

IARIW- Statistics South Africa Conference on Experiences and Challenges in Measuring National Income, Wealth, Poverty, and Inequality in African Countries

September 28-October 1, 2011, Cape Town, South Africa

Inequality in the Distribution of Household Expenditure in Cameroon¹

by

Samuel Fambon
FSEG University of Yaounde II- Cameroon
Email : sfambon@yahoo.fr
or fambonsamuel@yahoo.com
Tel : (cel.) (237) 9987 43 10

FIRST DRAFT August, 2011

Abstract

In the literature, it is generally accepted that consumption is a more appropriate welfare measure than household income or salaries. This paper aims to investigate the evolution of expenditure inequality in Cameroon over the 1984-2007 period, with the help of Lorenz Curves, the Gini coefficient, and two entropy measures of inequality. Total expenditure inequality is also decomposed into the within-groups and between-groups components using Theil's decomposition techniques and household expenditure data derived from the 1984, 1996, 2001, and 2007 National household surveys (i.e. the 1983/1984 Household Consumption Budget (HCB) survey, and the 1996, 2001 and, 2007 Cameroonian Household Survey CHS1, CHS2 and CHS3). Decompositions are carried out according to the residence area (rural and urban), age, educational level, and the gender of the household head. Our results consistently indicate that expenditure inequality at the national level decreased between 1984 and 1996, increased over the sub-period 1996-2001, and decreased again during the sub-period 2001-2007. The inequality within-groups contributes much more towards national inequality. Policy implications are discussed.

Keywords: Inequality, Expenditure, Decomposition, Household Surveys, Cameroon.

¹ This research is part of Collaborative Project on "Poverty, Income Distribution, and Labor Market in Sub Saharan African Countries" supported by the African Economic Research Consortium (AERC). I would like to sincerely thank the AERC for funding and providing the technical support for the collaborative study. The usual disclaimer applies

1. Introduction

Social inequality constitutes both a cause and an effect of economic underdevelopment. In his seminal paper on the links between economic growth and income inequality, Kuznets (1955) made the hypothesis that over time, income inequality first rises, reaches a maximum, and then decreases in the course of a country's economic development process. In other words, there exists an inverted U-shaped relationship between income inequality and the level of economic development of a country. Kuznets made this hypothesis after empirically studying this relationship in several western countries such as the United States, Germany (Prussia and Saxony), etc. from the 19th century to 1950. From this work, he drew the conclusion that inequalities in the distribution of income tend to be higher in poorer countries than in richer ones.

From that time onward, a large number of theoretical and empirical studies have been carried out to confirm or reject Kuznets' hypothesis. Most empirical studies in this research area have used cross-section country studies owing mainly to the lack of the long data time series likely to provide the large number of degrees of freedom necessary for carrying out a robust test of this hypothesis in the case of individual countries. Despite the existence of a data-comparability problem when cross-section country data are used in empirical studies due most particularly to differences in the choice of beneficiary groups, the concept of income, and the countries covered, it can be said that, in general, most of these studies have confirmed Kuznets hypothesis². These studies have been criticized from several angles, most particularly from the view points of data comparability across countries, as well as from the parametric form and the nature of the cross-section tests used (see, Frazer G. (2006)). Based on an examination of models formalized with six inequality indexes³, Anand and Kanbur (1993) also pointed out that during the development process, the population always tends to move from the traditional (rural) sector, which is characterized by the existence of low incomes and low inequalities, towards the modern (urban) sector of the economy where average incomes and income inequalities are higher, and where average sectoral incomes and sectoral inequality levels tend to remain unchanged over time.

According to Oshima (1992), several Asian countries seem to follow the Kuznets income inequality reversed U-shaped curve, but the peak of the curve seems to have been reached when the economy was still predominantly agricultural, with income per head much lower than in Western countries. So far as Sub-Saharan Africa is concerned, tests of Kuznets' hypothesis carried out by Lahmer (2008) yield divergent results depending on the estimation method used. In fact, Kuznets' hypothesis is borne out when the aforementioned author uses the cross-section two-stage least squares (2SLS) and the time average three-stage least

² Among the studies which have confirmed Kuznets hypothesis, in this case we may mention notably, the following: Ahluwalia (1976); Huang (2004); Jha (1996); Mbaku (1997); Papanek and Kyn (1987); Tsakloglou (1988).

³ The six inequality indexes considered by these two authors are the following: (i) Theil's entropy index, T; (ii) Theil's second entropy index, L; (iii) the coefficient of variation squared, S²; (iv) a decomposable transformation of Atkinson's inequality index, I(E); (v) the Gini coefficient, G; and (vi) the logarithmic variance of income.

squares (3SLS) methods, while the hypothesis is rejected when that author uses the weighted 3SLS as estimation method.

These results suggest that the factors and forces underlying Kuznets process are quite diverse so that this process cannot be explained by a simple model. Moreover, published studies on income inequality in the case of Cameroon are scarce⁴.

This study therefore aims to fill this research gap in Cameroon by examining the evolution of expenditures inequalities in Cameroon as well as to explore its determinants over the period 1984-2007 using the Lorenz curve, the Gini coefficient, and two inequality entropy measures. The achievement of the objectives of the present study may increase our understanding of the relationships between the economic crisis, economic reforms, and the distribution of income, and thus help the decision makers to formulate more appropriate policies likely to achieve social stability.

The decomposition of income inequality in the present study is carried out by using the household expenditure data derived from the 1984 Consumption Budget Survey (CBS) and the Cameroonian Household Surveys CHS1, CHS2, and CHS3 conducted respectively in 1996, 2001, and 2007 by the National Institute of Statistics (NIS) of Cameroon.

Several factors are assumed to have affected income inequality in the country. In effect, since urban inequality is usually higher than rural inequality, a higher level of urbanization is likely to lead to a higher level of inequality in total income. Therefore, the urban/rural disparity should have a significant impact on income inequality. For similar reasons, a larger proportion of well-educated groups of individuals may also cause higher inequality in total income, if it is assumed that income inequalities within these better educated groups are higher than those of the other groups. Greater income disparities between well-educated groups and other groups may also increase the level of total inequality. Changes in the age distribution may also affect income inequality. In fact a greater longevity may lead to an increasing number of the elderly. Since old persons' incomes are usually lower than those of the young, an increase in the number of old persons may lead to a rise in the number of low-income households. In addition to these factors, gender inequality may also impact upon the total level of inequality.

In decomposing income inequality in Cameroon, the above factors are examined in succession.

The rest of the paper is organized as follows. Section 2 gives the background of Cameroon's economy. Section 3 examines the measurement and decomposition of income inequality and presents several inequality measures used in the study. In Section 4 we describe the data sets.

⁴Previous studies published on income inequality in Cameroon and its evolution over time mainly focussed their study periods either on the years 1984 (Lynch (1991)) and 1996 (Fambon et al. (2001), Baye and Fambon (2003)), or over the time periods 1984-1996 (Fambon et al. (2005)) and 1996-2001 (the National Institute of Statistics (NIS), 2002), and Fambon (2010)). With the support of development partners such as UNDP, the EU, and the World Bank, the NIS in 2007 carried out a survey of Cameroonian households covering the entire national territory. In order to provide recent developments on income inequality in Cameroon, the present study will use both the data derived from the Household Consumption Budget survey of 1984 and those of the Cameroonian household surveys CHS1, CHS2, CHS3 conducted by the NIS respectively in 1996, 2001, and 2007.

Section 5 presents the results of the analysis of inequality trends in Cameroon during the 1984-2007 period, and Section 6 concludes the study and discusses the policy implications of these findings.

2. Background of Cameroon's Economy

To analyze the factors and forces affecting inequality in the distribution of income, it is necessary to examine the economic conditions inherent in the period under study (1984-2007).

The Cameroonian economy recorded a sustained average annual growth rate of 5% up to 1978, a performance which was mainly attributed to agricultural exports. The discovery and exploitation of oil in 1978 brought this growth rate to 7% up to 1986, a situation which helped boost the contributions of the oil sector respectively to 20% of GDP, 44% of government revenues, and to 54% of the country's exports. Soon after this period however, the country was suddenly stricken by a serious economic crisis which was to last for a decade from 1987 to 1997, and whose underlying causes most particularly included the combined effects of a significant reduction in oil production, a fall in the prices of the country's traditional exports, and a rise of about 40% in the effective real exchange rate of the CFA Franc. The combination of the effects of all these factors led perforce to a fall of 40% in GDP per head and to serious macroeconomic imbalances, which in turn led to the increasing recourse by the government to the external financing necessary to redress public finance balance and shift the economy back to its sustained growth path.

To reverse this trend, public authorities put in place at the beginning of 1987, a series of domestic measures aiming at reducing government expenditures and economic reform programs with the support of the international community⁵. These programs were essentially concerned with policies whose objectives were to reduce the budget deficit through an increase in tax rates, cuts in the payroll and subsidies to public enterprises, the restoration of external competitiveness centred on the reduction of the costs of the factors of production, and the restructuring of public enterprises. In this context the government introduced drastic cuts in civil servants' salaries of about 50% in 1993, a measure which led to considerable deterioration in the socioeconomic conditions of civil servants. Nevertheless, in the absence of monetary adjustment, the results obtained after the implementation of these programs remained quite unsatisfactory.

In January 1994, the devaluation of the CFA Franc relative to the French Franc by 50% in nominal terms took place, and the implementation of additional trade and fiscal reforms were initiated at the regional level by the Economic and Monetary Community of Central African

⁵ The crisis and the initial responses to it led to a severe economic depression and to an increase in the incidence of poverty according to the World Bank Report (1995). This report pointed out that in 1990, real GDP fell and stood at 20% under its 1985 level. Moreover, per capita income plummeted by about 50% between 1986 and 1993. The loss in competitiveness also led to the loss of export markets for agricultural products, thus making it difficult for food and industrial products to compete against imports; this loss of export markets also led to a decrease in the demand for labour in the domestic markets for exchangeable and non exchangeable goods with adverse effects on employment and the living standards of populations residing in both rural and urban areas. Likewise, the slowdown in economic activity combined with the slackening of tax collection to paralyze the capacity of the State to provide social services, thus aggravating the impoverishment of Cameroonian citizens.

States (EMCCA)⁶, of which Cameroon is a member. These measures provided Cameroon with the opportunity to reverse its socio-economic decline. The country thus witnessed some positive growth after the devaluation, but it was not until the middle of 1996, after a few failures in stabilization and adjustment efforts⁷, that the government showed a strong commitment to implement in-depth reforms.

