9513.333	0	0	0	0	0	0
Zamfara	5	14400	2880	0	0	0	1	0.203099	0.008378

EXCEL COMPUTATION OF PROPORTIONS,DEPTH AND SEVERITY OF POVERTY USING TMPCE AND MPCE METHODS RESPECTIVELY CONT.									
Zamfara	6	29700	4950	0	0	0	0	0	0
Zamfara	1	21420	21420	0	0	0	0	0	0
Zamfara	2	37800	18900	0	0	0	0	0	0
Zamfara	3	26200	8733.333	0	0	0	0	0	0
Zamfara	1	19820	19820	0	0	0	0	0	0
Zamfara	2	11200	5600	0	0	0	0	0	0
Zamfara	3	42170	14056.67	0	0	0	0	0	0
Zamfara	4	6500	1625	1	0.362745	0.131584	1	0.55036	0.166702
Zamfara	5	3700	740	1	0.709804	0.503822	1	0.795241	0.502916
FCT	1	8000	8000	0	0	0	0	0	0
FCT	2	2400	1200	1	0.529412	0.280277	1	0.667958	0.298021
FCT	3	7500	2500	1	0.019608	0.000384	1	0.308246	0.029288
FCT	4	5000	1250	1	0.509804	0.2599	1	0.654123	0.279884
FCT	6	7600	1266.667	1	0.503268	0.253279	1	0.649511	0.274006
FCT	7	5000	714.2857	1	0.719888	0.518239	1	0.802356	0.516537
FCT	1	5000	5000	0	0	0	0	0	0
FCT	1	15000	15000	0	0	0	0	0	0
FCT	2	8000	4000	0	0	0	0	0	0
FCT	3	13000	4333.333	0	0	0	0	0	0
FCT	4	10000	2500	1	0.019608	0.000384	1	0.308246	0.029288

APPENDIX B : RESAMPLING STAT EXCEL BOOTSTRAP SIMULATION ON POVERTY HEAD COUNT USING MPCE AND TMPCE

TMPCE		MPCE	
Per capita expenditure	Simulated per capita expenditure	Per capita expenditure	Simulated per capita expenditure
68500	3500	68500	783.3333
54000	666.6667	54000	16500
40000	4800	40000	17300
36500	1600	36500	650
31800	314.2857	31800	3666.667
29600	9200	29600	4900
29450	12700	29450	3550
29000	3400	29000	485.7143
27500	3500	27500	2033.333
27000	21100	27000	3000
26000	12200	26000	7333.333
25100	49733.33	25100	1000
25000	1650	25000	36500
24668	800	24668	11000
24000	5900	24000	5200
23666.67	1700	23666.67	3500
23500	875	23500	16250
23000	200	23000	11000
22500	571.4286	22500	140
22000	3600	22000	3600
21000	10950	21000	6805
21000	1000	21000	80
20000	1333.333	20000	7500
19500	1225	19500	566.6667
19400	2260	19400	5000
19300	1000	19300	1666.667
19250	2800	19250	2163.636
19000	11000	19000	1566.667
19000	1000	19000	114.2857
18700	20555.56	18700	30000
18600	3500	18600	562.5
18500	50	18500	9250
18300	1000	18300	6600
18000	2150	18000	29000
18000	14400	18000	4050
17500	1733.333	17500	2800
16800	10800	16800	700
16650	1926.667	16650	2300

RESAMPLING STAT EXCEL BOOTSTRAP SIMULATION ON POVERTY HEAD COUNT USING MPCE AND TMPCE CONT.			
TMPCE		**MPCE**	
Per capita expenditure	**Simulated per capita expenditure**	**Per capita expenditure**	**Simulated per capita expenditure**
	10600	16350	10883.33
16300	1800	16300	2400
16050	2200	16050	1120
16000	16350	16000	6333.333
15500	6400	15500	5466.667
15100	1483.333	15100	3666.667
15000	2200	15000	2080
14700	11600	14700	2500
14600	3900	14600	980
14000	48000	14000	8500
14000	4400	14000	11070
13650	800	13650	16600
13600	257.1429	13600	957.1429
13500	3800	13500	2550
13000	157.1429	13000	0
13000	314.2857	13000	5000
13000	1500	13000	2850
12950	6666.667	12950	3500
12500	2333.333	12500	2375
12500	3500	12500	4000
11625	333.3333	11625	483.3333
11500	1995	11500	3166.667
11500	30000	11500	1450
11350	379.0909	11350	3500
11000	1500	11000	5000
10910	1875	10910	6000
10600	2800	10600	2500
10150	17500	10150	7533.333
10000	1833.333	10000	3250
9920	3880	9920	1233.333
9833.333	4000	9833.333	1000
9566.667	1360	9566.667	337.5
9500	1400	9500	30100
9500	14000	9500	1710
9333.333	6.5	9333.333	1025
9300	3700	9300	1350
9100	14300	9100	29600
9000	1750	9000	6750