During the period 1997-2000, economic programs implemented by the government included radical economic reforms whose objectives were to enhance the productive potential of the economy : firstly, to reinforce the functioning of the market economy notably by privatizing public enterprises and by liberalizing markets ; and secondly, to improve the environment for the development of the private sector through sector-wide reforms in the areas of energy, forestry, transports, and finance, and to reinforce public administration through the reforms of public services and of the judicial system. These reforms continued during the period 2000-2003, when they were supplemented by policies designed to accelerate the reduction of poverty by developing a poverty reduction strategy and by improving the delivery of social services⁸.

The successful implementation of these reforms, combined with the CFA franc devaluation vis-à-vis the French Franc, led to macroeconomic stability and to an increase in average real GDP growth rates of about 5% over the period 1997-2000, and 3.5% over the period 2001-2007. Per capita GDP increased by nearly 2.2% between 1996-2001 and by 1.3% over the period 2001 – 2007 (WDR, (2011)). Exports, and most particularly, non oil exports responded positively to improvements in price competitiveness and in 2002, export volumes jumped to 50% above their 1993 level. However, despite some diversification in export products, oil, wood, aluminium, and a reduced number of agricultural products continued to account for nearly 70% of Cameroon's exports (World bank, (2005)).

3. Problems and Methods Linked to the Decomposition of Income Inequality.

⁶ This Organization is mostly known under its French acronym CEMAC for *Communauté Economique et Monétaire d'Afrique Centrale*.

⁷ It is opportune to note at this point that following the devaluation of the CFA Franc in January 1994, Cameroon received from the IMF in March 1994, a standby credit to support reform efforts. This programme was interrupted because of poor performances in the areas of public finance and structural adjustment. However, the reforms resumed in September 1995, following the signature of a new standby IMF credit facility. The objective was to take advantage of the gains in competitiveness resulting from the monetary adjustment of January 1994. The first review of this programme by the IMF was positive, but the performance criteria of subsequent reviews were not met. The IMF, the World Bank, and the Cameroon government then put in place an IMF staff-monitored programme covering the period extending from July 1st to December 30, 1996.

⁸ In 2003, Cameroon adopted a poverty reduction strategy (PRS), the implementation of which was supported by the international community. The results obtained in terms of improvements in the macroeconomic framework made it possible for Cameroon to reach the decision and completion points of the HIPC Initiative respectively in 2003 and 2006, to increase the level of investment in the priority sectors identified in the Poverty Reduction Strategy Paper (PRSP), and to undertake structural reforms particularly in the public utilities sectors. Most government programs were implemented according to sequences defined in the PRSP, which enabled the government to bring to completion the six Growth and Poverty Reduction Facilities (GPRFs) funded by the IMF, and to receive the support of the other development partners in the implementation of its poverty reduction strategy.

When measuring income inequality, one must first choose the level at which inequality should be measured⁹. In other words, should inequality be measured among households or among individuals? In view of the fact that a large amount of sharing is assumed to take place among household members, it is appropriate to choose the individual as the measuring unit under the assumption that household income is uniformly distributed among all household members. In this study however, the analytical unit is the household, since the only data available in the surveys were gathered at the household level.

The second choice to be made is probably the most difficult; and it proves to be the choice of an inequality measure for the one-dimensional characterization of an entire income distribution. Several inequality measures have been proposed in the literature for this purpose¹⁰. Following Sen (1973) and other authors such as Bourguignon (1979) and Shorrocks (1980), the inequality measures used in this study were selected by taking account of the fact that they satisfy the following five axioms: i) independence of the mean; ii) independence of population size; iii) the Pigou-Dalton sensitivity to transfers; iv) symmetry; and v) decomposability. Because these measures satisfy axioms i), ii), iii) and iv), these measures belong to the class of measures of relative inequality which are Lorenz consistent (Anand, 1983). This means that each time a distribution X dominates in Lorenz sense another distribution Y, each of these inequality measures acquires an inequality value that is much lower for X than for Y. However, when the Lorenz criterion is not decisive on a pair of distributions, these inequality measures may be different in the appreciation of inequality (Foster, (1985)).

The independence of the mean condition is met when the multiplication of all incomes by a constant (k) leaves the inequality measure unchanged. The independence of population size condition is met if a decrease or an increase in the population of the same proportion throughout all classes does not affect the inequality measure. The Pigou-Dalton sensitivity to transfers is satisfied when an income transfer from a less poor to a poorer person entails a fall in the inequality measure without changing the relative rank of these persons. The symmetry property posits that the inequality measure must be independent of any characteristics linked to individuals other than their income; this axiom is also called the *anonymity* axiom. Decomposability often means total inequality can be expressed as the sum of two components, namely, between-groups inequality and within-groups inequality¹¹. Groups become identified with categories of households defined on the basis of differentiation criteria that may be geographic (regions or ecological areas) or socio-economic (household head's educational level, age, gender, household size, etc). Decomposition can also take the form of decomposability through income sources or income derived exclusively from salaries. An inequality measure can be regarded as source-decomposable if the total income inequality can be broken down into weighted sum of inequality contributions of various income components¹².

⁹ For more details, see Glewwe (1985).

¹⁰ Several measures have been proposed in the literature to characterize inequality in the distribution of income. Kakwani (1980), Glewwe (1986), Fields (1980). Sen (1973) and other authors have proposed axioms which any synthetic, simple, and appropriate inequality measure must satisfy.

¹¹ This property makes it possible to identify the amount of total inequality (i.e. by how much total inequality is) explained by a certain characteristic.

¹² For more details, see Glewwe (1985).

Among the inequality measures generally used in the literature which not only satisfy the above axioms, but are also « consistent » in Lorenz's sense, we can mention the Gini coefficient (G), Theil's two measures of entropy, and the coefficient of variation (Fields, (1997)). In this respect, we will use the Gini coefficient (G) and Theil's two entropy measures of inequality. In addition to the latter three measures, we will also carry out stochastic dominance analysis and illustrate changes in inequality graphically by means of Lorenz curves.

The Lorenz Curve

For a simple illustration of inequality, we use the Lorenz curve which is not in itself a numerical index of inequality, but which clearly shows how such indices are derived.

The Lorenz curve is the graphical representation of the $L(p)$ function which yields the cumulative percentage of the living standards (expenditure per adult equivalents) of a proportion p of the population, when individuals are ranked in increasing order according to their own living standard (total expenditure per adult equivalent). The Lorenz curve is defined as follows:

$$L(p) = \frac{1}{\mu} \int_0^p Q(p) dq \quad (1)$$

where, μ is the average standard of living (total expenditure per adult equivalent/income), and $Q(p)$ the q quintile of the living standard distribution¹³. The Lorenz curve is increasing and convexe in p .

The Lorenz curve is plotted graphically in a square whose dimension is equal to unity¹⁴. In a completely egalitarian society where each individual's total expenditure is identical to others, the Lorenz curve would coincide with the perfect 45° equality diagonal line p . In contrast, if a single individual enjoys all of society's income or performs all of society's total expenditure, the Lorenz curve would pass through the coordinate points (0, 0), (1, 0) and (1, 1) (i.e. a situation of perfect inequality). Moreover, the Lorenz curve always lies below the principal diagonal and its distance relative to the perfect equality line $p-L(p)$ measures the gap between the proportion of the living standard enjoyed by $100p\%$. Furthermore, when the Lorenz curve of distribution B lies entirely below another Lorenz curve of distribution A, distribution A dominates distribution B in Lorenz's sense, i.e. distribution A is more egalitarian than distribution B. In fact, this means that it is possible to go from distribution A to distribution B (assuming that their means are equal) by transferring the income of the poor to the rich.

¹³ If we assume that the cumulative distribution function of living standards, $F(y)$, is strictly increasing in y , and if p is a real number varying between 0 et 1, the *quintile*, $Q(p)$, is defined such that $F(Q(p))$ is equal to p , or by using the inverse of the cumulative distribution function: $Q(p) = F^{-1}(p)$. $Q(p)$ therefore represents the living standard below which lies proportion p of the population.

¹⁴ The horizontal axis represents the proportion of the population ranked in increasing order of income or expenditure from the lowest to the highest level of income or expenditure, while the vertical axis reports the cumulative proportion of total expenditure incurred by this stratum of the population.

This ranking criterion is not complete however. The fact is that when the Lorenz curves of both total expenditure distributions intersect, nothing can be said about the dominance of distribution A relative to distribution B and vice versa; consequently, it cannot be said that a distribution is more egalitarian than another without making additional assumptions about the manner in which equality at different points of the income distribution is evaluated.

This incomplete ranking of income distributions by means of Lorenz curves has led to the development of a summary inequality index that is used to compare two distributions.

The Gini Coefficient

The Gini coefficient (G) is an inequality index linked to the Lorenz curve, and it is expressed mathematically as follows :

$$G = \int_0^1 (1 - L(p)) dp \quad (2)$$

$$\text{or, } G = \frac{1}{2n^2\mu} \sum_i \sum_j |y_i - y_j| \quad (3)$$

where, μ is the mean income (or expenditure) of the population, and y_i and y_j , the incomes (expenditures) of individuals i and j . The Gini index computes the average distance between the cumulative classes of the population and the cumulative living standards. It is equal to twice the area lying between the Lorenz curve and the perfect equality line. The Gini coefficient varies from 0 to unity, and when it is equal to zero, every individual in the population has the same level of income, thus indicating the absence of inequalities or a situation of perfect equality. In contrast, when the Gini coefficient is equal to unity, the implication is that a single individual monopolizes all of society's income, while everybody else gets nothing, thus indicating a situation of perfect inequality¹⁵.

Entropy Indices

The two measures selected for the decomposition of inequality are Theil's entropy measures, the first being $GE(0)$ and the second, $GE(1)$. They belong to the extended class of measures known as general entropy measures $GE(\theta)$ defined as follows:

$$GE(\theta) = \frac{1}{\theta^2 - \theta} \left[\frac{1}{n} \sum_i \left(\frac{y_i}{\mu} \right)^\theta - 1 \right] \quad (4)$$

¹⁵The standard Gini gives equal importance to different gaps between the individuals in a given population. However, it is possible to use other types of weights in accordance with social preferences to aggregate the distance $P - L(p)$ by using the generalized Gini index. The latter uses a weight function which depends on the so-called « ethical » parameter, ρ . The different values of ρ define a class of indices known as S-Gini (for more details, see Duclos and Araar (2004)).

where n is the number of individuals in the sample, θ the aversion parameter for inequality, y_i the income (or expenditure) of individual i , $i = 1, 2, 3, \dots, n$, and μ the arithmetic mean of income (or expenditure) ¹⁶.

When $\theta = 0$ or $\theta = 1$, we obtain both of Theil's inequality measures, namely, the deviation of the logarithmic mean $GE(0)$, and Theil's index $GE(1)$, given respectively by the following expressions:

$$GE(0) = \frac{1}{n} \sum_{i=1}^n \log \left(\frac{\mu}{y_i} \right) \quad (5)$$

$$GE(1) = \frac{1}{n} \sum_{i=1}^n \frac{y_i}{\mu} \log \left(\frac{y_i}{\mu} \right) \quad (6)$$

$$\mu = \left(\frac{1}{n} \right) \sum y_i$$

Static Decomposition of the Entropy Index

Both the preceding inequality measures are decomposable into groups which is very useful to our study. In effect, inequality measures that are decomposable into groups have the advantage that they can be used to divide overall inequality into inequalities within different groups and inequalities between these groups. For instance, it is possible to calculate the percentage overall inequality in Cameroon attributable to disparities in average expenditures between the urban and rural areas. This calculation makes it possible to identify the potential impact on overall inequality of the strategies designed to reduce disparities between these two areas. If inequalities between these areas are negligible (e.g. lower than 5%), the strategies designed for the sole objective of reducing differences in living standards between these areas will have but a negligible impact on the whole distribution of living standards, and hence, no significant effect on the level of equity. By contrast, significant inequality contributions from one group to another (e.g. from 20% onward), indicate that it is possible to promote greater equity in Cameroon by reducing regional disparities.

Decomposition of inequality by groups requires that the population be divided into groups or sectors, and that this remains valid if the inequality measure for the whole population may expressed as a weighted average of the same measure for the different groups (within-groups component), the more the inequality measure for all the population in which each member receives the average income of his group (between-groups component). The weight of the within-groups component may be the share of the population (strict decomposability) or the shares of the incomes of respective groups (limited decomposability)¹⁷. Decomposability of

¹⁶ The generalized entropy (GE) measure varies from 0 to ∞ . When $GE(\theta) = 0$, we have an equal income distribution, meaning that all incomes are identical. Higher values of $GE(\theta)$ represent higher levels of inequality.

¹⁷ Theil's $GE(0)$ index is weakly-additively decomposable, meaning that the elimination of between-groups inequality affects the value of the within-groups component of inequality, since the shares of expenditures used

the source (which will not be dealt with in the present study owing to lack of reliable data) does not divide the population into several groups. It does however divide everybody's income into several sources (e.g., farm and on farm income). In this case, overall inequality might be divided into a weighted sum of inequality by income sources, taking into consideration, implicitly or explicitly, the covariance between the sources of income. For group decomposition in this study, we use the GE (θ)-class of generalized entropy measures. More precisely, if I is overall inequality in a given population, general entropy measure of inequality may be expressed as the sum of between-groups inequality (I_b) and within-groups-inequality (I_w)¹⁸.

Assuming that it is possible to break down the population into mutually exclusive K sub-groups $k = 1, 2, 3, \dots, K$, a GE inequality index $I(\theta)$ is then written as follows:

$$I(\theta) = GE(\theta) = \sum_{k=1}^K \phi(k) \left[\frac{\mu(k)}{\mu} \right]_{\theta} I(k; \theta) + I_b(\theta) = I_w + I_b \quad (7)$$

where $\phi(k)$ is the share of population in sub-group k , and $I(k; \theta)$ its inequality measure. The first term of the decomposition can be considered as the weighted sum of within-groups inequalities. The term $\phi(k) \frac{\mu(k)}{\mu} I(k; \theta)$ can be interpreted as the absolute contribution of sub-group k to total inequality. $I_b(\theta)$ represents overall inequality if within-groups inequality is eliminated (i.e. if each individuals in sub-group k has the mean income of his own sub-group): it can be interpreted as the contribution of between-groups inequality to overall inequality.

It is often easier to obtain a synthetic inequality indicator by using the ratio of I_b to I . Let

R_b be this indicator, then $R_b = \frac{I_b}{I}$ or $R_b = \frac{I_b(\theta)}{I(\theta)}$. This indicator measures the share of inequality explained by between-groups inequalities.

4. Data Sources and Choice of the Welfare Indicator

The data used to perform the decomposition of Theil's inequality measures, are derived from the Consumption Budget Survey (CBS), and from the Cameroonian Household Surveys

as weights in the index undergo a change. But Theil's $GE(1)$ index is strictly additively decomposable, which means that the elimination of between groups inequality does not affect the value of the within-groups inequality component, for the population shares used as weights do not witness any change.

¹⁸ The between –groups inequality component (I_b) is captured by the first term in the right-hand side (RHS) of equation (7). This represents inequality in consumption between sub-groups and reflects what the level of inequality in the population would be if everyone within each sub-group had the same (i.e., the group's average) consumption level μ . The second term of the RHS of the equation reflects within-groups inequality (I_w) or what the overall inequality level would be if there were no differences in average consumption across groups, while there were inequality within each group. Overall inequality therefore is the sum of (I_b) and (I_w).

CHS1, CHS2 and CHS3 conducted respectively in 1983/84, 1996, 2001 and 2007 by the Cameroon's National Institute of Statistics (INS).

The 1983/84 EBC survey covered all of Cameroon's national territory and comprised a sample of about 6000 households. However, survey data were effectively gathered and compiled from only 5474 household questionnaires. The survey used a 4-degree sampling plan. At the first degree, the primary units drawn in proportion to population size were administrative districts. At the second degree, the drawing was based on counting areas proportionally to the number of segments or sub-areas selected independently in the urban and rural areas of each district chosen in the first degree. At the third degree, the operation consisted of carrying out an equiprobable drawing of a segment or sub-area in some units of the second degree whose sizes exceeded a certain threshold. At the fourth degree finally, the selection concerned households from the new files obtained during the updating operation.

On the other hand, the CHS1 survey is a national survey whose sample comprises about 1700 households selected randomly by a two-step probability in urban regions, and three-step probability in rural regions. CHS1's general objective was to measure the impacts of the economic crisis and structural adjustment policies on household living conditions and levels and, to analyze the interrelations between the dimensions of levels of living. Two types of questionnaires were designed, one type for cities and large cities, and the other type for the rest of the country. These questionnaires were administered to selected households, and they comprised 11 sections, several of which could be used to analyze poverty and income distribution in Cameroon.

The CHS2 survey covered the whole national territory and gathered a random sample of about 12000 households. It most particularly aimed at the construction of a poverty profile for Cameroon at the national level and at the levels of the ten provinces of the country, as well as for the two largest cities of Douala and Yaoundé (respectively the economic and political capitals of the country) each of the latter being considered as separate strata, while each of the ten provinces was divided into two strata, one rural and the other urban. The sampling basis of the survey was that of the second General Census of the Population and the Habitat (RGPH) of April of 1987, which was updated to take account of its dated nature. Two types of draws were made according to residence area: a two-degree draw in the major cities of Douala and Yaoundé, and a three-degree draw with equal probability in the semi-urban sub-strata, and the rural strata of the provinces.

The CHS3 was a survey of national scope whose main objective was to update the 2001-poverty profile, with a view to evaluate progress made in the areas of poverty reduction and the achievement of the Millennium Development Goals (MDGs), as well as to contribute updated socio-economic information to the review of the Poverty Reduction Strategy (PRSP) adopted by the Cameroon government in April 2003. The CHS3 sample, as that of the CHS2 survey comprised about 12 000 households. The sampling basis was the list of count zones (CZs) demarcated during the third- General Census of the Population and the Habitat (RGPH) in 1987.

Studies of the distribution of welfare are concerned with inequality. However, since welfare is not directly observable, a closely related variable, which may reasonably serve as a good welfare proxy, must be chosen. By referring to the standard argument of microeconomic theory, we can maintain that, *ceteris paribus*, the level of an individual's welfare is determined by his life-cycle income, or permanent income. Given that current consumption

is usually considered as a better proxy for life-cycle income than current income, it may be used as a measure of current welfare (Sen (1976), Deaton (1980)). Obviously, this does not mean that individual consumption does not fluctuate over time. Consumption fluctuates and sometimes does so substantially, since consumption needs are not uniformly distributed over the life cycle, and since capital markets are far from being perfect, notably, so far as poor households are concerned, owing to the fact that they often borrow money for current consumption. In this last case, current consumption may be considered as a better proxy for life-cycle income than current income. For that reason, the present paper deals with inequality in the context of the distribution of consumption expenditure.

Given that households have different sizes in the number of children and adults, we use the distribution of total consumption expenditure per adult equivalent to measure inequality. The adult equivalent scale used by the NIS is 1 for each adult and 0.5 for each child. Several adjustments were made in the initial data before estimating inequality indices, notably, by rendering comparable the value of the 1984, 1996, and 2007-consumption expenditure to that of 2001.

5. Inequality Measurement and Decomposition Results

5.1 Population Share and Expenditure Gap

The proportion of the urban population increased regularly over the period 1984-2007, while that of the rural population rather decreased from 70.9% in 1984 to 63.4% in 1996, and to 65.2% in 2001, and to 64.7% in 2007 (see Table 1 below). Urban household expenditure is one and a half times higher than rural household expenditure. However, the urban-rural expenditure gap fell slightly from 1.57 in 1996 to 1.54 in 2001, and seems to have substantially increased starting in 2001.

Between 1996-2007, there was a decline in the proportion of the population of household heads in the youngest age groups of less than 35 and between 35 and 50.

The share of the population of household whose heads has the highest level of education (i.e. higher education) increased from 5.7% in 1996 to 6.03% in 2007. On the other hand, the proportion of the population of households whose heads have no education declined from 36.6% in 1996 to 30.3% in 2007.

There is a significant difference between the average expenditure of household groups with the highest educational level (up to higher education) and the lowest average expenditure of household groups with no education. In this context, the average household expenditure gap according to the highest educational level rose slightly from 2.13 in 2001 to 2.28 in 2007. Moreover, the expenditure position of the household groups without education remarkably worsened with its mean expenditure as a ratio of the overall mean declining from 0.81 in 2001 to 0.52 in 2007.

Households managed by women are more heterogeneous in the way they usually spend their money than households managed by men. The latter accounted for about 84% of the population and incurred slightly less expenditures than the national average.