RESAMPLING STAT EXCEL BOOTSTRAP SIMULATION ON POVERTY HEAD COUNT USING MPCE AND TMPCE CONT.			
TMPCE		TMPCE	
Per capita expenditure	Simulated Per capita expenditure	Per capita expenditure	Simulated Per capita expenditure
9000	317.1429	9000	4833.333
9000	5500	9000	416.6667
9000	1133.333	9000	2640
9000	6000	9000	1120
9000	1875	9000	1750
8600	3644.444	8600	312.5
10150	1700	10150	19500
10100	11700	10100	2800
10000	8100	10000	31600
9860	2000	9860	1655
9625	1212.5	9625	3008.333
9575	4300	9575	125
9500	10050	9500	40000
9500	1466.667	9500	6000
2225	200	2225	1516.667
2216.667	2700	2216.667	764
2200	190	2200	11900
2166.667	13200	2166.667	3825
2142.857	2566.667	2142.857	13834.17
2120	18000	2120	4300
2100	650	2100	1740
2100	55.55556	2100	5880
2100	8766.667	2100	4166.667
2100	4200	2100	14000
2080	916.6667	2080	6500
2071.429	2750	2071.429	260.4
2071.429	8125	2071.429	3680
2066.667	8500	2066.667	380
2050	477.5	2050	3600
2050	253.3333	2050	26000
2033.333	3500	2033.333	1183.333
2000	1160	2000	6166.667
2000	24180	2000	3700
2000	825	2000	9100
2000	600	2000	1066.667
2000	5177.188	2000	2600
2000	0.517719	2000	0.26

APPENDIX E: RESAMPLE AND SCORE OF POVERTY HEADCOUNT

MPCE		TMPE	
0.255	115	0.526418	1
0.25	206	0.512356	1
0.254	11	0.538306	1
0.253667	2	0.541514	1
0.2625	31	0.533629	1
0.256	27	0.524675	1
0.26	207	0.527469	1
0.257143	12	0.528393	1
0.250363	1	0.554658	1
0.256667	80	0.525186	1
0.2575	19	0.507604	1
0.257321	7	0.529688	1
0.258667	2	0.52702	1
0.258333	9	0.541096	1
0.246667	1	0.544858	1
0.251548	3	0.551278	1
0.2545	1	0.533066	1
0.258367	2	0.52161	1
0.2555	6	0.521983	1
0.250013	7	0.520019	1
0.256905	8	0.524232	1
0.266667	7	0.529117	1
0.258575	2	0.520486	1
0.2525	26	0.515296	1
0.2605	1	0.539155	1
0.26315	1	0.543697	1
0.259667	2	0.524346	1
0.253333	43	0.529691	1
0.2501	1	0.540134	1
0.261056	1	0.548735	1
0.250513	1	0.539512	1
0.258	8	0.546071	1
0.25775	5	0.523049	1
0.250208	2	0.535349	1
0.26225	4	0.529131	1
0.264286	1	0.541931	1
0.26431	2	0.531856	1
0.263625	1	0.506083	1
0.257917	2	0.52836	1
0.263542	1	0.536579	1
0.253485	3	0.526491	1
0.251083	1	0.531318	1

RESAMPLE AND SCORE OF POVERTY HEADCOUNT CONT.			
0.256333	3	0.537305	1
0.254083	3	0.526869	1
0.250063	2	0.528532	1
0.262679	2	0.548566	1
0.251833	4	0.537085	1
0.25015	1	0.529929	1
0.252917	8	0.516225	1
0.258167	8	0.538828	1
0.250108	1	0.534409	1
0.265	8	0.531294	1
0.2655	1	0.538139	1
0.262	2	0.5382	1
0.259167	3	0.526227	1
0.261548	2	0.511494	1
0.254583	1	0.516139	1
0.253693	1	0.524426	1
0.25075	2	0.538008	1
0.254226	3	0.534986	1
0.251714	2	0.512494	1
0.25225	5	0.519377	1
0.25005	2	0.528041	1
0.2595	3	0.528876	1
0.251667	1	0.518073	1
0.259	3	0.518032	1
0.253875	1	0.543613	1
0.263333	3	0.517542	1
0.261	1	0.550434	1
0.2502	1	0.526312	1
0.259833	5	0.52161	1
0.251214	1	0.514969	1
0.258833	2	0.527531	1
0.263	2	0.52927	1
0.258875	4	0.552779	1
0.252	1	0.52345	1
0.254306	2	0.528767	1
0.25016	2	0.536206	1
0.253818	2	0.529806	1
0.26127	1	0.536936	1
0.26275	1	0.523684	1
0.259375	1	0.528297	1
0.252125	1	0.532273	1
0.27	1	0.534058	1
0.250263	1	0.52626	1