Table 1: Population Share and Relative Expenditure of Household Groups, Cameroon, 1984-2007

Household Groups	Population Share				Relative Mean Expenditure			
	1984	1996	2001	2007	1984	1996	2001	2007
Areas	(Rural households = 1.00)							
Urban	0.2902	0.3463	0.3479	0.3531	1.35	1.57	1.54	1.84
Rural	0.7098	0.6537	0.6521	0.6469	1.00	1.00	1.00	1.00
Cameroon	1.00	1.00	1.00	1.00				
Age	(All households = 1.00)							
< 35	0.3612	0.3178	0.3121	0.3114	2.15	1.90	1.33	1.18
35-50	0.3685	0.2893	0.2993	0.2991	1.59	1.57	1.17	1.08
50 and over	0.2703	0.3929	0.3886	0.3871	0.08	1.22	1.04	0.92
Cameroon	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Education	(All households = 1.00)							
No education	0.5888	0.3668	0.3153	0.3036			0.81	0.52
Primary school	0.2931	0.3504	0.3490	0.3439	1.631	1.11	0.88	0.81
Secondary 1 st cycle	0.0438	0.0711	0.1731	0.1787	3.05	1.53	1.31	1.04
Secondary ,second cycle	0.0533	0.1070	0.1008	0.1135	3.78	2.15	1.46	1.30
Higher Education	0.0101a	0.0573	0.0598	0.0603	5.83	3.41	2.13	2.28
Cameroon	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Gender	(All households = 1.00)							
Male	0.8775	0.8888	0.8162	0.7907	1.53	0.93	1.07	0.98
Female	0.1225	0.1112	0.1838	0.2093	1.69	1.34	1.19	1.06
Cameroon	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

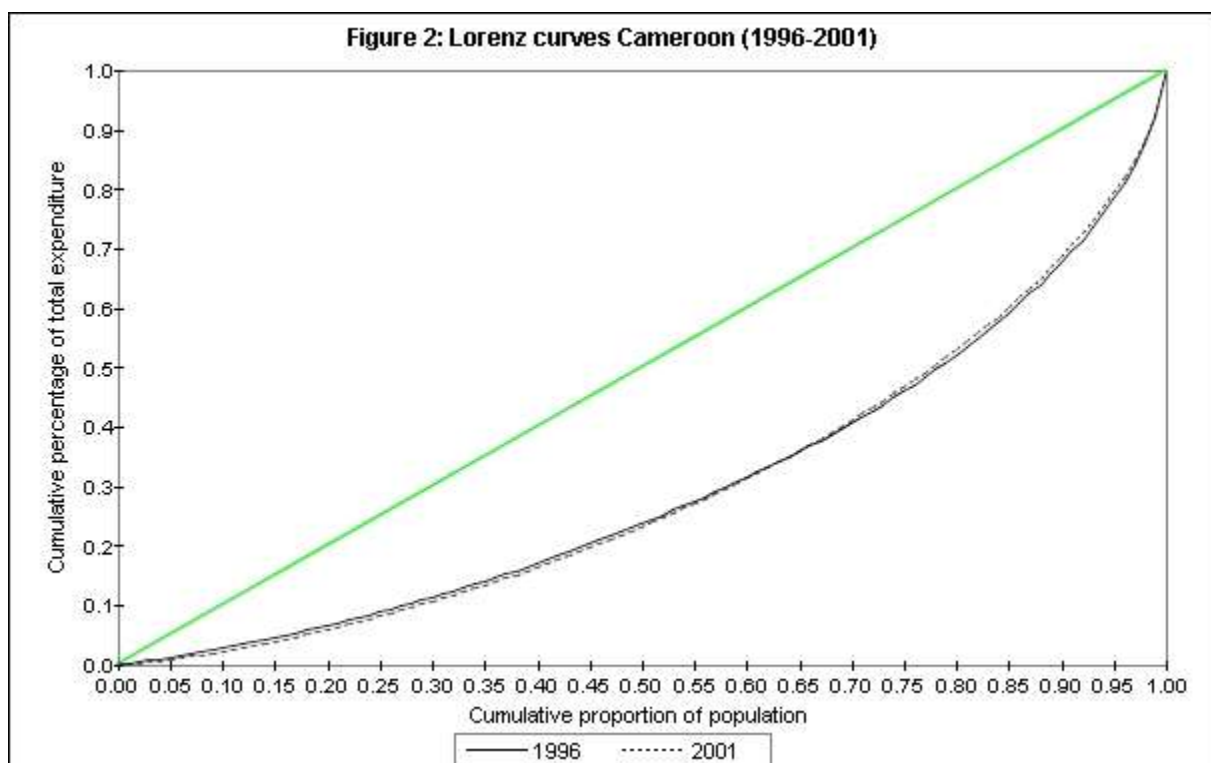
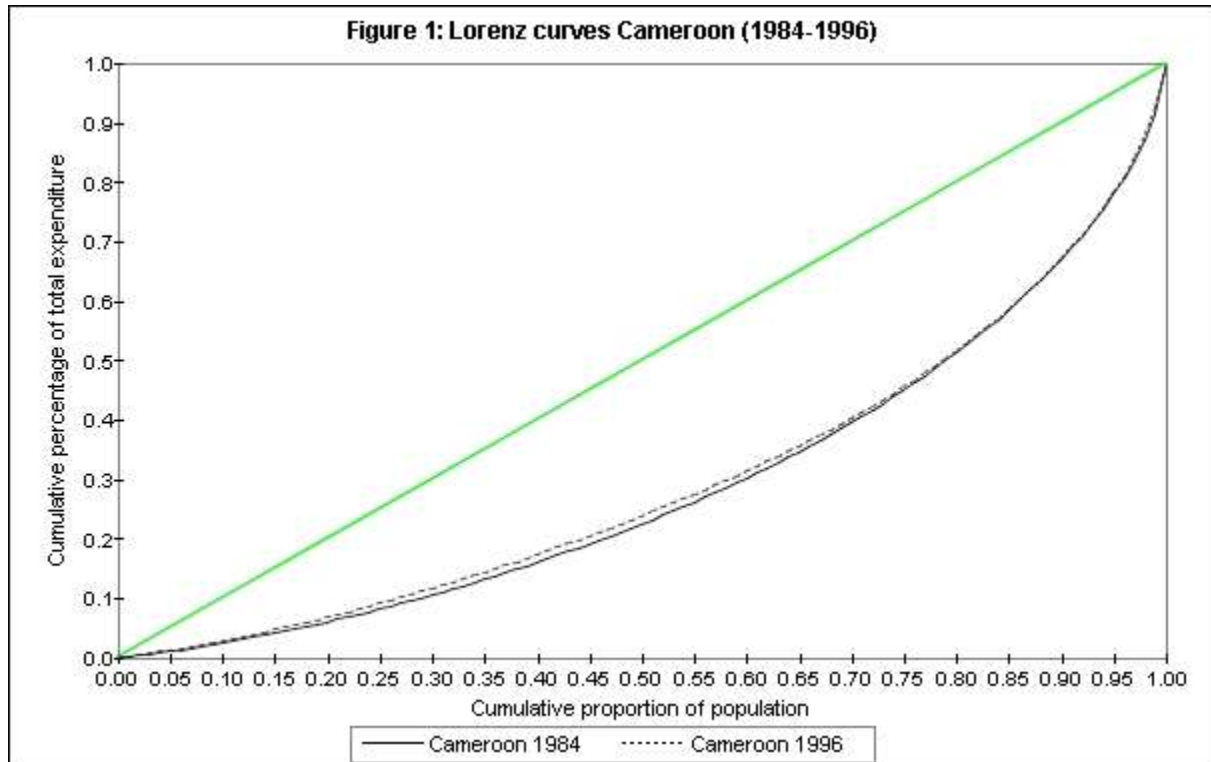
5.2 Changes in Inequality Expenditure in Cameroon between 1984 and 2007

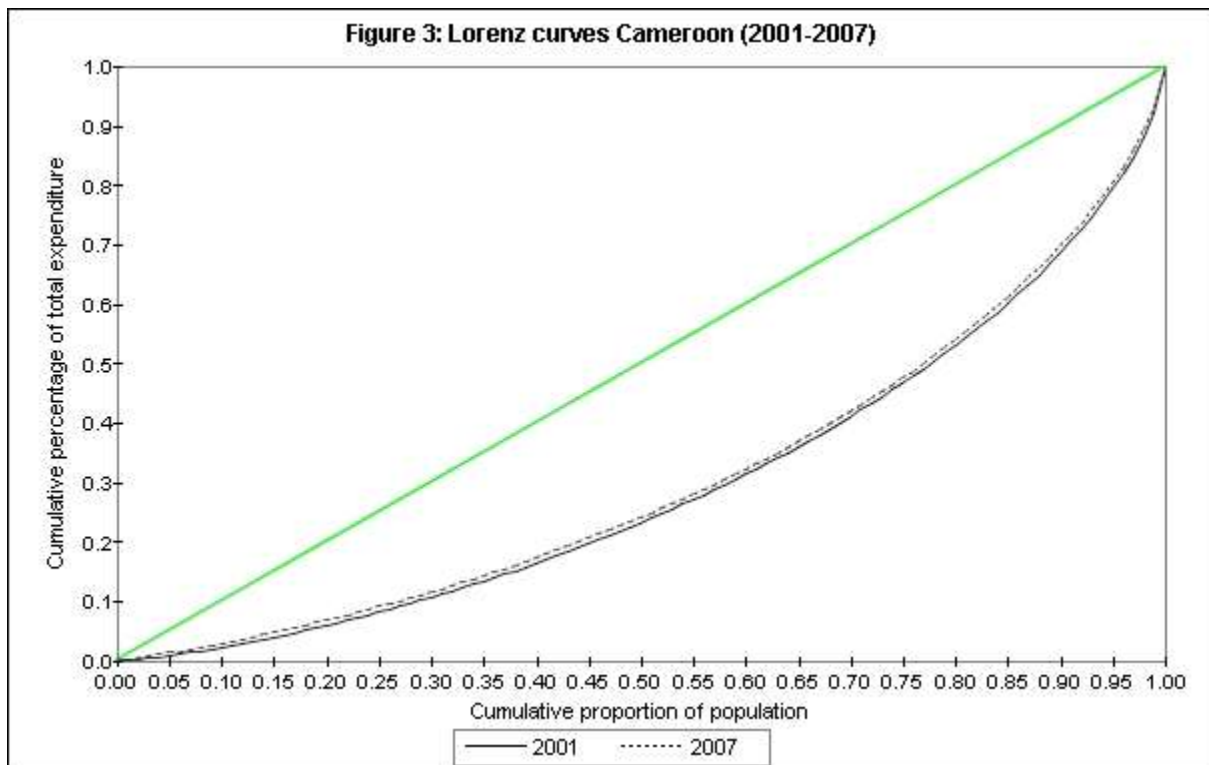
Before presenting the decomposition of the inequality index, it is opportune to note that total household real expenditure per adult equivalent decreased by nearly 40 % in Cameroon between 1984 and 1996, thus depicting the same downward trend as the negative GDP growth rate witnessed by the country during the sub-period 1984-1996. Moreover, the values of the Gini coefficient and Theil's index for the year 2007, which were respectively equal to 0.38 and 0.24, indicating that Cameroon had quite an equal distribution of expenditures with respect to a country like Côte d'Ivoire with a slightly higher Gini coefficient of 0.44. Furthermore, regardless of the inequality measure used inequality in total expenditure per adult equivalent decreased over the sub-period 1984-1996 period, increased over the sub-period 1996-2001, and decreased again during the sub-period 2001-2007 (See Table 2 below).