RESAMPLE AND SCORE OF POVERTY HEADCOUNT CONT.			
0.250358	1	0.537307	1
0.251	1	0.506464	1
0.252375	2	0.523641	1
0.252792	1	0.525802	1
0.252083	1	0.52718	1
0.259667	3	0.534123	1
0.258867	1	0.525382	1
0.250608	1	0.526773	1
0.250942	1	0.521714	1
0.263167	1	0.514323	1
0.261667	1	0.545366	1
0.250221	1	0.53935	1
0.253542	1	0.522835	1
0.254143	1	0.531903	1
0.262857	1	0.530966	1
0.250613	1	0.539983	1
0.2584	1	0.524228	1
0.250833	1	0.527508	1
0.250217	1	0.521483	1
0.254444	1	0.533163	1
0.259042	1	0.52772	1

Figure 4.6 : POVERTY LINES USING MPCE

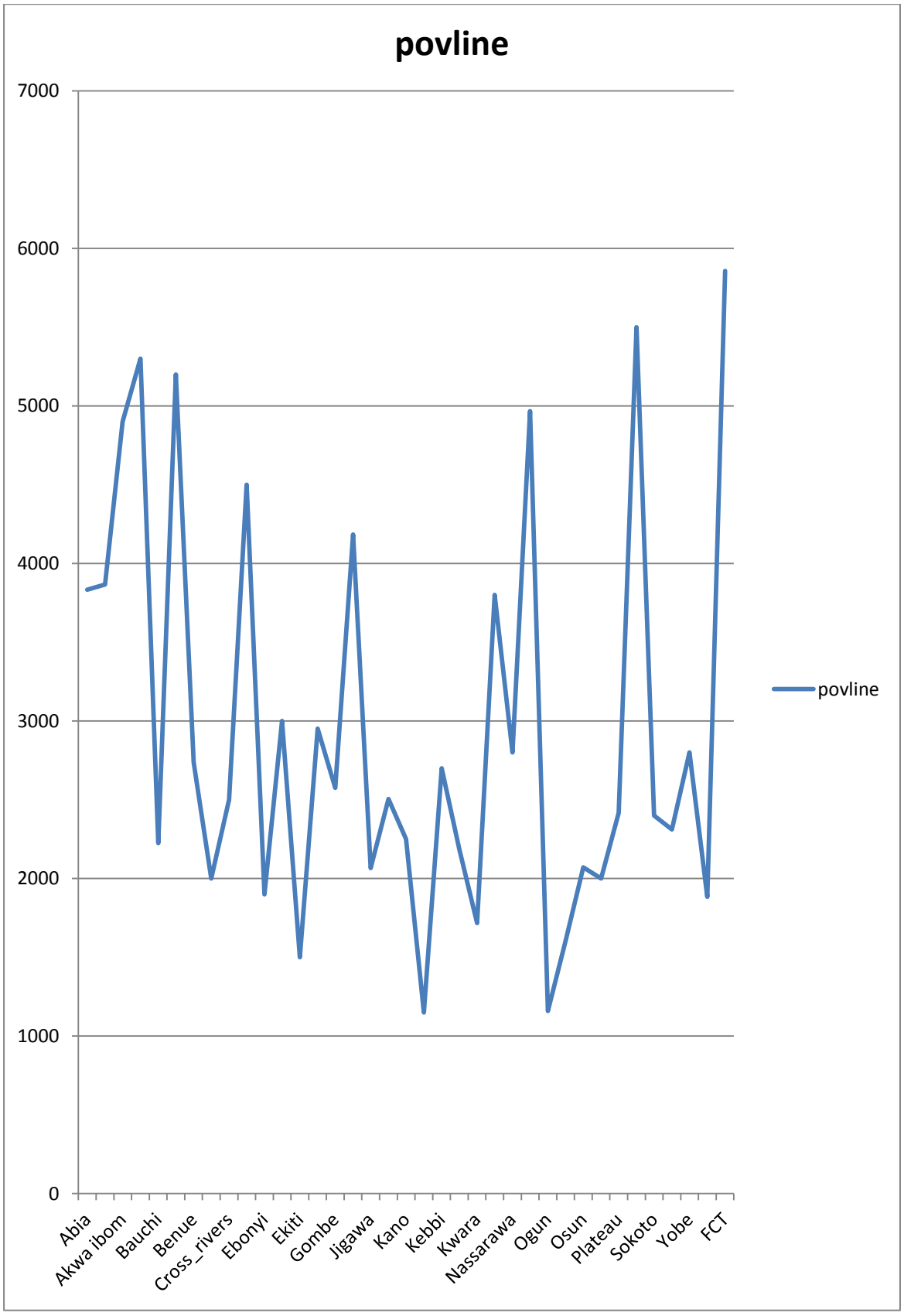

Figure 4.7 : PROPORTION OF POVERTY (P0)