Figures 1, 2 and 3 below show Lorenz curves for the national distribution of total expenditures per adult equivalent for the years 1984 and 1996, 1996 and 2001 and, 2001 and 2007. Figure 1 indicates that the Lorenz curve for the 1996, total expenditure per adult equivalent lies everywhere above that of 1984. This result indicates that Cameroon witnessed a general improvement in living standards equality as measured by total expenditure per adult equivalent between 1984 and 1996.

If Lorenz curves intersect, then it is difficult to provide a definite opinion on an eventual increase or fall in expenditure inequality. In the present case, the 1996-Lorenz curve always lies above that of 1984, which implies that the fall in inequality that occurred in Cameroon between 1984 and 1996 was robust.

Figure 2 shows that the Lorenz curve of total expenditure per adult equivalent of 1996 lies above that of 2001, and Figure 3 demonstrates that the Lorenz curve of 2001 lies below that of 2007, thus confirming an increase in expenditure inequality between 1996 and 2001, and a decrease in expenditure inequality between 2001 and 2007.





5.2.1 Changes in Inequality According to Residence Area between 1984 and 2007

All the three measures of inequality show higher values for urban households, thus confirming once more the “classical” observation that the degree of income inequality is higher among urban than rural households (see Table 2 below). Compared to inequality at the national level, the values of the three inequality indices generally indicate that inequality is less prevalent in the two areas than in the country as a whole.

From 1984 to 1996, inequality increased in the urban area and declined in the rural area as well as in Cameroon taken as a whole, thus implying that opposed urban and rural inequality trends combined with each other to improve overall inequality. As noted by Baye and Fambon (2002), the higher inequality observed in urban areas is mainly attributable to the fact that most of the beneficiaries of the huge incomes derived from property, profitable businesses, and government and corporate employment live side by side with very poor people. In particular, this situation may be explained by the rapid urbanization, the limited rural jobs and absorption of migrant workers by urban areas, to which is partially attributed the responsibility of the economic crisis which hit the country from the late 80s to the early 90s, and whose effect was the acceleration of the exodus of a large number of rural poor job-seekers towards large urban centers.

A reversed situation occurred from 1996 to 2001, manifesting itself by a decrease in urban inequality and a rise in rural inequality, which also shows that opposite urban and rural inequality trends compensated for each other in such a way that overall inequality remained at the same level. From 2001 to 2007, a general improvement in the distribution of income took place concurrently with a fall in urban and rural inequalities.

In addition, inequality between these two areas account for a small share contribution to total inequality while within-groups inequality among the two areas explains the largest share contribution to total inequality. Since a high percentage of inequality is attributed to within-groups inequality, efforts to reduce this type of inequality are likely to contribute more to total equality. This kind of information can provide an important guide for the design of policies that aim at the reduction of inequality and eventually, relative poverty.

Table 2 : Inequality Decomposition by Areas, 1984–2007

Areas	GINI				GE(0)				GE(1)			
	1984	1996	2001	2007	1984	1996	2001	2007	1984	1996	2001	2007
Urban	0.3735	0.4036	0.4060	0.3519	0.2207	0.2848	0.2783	0.2056	0.2782	0.3091	0.3207	0.2287
Rural	0.3616	0.2996	0.3690	0.3223	0.2050	0.1457	0.2406	0.1666	0.2264	0.1578	0.2387	0.1875
All groups	0.4277	0.4060	0.4078	0.3896	0.2984	0.2694	0.2905	0.2477	0.3510	0.3170	0.3173	0.2787
Within-group (% share)					0.2227 (74.6)	0.1897 (70.4)	0.2538 (87.3)	0.1804 (72.8)	0.2619 (66.0)	0.2335 (73.7)	0.2782 (88.0)	0.2096 (75.2)
Between-group (% share)					0.0757 (25.4)	0.0797 (29.6)	0.0368 (12.7)	0.0673 (27.2)	0.0891 (34.0)	0.0835 (26.3)	0.0381 (12.0)	0.0691 (24.8)

Source : Calculations of the author using expenditure data drawn from the 1983/84 BCS survey and the CHS1, CHS2, and CHS3 household surveys conducted by the National Institute of Statistics (NIS) of Cameroon and the DSCN.

Figures 4, 5, 6, 7, 8 and 9 present stochastic dominance analysis for the two residence areas. Examination of the 1984 and 1996-Lorenz curves for each area shows that for the rural areas, the 1984-Lorenz curve lies everywhere below that of 1996 (see Figure 5 below). This result thus makes it possible to confirm the sharp fall in total expenditure per adult equivalent and the results arrived at for the inequality indices of these areas between 1984 and 1996. On the other hand, the Lorenz curves of urban areas (see Figure 4 below) rather show a net increase in inequality in this area between 1984 and 1996. Indeed, the 1984-Lorenz curve lies everywhere above that of 1996. This result also confirms the rise in inequality previously obtained in this area with the Gini coefficient and both of Theil's indices.

Comments similar to the above may be made with regard to the curves of Figures 6, 7, 8, and 9 to confirm graphically the fall in inequality in the urban area and its rise in the rural area between 1996 and 2001, and the simultaneous decreases in urban and rural inequalities over the period 2001-2007.

Figure 4: Lorenz curves Urban (1984-1996)

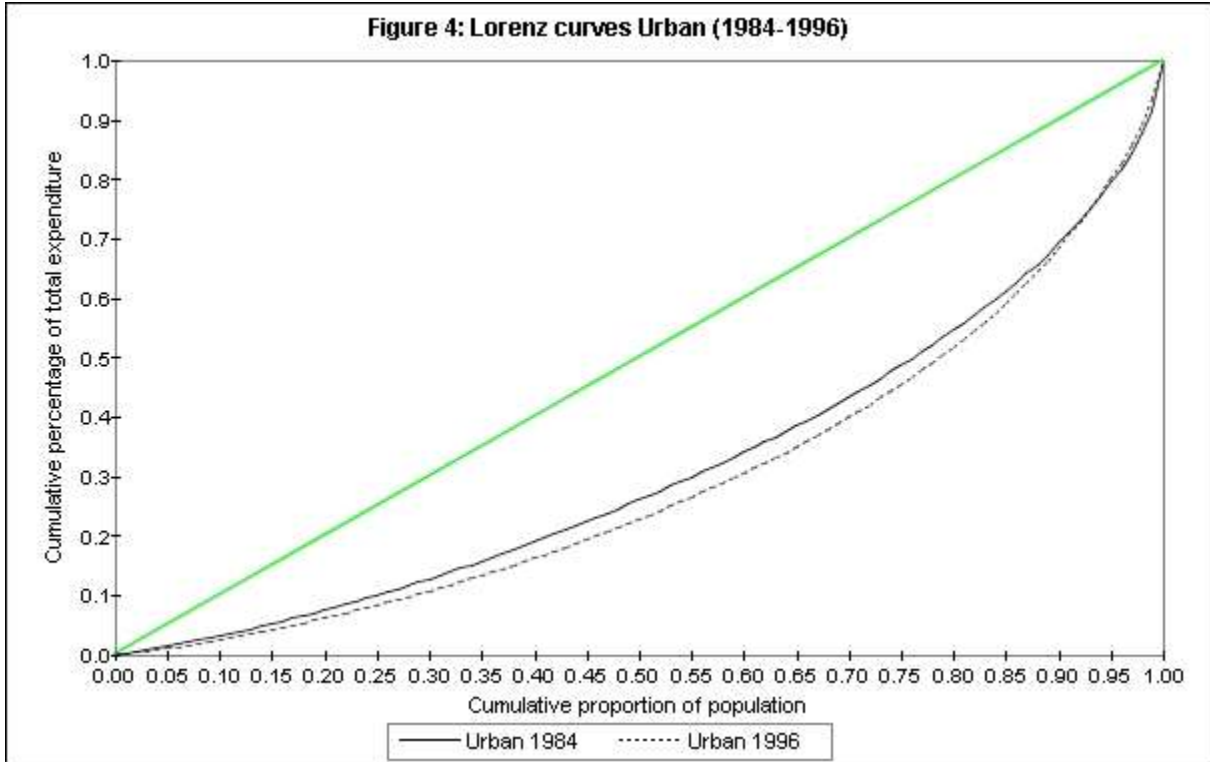


Figure 5: Lorenz curves Rural (1984-1996)

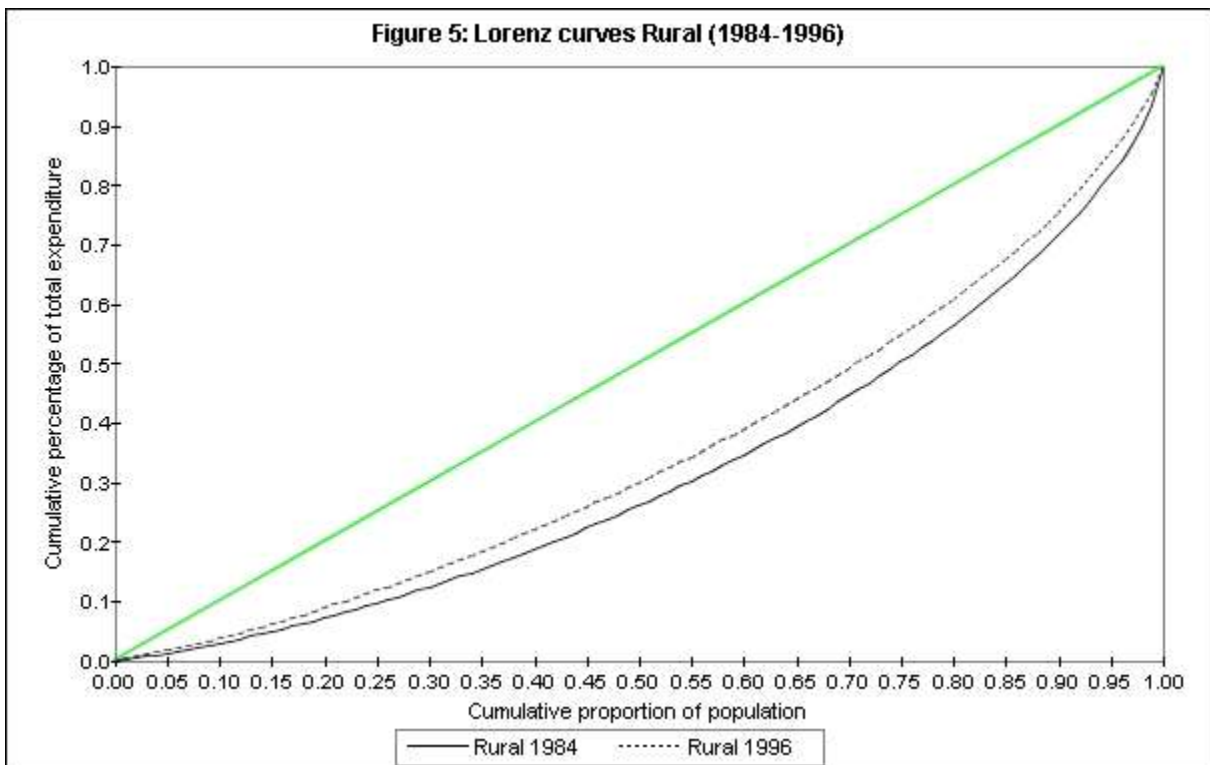


Figure 6: Lorenz curves Urban (1996-2001)

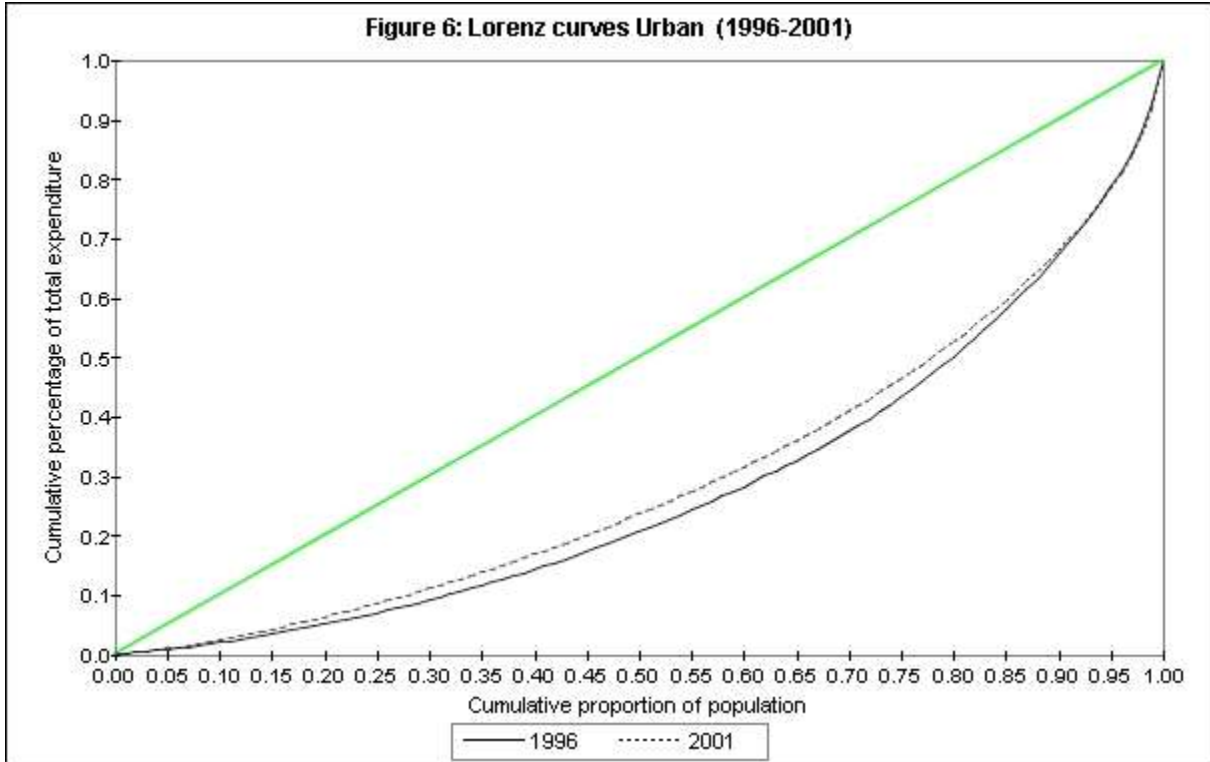


Figure 7: Lorenz curves Rural (1996-2001)

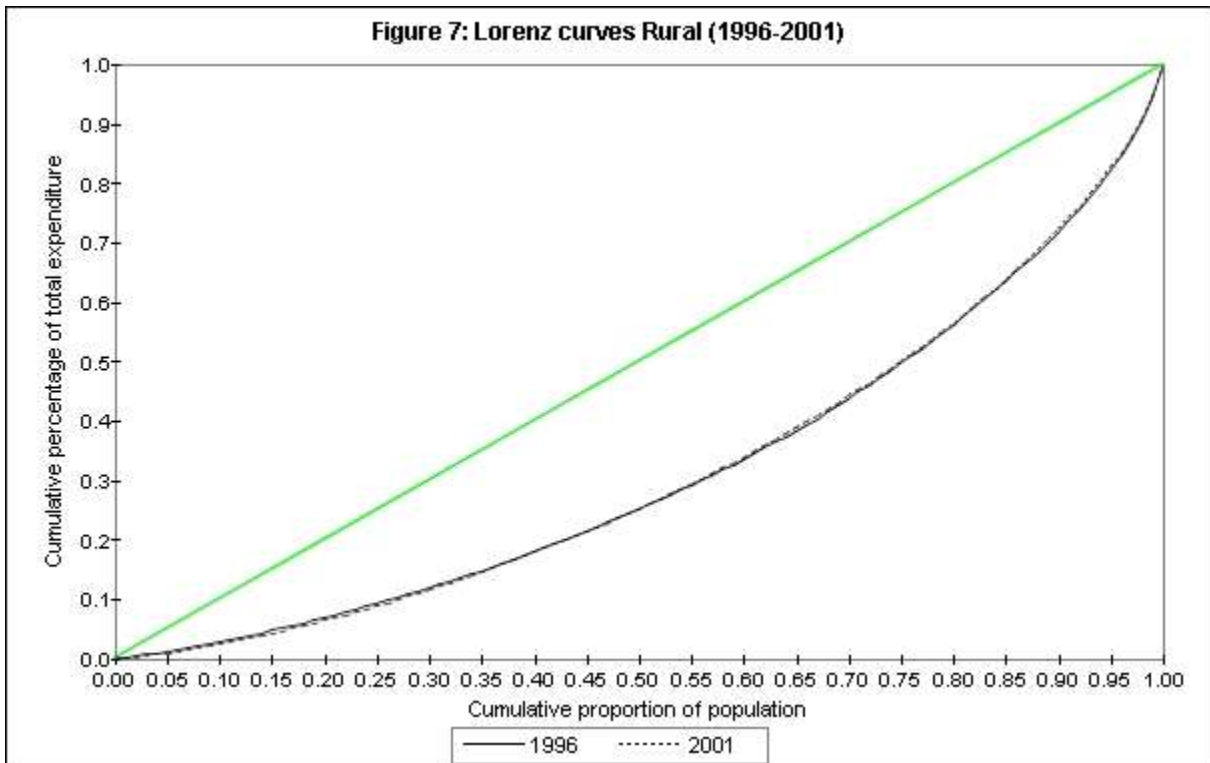


Figure 8: Lorenz curves Urban (2001-2007)