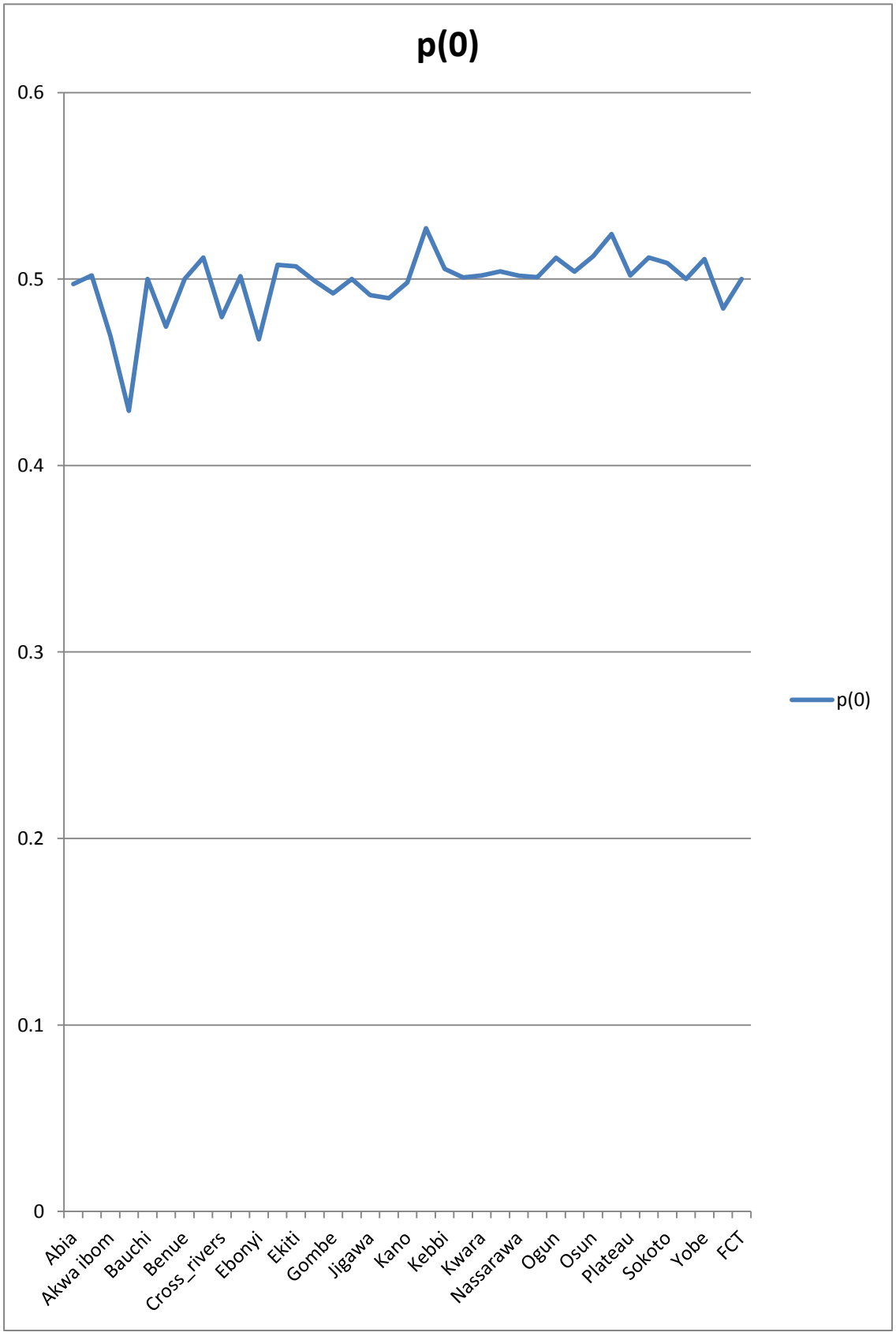

Figure 4.8: DEPTH OF POVERTY (P1) USING MPCE

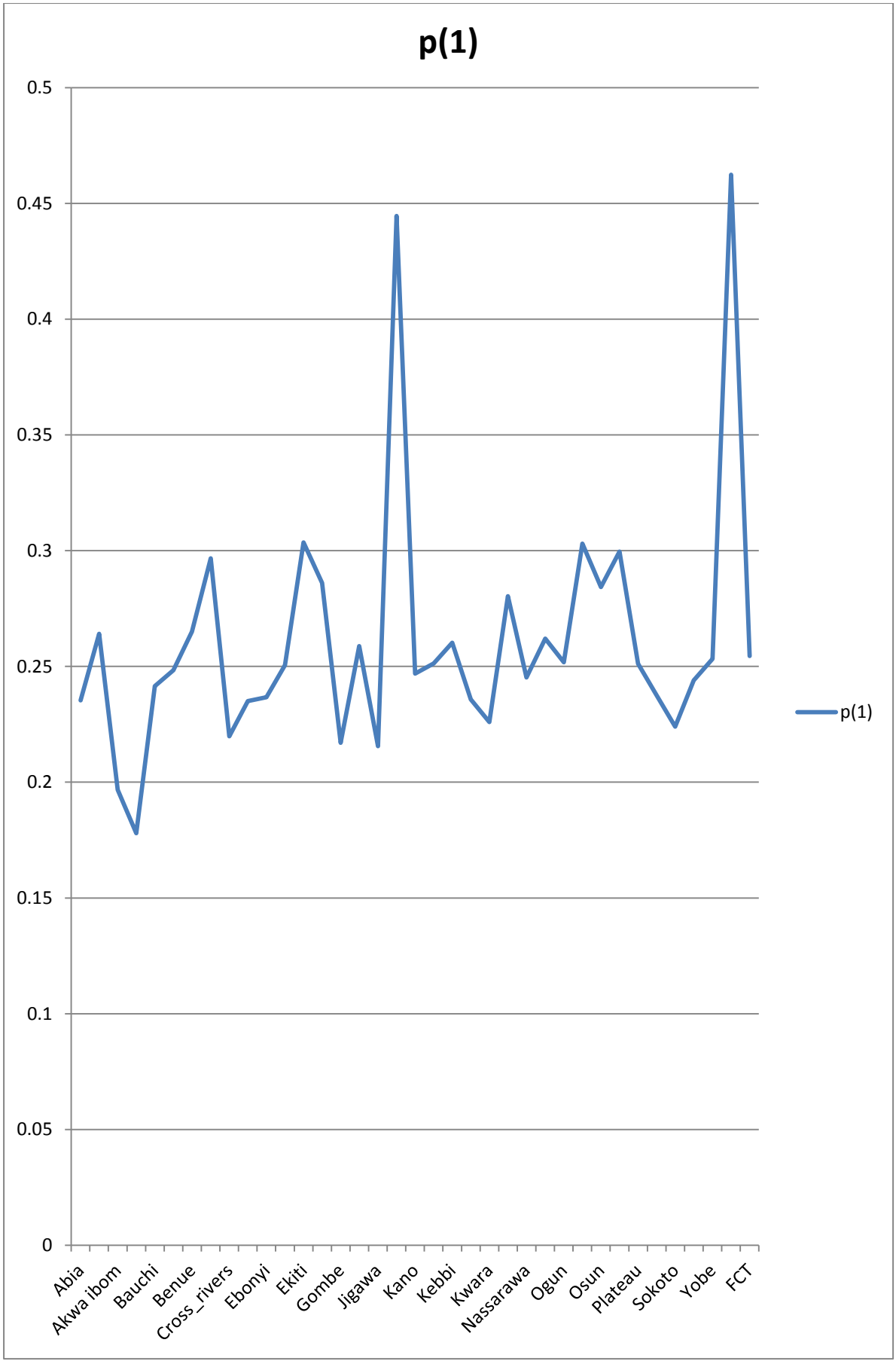
p(1)
0.5
0.45
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
Abia
Akwa ibom
Bauchi
Benue
Cross_rivers
Ebonyi
Ekiti
Gombe
Jigawa
Kano
Kebbi
Kwara
Nassarawa
Ogun
Osun
Plateau
Sokoto
Yobe
FCT
p(1)

Figure 4.9: SEVERITY OF POVERTY (P2) USING MPCE

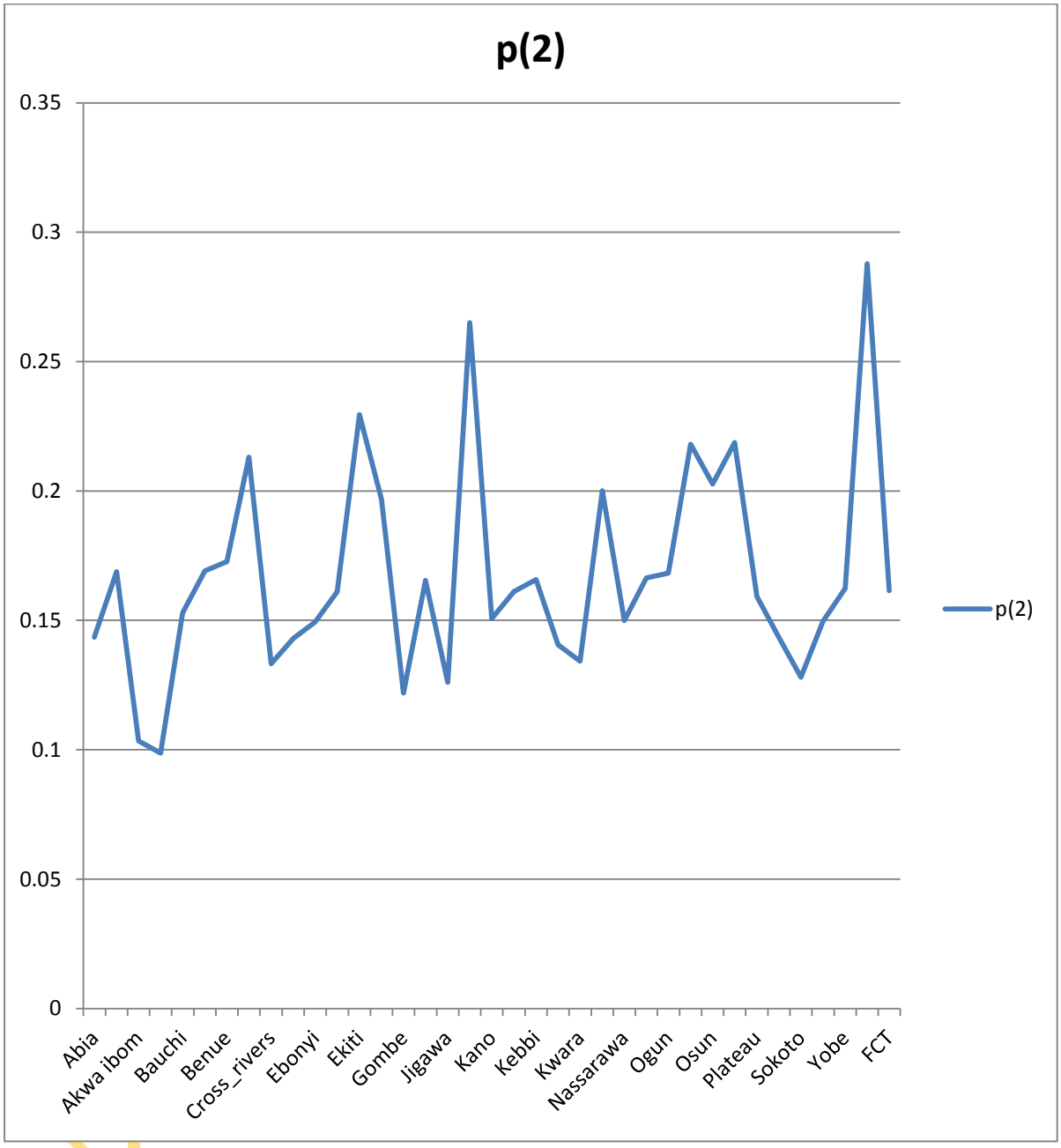

Figure 4.10: Poverty lines using TMPCE