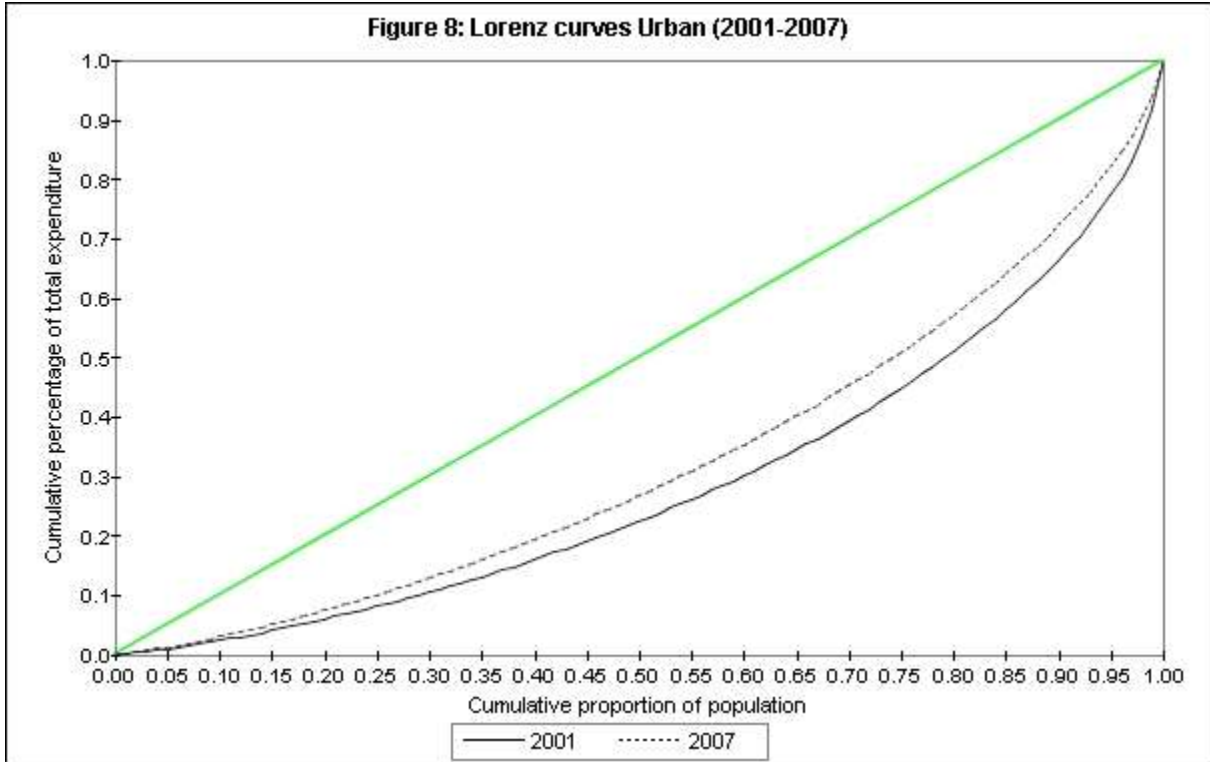
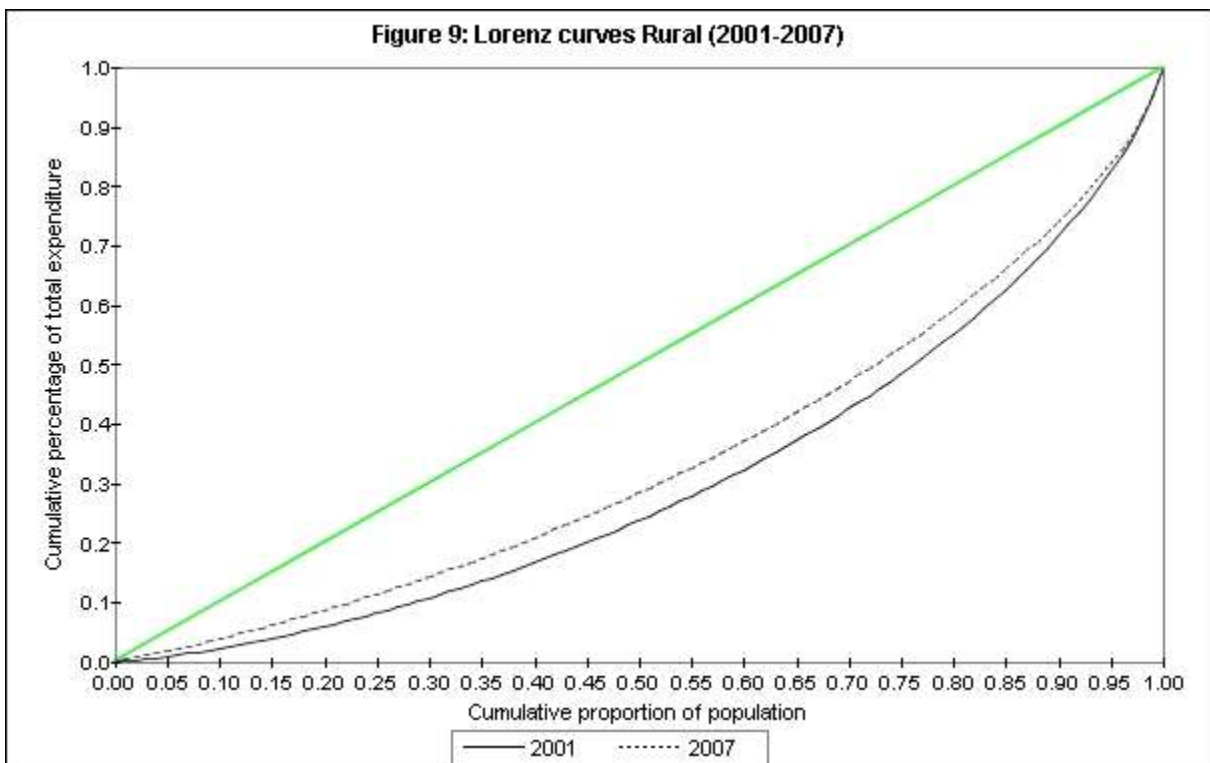


Figure 9: Lorenz curves Rural (2001-2007)



5.2.2 Inequality According to Education of the Household Head

We expect the educational level of the household head to play a significant role in determining the welfare level of a household. Inequality measured by entropy indices seems to have decreased among household heads for all levels of education between 1984 and 1996, increased over the period 1996-2001 (excepted for household heads of Secondary, second cycle) and decreased again between 2001 and 2007. A systematic behaviour pattern does not appear to emerge between levels of education and inequality. This situation is perhaps due to the fact that employment is a phenomenon that affects all students who leave school at all levels of education in Cameroon.

When considering decomposition of expenditure inequality using $GE(0)$, it appears that the between-education group component as a percentage of the aggregate inequality exceeded 15 per cent in 1984, increased to more than 30 per cent in 1996, decreased to 17 percent in 2001 and increased again to more than 27 percent in 2007. Therefore, the between-groups component to total inequality was not negligible in explaining total expenditure inequality. However, in spite of disparities in living standards between different levels of education, the within-groups inequalities were much more likely to explain national inequality.

The implication of this situation is that one must examine the distribution of education and the determinants of economic returns that result from it, if the distribution of living standards in Cameroon is to be understood.

Table 3: *Inequality Decomposition by the Educational Level of the Household Head, 1984–2007*

Education	GINI				GE(0)				GE(1)			
	1984	1996	2001	2007	1984	1996	2001	2007	1984	1996	2001	2007
No education			0.3529	0.3296			0.2154	0.1739			0.2150	0.2041
Primary school	0.4007	0.3224	0.3673	0.3275	0.2718	0.1694	0.2407	0.1730	0.3184	0.1859	0.2351	0.1850
Secondary 1 st cycle	0.4423	0.3958	0.3756	0.3261	0.2652	0.1908	0.2485	0.1745	0.2753	0.1904	0.2648	0.1892
Secondary, second cycle	0.3891	0.3803	0.3739	0.3318	0.3427	0.2564	0.2366	0.1809	0.3438	0.2768	0.2572	0.1915
Higher Education	0.4337	0.3859	0.4261	0.3797	0.3501	0.2516	0.3023	0.2409	0.3181	0.2639	0.3450	0.2634
All groups	0.4218	0.4060	0.4077	0.3896	0.2984	0.2694	0.3163	0.2477	0.3510	0.3170	0.31630	0.2787
Within-group (% share)					(84.9)	0.1864 (69.2)	0.2370 (83.1)	0.1785 (72.1)	(76.4)	0.2135 (67.4)	0.2538 (80.3)	0.2017 (72.4)
Between-group (% share)					0.0451 (15.1)	0.0829 (30.8)	0.0534 (16.9)	0.0691 (27.9)	0.0829 (23.6)	0.1035 (32.6)	0.0622 (19.7)	0.0770 (27.6)

Source : Calculations of the author using expenditure data drawn from the 1983/84 BCS survey and the CHS1, CHS2, and CHS3 household surveys conducted by the National Institute of Statistics (NIS) of Cameroon and the DSCN.

5.2.3 Inequality According to Gender of the Household Head

The three inequality indexes show that inequality among male household heads is not very different from inequality at the national level, while inequality among female household heads is slightly more pronounced.

Over the sub-periods 1984-1996 and 2001-2007, the Gini coefficient and the Theil indices decreased for households managed by both men and women, but much more so for those managed by women. A reversed situation occurred from 1996 to 2001, manifesting itself by an increase in inequality for households managed by both men and women.

The design of gender-sensitive policies requires the breakdown of inequality according to the gender of the household head. As indicated by the data in Table 4, gender inequality is not a major factor in overall expenditure inequality, because the between group component constituted only less than 2 per cent of total inequality. In other words, the elimination of gender inequality will not reduce total expenditure inequality by very much. By contrast, the contribution to within-gender inequality remained a significant factor in explaining inequality between 1984 and 1996, 1996 and 2001 and, 2001 and 2007.

Table 4: *Inequality Decomposition by Gender of the Household Head, 1984–2007*

Gender	GINI				GE(0)				GE(1)			
	1984	1996	2001	2007	1984	1996	2001	2007	1984	1996	2001	2007
Male	0.4213	0.4034	0.4066	0.3883	0.2977	0.2662	0.2878	0.2460	0.3525	0.3194	0.3182	0.2766
Female	0.4240	0.4086	0.4123	0.3899	0.3022	0.2784	0.3023	0.2478	0.3422	0.2865	0.3075	0.2803
All groups	0.4277	0.4060	0.4078	0.3896	0.2984	0.2694	0.2905	0.2477	0.3510	0.3170	0.3163	0.2787
Within-group (% share)					0.2983 (99.97)	0.2674 (99.26)	0.2905 (1.00)	0.2464 (99.48)	0.3510 (99.99)	0.3149 (99.34)	0.3162 (99.97)	0.2774 (99.50)
Between-group (% share)					0.0001 (0.03)	0.0020 (0.74)	0.0000 (0.00)	0.0013 (0.52)	0.000029 (0.01)	0.0021 (0.66)	0.0001 (0.03)	0.0014 (0.50)

Source: Calculations of the author using expenditure data drawn from the 1983/84 BCS survey and the CHS1, CHS2, and CHS3 household surveys conducted by the National Institute of Statistics (NIS) of Cameroon and the DSCN.

4.5. Inequality according to Age of Household Head

According to Table 5, which presents the decomposition results, the between group component accounted for 1 to 6 per cent of total inequality as measured by the Theil index $GE(0)$, thus indicating that disparities between age groups were not significant in the overall expenditure inequality. Within-age-group inequality appears to increase with the age of household heads. In 2007, it started at 0.2505 for ages less than 35. After dropping to 0.2640 at ages 35 to 50, it raised and peaked at ages 50 and over at 0.2913.

The evolution of within-age groups inequality contributed substantially to the explanation of the increase or reduction in total inequality over the study period.

Table 5: *Inequality Decomposition by Age of the Household Head, 1984–2007*

Age Group	GINI				GE(0)				GE(1)			
	1984	1996	2001	2007	1984	1996	2001	2007	1984	1996	2001	2007
< 35	0.4479	0.4266	0.4012	0.3759	0.3355	0.3013	0.2858	0.2333	0.3727	0.3306	0.2890	0.2505
35-50	0.4332	0.4164	0.3990	0.3827	0.3171	0.2860	0.2744	0.2396	0.3879	0.3286	0.2951	0.2640
50 +	0.3821	0.3506	0.4077	0.3963	0.2446	0.2015	0.2868	0.2566	0.2761	0.2459	0.3286	0.2913
All groups	0.4218	0.4060	0.4078	0.3896	0.2985	0.2694	0.2905	0.2477	0.3510	0.3170	0.3163	0.2787

Within-group (% share)					0.2936 (98.4)	0.2530 (93.9)	0.2841 (97.8)	0.2416 (97.6)	0.3462 (98.6)	0.3006 (94.8)	0.3097 (97.9)	0.2727 (97.9)
Between-group (% share)					0.0049 (1.6)	0.0164 (6.1)	0.0065 (2.2)	0.0060 (2.4)	0.0048 (1.4)	0.0164 (5.2)	0.0065 (2.1)	0.0060 (2.2)

Source : Calculations of the author using expenditure data drawn from the 1983/84 BCS survey and the CHS1, CHS2, and CHS3 household surveys conducted by the National Institute of Statistics (NIS) of Cameroon and the DSCN.