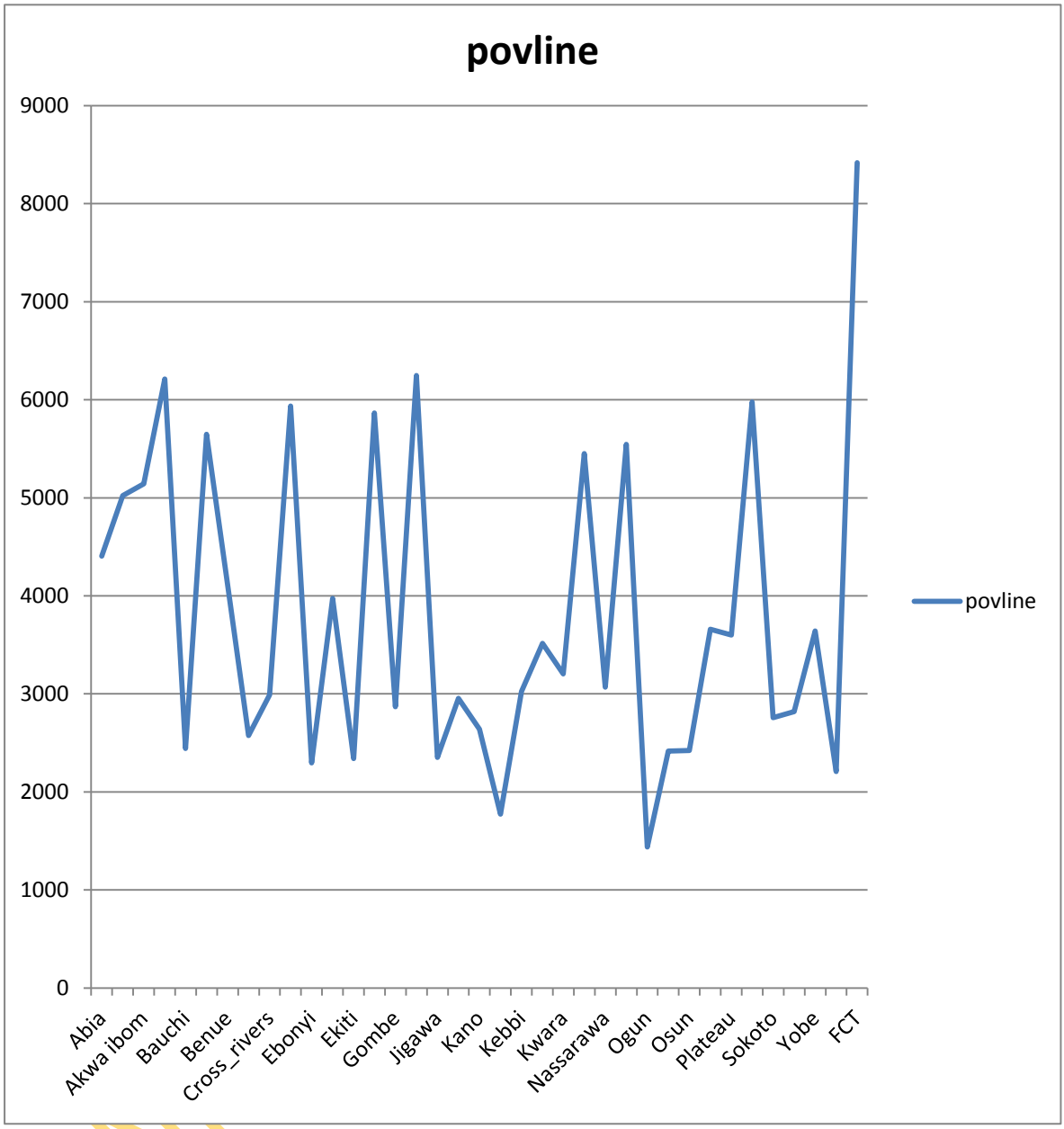

Figure 4.11: PROPORTION OF POVERTY (P0 USING TMPCE

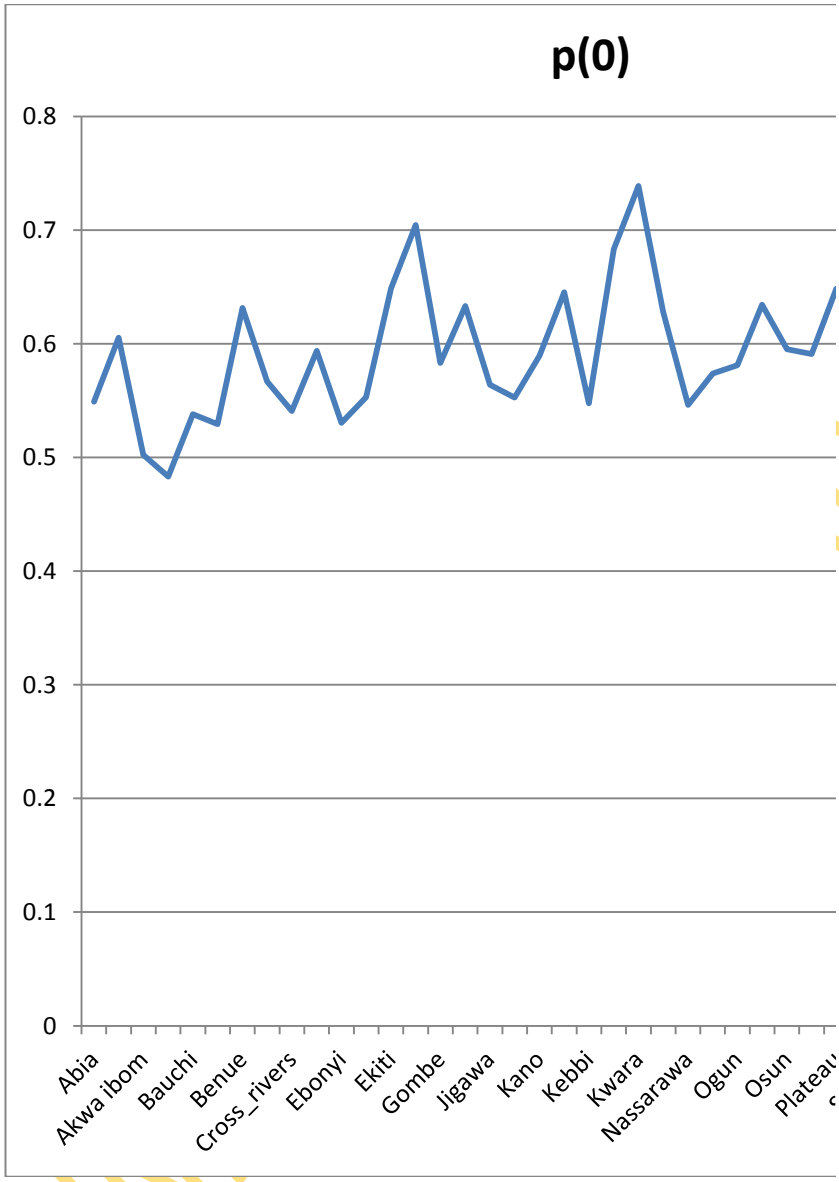

Figure 4.12: DEPTH OF POVERTY (P1) USING TMPCE

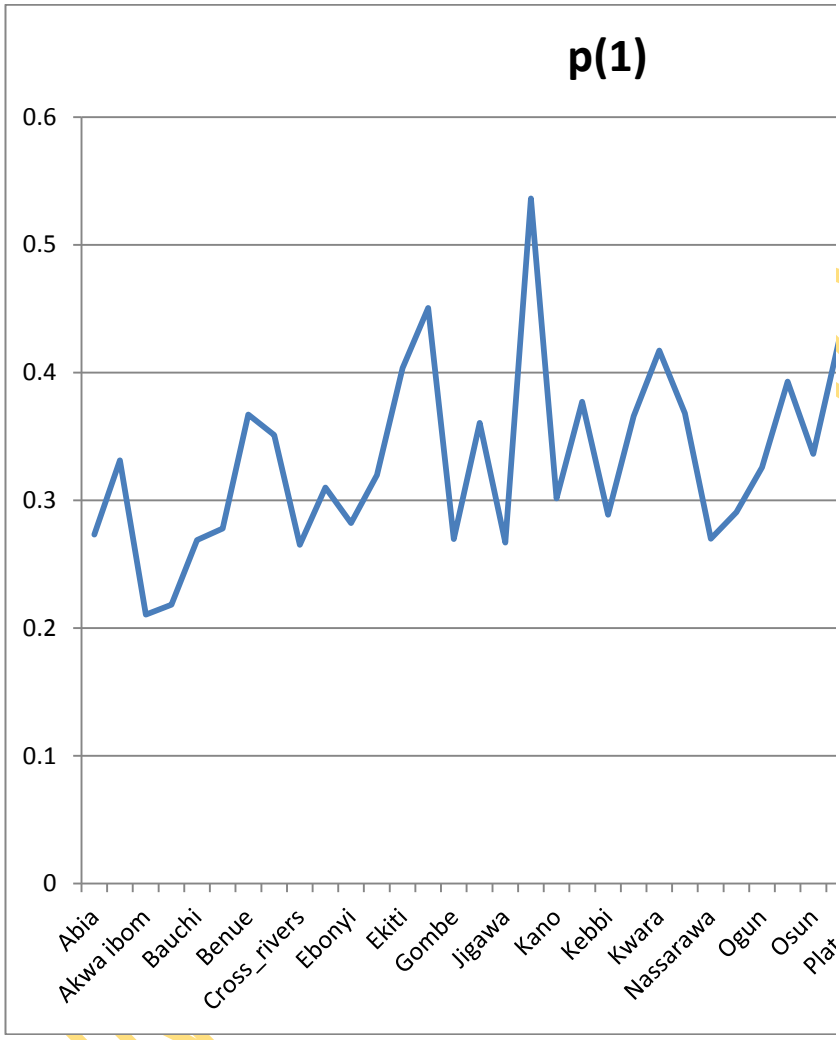

Figure 4.13: SEVERITY OF POVERTY (P2) USING TMPCE