6. Conclusion and Policy Implications

The objective of this study was to investigate the evolution of household expenditure inequalities in Cameroon over the 1984-2007 period. To achieve this, we concurrently used the graphic approach (i.e. Lorenz curves) and the numerical approach, i.e. the Gini index and Theil's entropy class of indices, which are decomposable into population sub-groups and make it possible to examine the importance of movements in the contributory factors of changes in inequality in the different areas and socio-economic groups of the country. The results of this investigation are briefly summarized in five main points:

- i) Whichever inequality index is considered, expenditure inequality at the national level decreased between 1984 and 1996, increased over the sub-period 1996-2001, and decreased again during the sub-period 2001-2007. These results are confirmed by the stochastic dominance curves of first order plotted for the three sub-periods of the study. Cameroon's level of expenditure inequality was quite high, since the Gini coefficient of expenditure inequality practically amounted to about 0.40.
- ii) Between-areas inequality was not a determining factor in the evolution of overall national inequality in Cameroon during the study period. In contrast, more than 66% of total expenditure inequality was explained by within-areas inequality components. It follows from this result that policies designed to reduce expenditure inequality should focus on within-areas disparities in the distribution of expenditure through considerations within areas, although between-areas inequalities should not be neglected. Moreover, since urban inequality is likely to play an increasingly significant role in the determination of overall inequality, the reduction of urban proves to be an additional key factor that must be taken into account in policies whose aim is to achieve some equity in Cameroon.
- iii) Gender inequality appears to be insignificant in Cameroon, for the ratio of average total household expenditure per adult equivalent for men household heads to that of women household heads was about 0.98 in 1984 and 0.82 in 1996. Changes in the between-groups gender inequality component contributed little in explaining overall inequality during the study period. Consequently the elimination of inequality between the sexes in terms of average total household expenditure per adult equivalent will have but a negligible impact on the reduction of overall inequality. However, this result seems to be an exception to the rule, for in most developing countries, women household managers are usually among the poorest of the poor owing to the lack of access to better job opportunities and capital.
- iv) As concerns age, the study shows that disparities in expenditures between age groups were not significant in explaining the general level of inequality, since the between-age groups inequality component had a low contribution (less than 6%)

to total expenditure inequality per adult equivalent over the study period. By contrast, the evolution of within-age groups inequality contributed substantially in explaining the evolution of total inequality during the 1984-2007.

- v) Finally, Education is a determinant of total expenditure. Even though the within-groups inequality components are much more likely to explain national inequality, the contribution of the between-groups component to overall inequality, whose average hovered around 20% over the study period, is not negligible. The average expenditure of household heads with a secondary level of education is 3.8 times higher than that of household heads with a primary level of education. In view of the fact that 35% of household heads only had a primary level education, improving the general level of education would constitute a significant contribution to the reduction of overall inequality in Cameroon, other things being equal. However, it should be noted that the educational systems of developing countries may cause an increase in the level of inequality since the opportunity costs of elementary education are usually higher for poor pupils than for rich ones.

A policy measure taken by the government to improve education and the distribution of income was to implement the « education for all (EFA)» policy, the objective of which was to increase the number of public primary and secondary schools significantly. The EFA policy was mainly designed to enhance access to education by the students of poor households with a view to further the development of the country's human resources. However, although the EFA policy aimed at making education available for all Cameroonian citizens, there remains the urgent need to improve on the quality of education, because the cognitive intelligence levels of primary and secondary school students in Cameroon has been quite poor these recent years.

6. References

- Abdelkrim, A., (2003)**, Décomposition de l'indice d'inégalité de Gini, une approche exacte, CIRPEE, Université Laval
- Adams, R., and Alderman, H. (1992)**. Sources of Income Inequality in Rural Pakistan: A Decomposition Analysis. *Oxford Bulletin of Economics and Statistics*, 54(4): 592 - 608.
- Ahluwalia, M. (1976)**. Income distribution and development: Some stylized facts. *American Economic Review*, 66(2), 128–135.
- Anand, S. (1983)**, *Inequality and Poverty in Malaysia*, Oxford University Press, London.
- Anand, S. And Kanbur, S.M.R (1993)**. The Kuznets process and the inequality-development relationship. *Journal of Development Economics*, 40, 25–52.
- Atkinson, A. B. (1970)**, 'On the Measurement of Inequality'. *Journal of Economic Theory* 2, 244-263.
- Baye, M.F. et Fambon, S., (2002)**. Decomposition of Inequality in the Distribution of Living Standards in Cameroon. *African Journal of Economic Policy*, Vol. 9, No. 2, December.

Bourguignon, F., (1979). “Decomposable Income Inequality Measures.” *Econometrica* 47, no. 4: 901–20.

Cameroun / MINEFI/ DSCN (1984). *Enquête Budget Consommation (EBC)*,

Cameroun / MINEFI/ DSCN (1996). *Enquête camerounaise auprès des ménages (ECAM)*, Vol. 1 : Méthodologie (tomes 1 et 2), Yaoundé, 44 pages.

Cameroun / MINEFI/ DSCN (1996). *Enquête camerounaise auprès des ménages (ECAM)*, Vol. 2 : Résultats (tomes 1 et 2 : 81 pages ; tomes 3, 4 et 5 : 95 pages), Yaoundé.

Davidson, R, Duclos, J.-Y. (1998). Statistical inference for stochastic dominance and for the measurement of poverty and inequality, Laval, Department of economics-CREFA, Canada.

Deaton, A. et J. Muellbauer (1980), *Economics and Consumer Behaviour*, Cambridge : Cambridge University Press.

Deaton, A. (1997). *The Analysis of Household Survey: A Microeconomic Approach to Development Policy*, Washington D.C. and Baltimore: The World Bank and Johns Hopkins University Press.

Duclos, J.Y. and Araar, A, (2004). Poverty and Equity: Measurement, Policy and Estimation with *DAD*. Preliminary version, CIRPEE, Laval University, May.

Duclos, J. Y., Araar, A. et C. Fortin, (2003), "DAD: A Software for Distributive Analysis / Analyse distributive", MIMAP programme, International Development Research Center, Government of Canada and CIRPEE, Laval University.

Fambon, S., (2010). Inequality in the distribution of household expenditure in Cameroon: A Gini decomposition analysis based on the Shapley-value approach. *Educational Research* Vol. 1(2) pp. 021-031, March.

Fambon S, Menjo Baye F, Tamba I, Nomba I, Ajab Amin A (2005). Dynamique de la pauvreté et de la répartition des revenus au Cameroun durant les années 80 et 90. Rapport final AERC, Projet collaboratif sur la pauvreté, la répartition du revenu et le marché de travail en Afrique Subsaharienne, Nairobi, Kenya, Septembre.

Fields, G. (1980). *Poverty, Inequality and Development*. New York: Cambridge University Press.

Foster, J. E. (1985), ‘Inequality Measurement’, in H.P. Young (ed) *Fair Allocation*. American Mathematical Society, Providence, RI.

Field, G.S., (1993), Inequality in Dual Economy Model, *The Economic Journal*, Vol. 103, Pp 1228-35.

Frazer, G. (2006). Inequality and Development Across and Within Countries .*World Development* Vol. 34, No. 9, pp. 1459–1481.

Glewwe, P. (1986). The Distribution of Income in Sri Lanka in 1969-70 and 1980-81: A Decomposition Analysis. *Journal of Development Economics* 24: 255-274.

Government of Cameroon (2003). Poverty Reduction Strategy Paper. Yaoundé: Republic of Cameroon.

Huang, H. R. (2004). A flexible nonlinear inference to the Kuznets hypothesis. *Economics Letters*, 84, 289–296.

Institut National de la Statistique (National Statistical Office). (2008). Troisième Enquête Camerounaise auprès des Ménages (ECAM3) : Yaoundé : République du Cameroun.

Institut National de la Statistique (2002). Evolution de la Pauvreté au Cameroun entre 1996 et 2001. Yaoundé : République du Cameroun.

Jha, S. K. (1996). The Kuznets curve: A reassessment. *World Development*, 24(4), 773–780.

Lahimer N. (2008): “Les IDE et le triangle « Croissance-Inégalités-Pauvreté », Application aux pays d’Afrique SubSaharienne”, gdri dreem : free.fr/.../C3-3_lahimer_les_ide_et_le_triangle_croissance_inegalites_pauvreté.pdf

Kakwani, N. (1980). *Income Inequality and Poverty. Methods of Estimation and Policy Applications.* Oxford: Oxford University Press.

Kuznets, S., (1955), Economic Growth and Income Inequality, *American Economic Review*, vol. 45, pp. 1-28.

Lynch, S. G., (1991). Income Distribution, Poverty and Consumer Pretences in Cameroon. Cornell Food and Nutrition Policy Program, Washington D,C.

Morrisson, C. (1996). Les inégalités de revenus. Paris: Collection Que sais-je? Presse Universitaire de France.

Oshima, H., T. (1992). “Kuznets’ Curve and Asian Income Distribution Trends.” *Hitotsubashi Journal of Economics* 33, no. 1: 95–111.

Papanek, G. F., and Kyn, O. (1987). Flattening the Kuznets curve: The consequences for income distribution of development strategy, government intervention, income and the rate of growth. *Pakistan Development Review*, 24(1), 1–54.

Sen, A. K. (1973). *On Economic Inequality.* Clarendon, Oxford.

Shorrocks, A.F. (1983). Ranking Income Distribution. *Economica* 50: 1 - 17.

Shorrocks, A. F. (1980). “The Class of Additively Decomposable Inequality Measures.” *Econometrica* 48, no. 3: 613–25.

Takahiro, .A., Rizal, A., L. and Yukino, Y. (1999). Inequality in the Distribution of Household Expenditure in Indonesia: A Decomposition Analysis. *The Developing Economies*, XXXVII-2, June, 197–221

Tsakoglou, P. (1988). Development and inequality revisited. *Applied Economics*, 20, 509–531.

World Bank (1995). Trends in Developing Economics. Extracts, Vol 3: Sub-Saharan Africa, The World Bank, Washington, DC.