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ABSTRACT

This paper appeals to the Shapley Value decomposition rule to account for the retreat in the FGT class of poverty measures in Cameroon between 1996 and 2001. In particular, the paper examines the evolution of poverty in Cameroon, simulates budgetary outlays necessary to eradicate poverty assuming perfect targeting, and decomposes changes in poverty into growth and redistribution components. The ECAM I and ECAM II household consumption surveys collected by the Governments Statistics Office together with the software DAD4.4 were used to generate the results. The incidence, depth and severity of poverty retreated significantly the period under study. The growth component contributed significantly more in explaining the fall in levels of poverty than the redistribution component in both rural and urban areas. The overall situation however clouds regional tendencies, which attribute varying importance to the two factors. The indication, however, clearly portrays the important role to be attributed to growth if long term poverty reduction is valued high in the policy menu as articulated in Cameroon's Poverty Reduction Strategy Paper. The government needs to allocate more budgetary outlays in rural areas to fill the income gap relative to the poverty line. In spite of the importance of growth in eradicating poverty, it will be much more effective if it benefits the poor disproportionately.

Keywords: Poverty decomposition, Shapley Value, Household Surveys, Cameroon.

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I Introduction

Cameroon like most SSA countries has suffered a series of setbacks that plunged its economic structure in chaos and disorder. Despite that since 2000, average real GDP has been revolving around 4.3% annually and per capita GDP of each inhabitant by 2.5% (INS, 2005), it should be noted that since the 1960s this has not always been the case. These fluctuations can be characterized either by major mutations in economic policies and international shocks that are exogenous in nature. Prior to the 1994 devaluation of the CFA franc, since the mid 1980s Cameroon experienced an economic crisis that was engendered mainly by a fall in world prices of agricultural and other commodities[2] causing a fall in revenue. To compensate for this fall in revenue, the government accumulated domestic arrears and foreign borrowing (Mbanga and Sikod, 2002). Additionally in the course of reducing public expenditure as conditioned by donor community key sectors were neglected (Khan and Noumba, 2001). This was reflected in most indicators (investment, GDP, internal consumption, etc) as the all underwent a decrease in their values (MINPLAT-DSCN, 1993).

In an effort to usher itself out of this critical situation, the government of Cameroon in September 1988, adopted the IMF/World Bank supported Structural Adjustment Program. This program was tailored towards expenditure-reducing measure with the goal of fixing the inadequate public finance situation (Baye, 2006). The failure of this program[3] culminated to the 1994 devaluation that had both expenditure-reducing and expenditure switching components[4]. Efforts from the devaluation started paying off from 1996 with a significant amelioration in macroeconomic policies[5] implemented by a reform minded government (World Bank, 2001). Difficulties in solving poverty issues-that experienced an increase from 40% in 1984 to 53.3% 1996 (Baye, 2006)-pushed

[2] In Cameroon this " international shocks" caused a fall in the price of cocoa and coffee which contributed about 50% of Cameroon's total export earnings in the late 1970s (National Institute of Statistics, 1993).

[3] : See Epo (2006). P.g 16/17

[4] These measures were aimed at switching the economy from non-tradable goods to tradable goods, increasing exportation of local goods and increasing the competitive nature of the industrial sector.

[5] Despite the fact that policies such as consolidating the benefits of devaluation and creating a favorable cadre for private sector development improved, issues of poverty alleviation did not improve. Additionally, since 1996 most indicators (GDP, investments, internal consumption, etc) have been experiencing an increase in their values till date (INS, 2004, 2005).

government to adopt the IMF/World Bank supported medium term economic and financial program spanning the period July 1997 to June 2000 (Baye and Fambon, 2001). This led Cameroon's admission into the Heavily Indebted Poor Country (HIPC) initiative in October 2000. Since the Cameroon has elaborated an interim and final PRSP document that has as in fighting poverty. These efforts to curb poverty where noted in the ECAM II (2001) household consumption survey that show a fall in the level of poverty from 53.3% in 1996 to 40.1% in 2001(Epo, 2006).

According to the Poverty Reduction Strategy Paper (Government of Cameroon, 2003) government with assistance from the World Bank/IMF under took the following studies: (1) a comprehensive study of growth; (2) an analysis of the dynamics of poverty; (3) macroeconomic modeling to align the priority medium term expenditure framework, including macroeconomic and budgetary frameworks and; (4) to harmonise the poverty reduction strategy and the poverty reduction and growth facilities. In this Document, seven priorities were also highlighted[6]. All these efforts put in place by the government of Cameroon paid off when in April 2006; Cameroon reached the Completion point of the HIPC initiative that warrants a substantial reduction of its debt by bilateral and multilateral partners. Also, efforts put in place by the government through divers programs contributed in improving the economic situation of the country since post devaluation (Epo, 2006).

Understanding and analysing poverty, its traits and diverse relationships with other socio economic factors is still a call for concern in Cameroon. Though efforts[7]have been made to harness these traits and relationships, a lot still remains to be done (Fambon et. al., 2005, Baye, 2006b). Exact decomposition of poverty into growth and redistribution in Cameroon is still poorly understood by analysts and decision makers. However, some advances have been made in this direction[8]. This paper falls in the line of contributions to fill the knowledge gaps by performing poverty decompositions based of the Shapley Value rule, which is one among the class of transferable utility concepts in the theory cooperative game theory.

[6] Refer, Poverty Reduction Strategy Paper, published in August 2003 by the government of Cameroon.
[7] These include statistics gathered by government; the ECAM I (1996) and ECAM II (2001) data base, empowering state organs, etc.
[8] Baye, (2006b), who was the first author to do an exact decomposition of poverty into growth and redistribution, taking the time range 1984-1996.

The main objective of the paper is to evaluate the relative importance of growth and redistribution in explaining poverty changes in Cameroon within the period 1996-2001. The specific objectives are: (1) to examine the evolution of poverty in Cameroon in the period 1996-2001; (2) to simulate budgetary outlays necessary to eradicate poverty assuming perfect targeting; (3) to perform an inter-temporal decomposition of poverty changes in Cameroon into growth and inequality components; and (4) to formulate policy implications on the basis of the analysis. The rest of this paper is organised into four sections. Section two presents the Data and literature review. Section three presents an exact decomposition rule based on the Shapley Value. Section four presents empirical results, and Section five makes concluding remarks.

II. Data and Literature Review

II.1 Data

Poverty analysis in this study is based on two distinct household surveys; the 1996 Household Consumption Survey ECAM I and the 2001 Household Consumption Survey ECAM II.

The first survey was conducted by the DSCN-MINEFI in 1996 over a three months period[9]and comprised of a random sample of approximately 1800 households in the ten provinces of the National territory (Institue Nationale des Statistiques, 1997). From this sample 1731 households were effectively visited[10]. The methodology used here was to stratify at two levels major towns: Yaoundé and Douala, and at three levels the other towns of the country, distinguishing between urban and rural towns. These towns were stratified into six[11] strata.

[9] From February to April 1996. The objectives were: (1) measure the effects of the economic crisis and the Structural Adjustments on the levels of standard of living; (2) Establish relations that exist between the different dimensions on living standards of the households and ; (3) analyse tendencies and evolutions of households living standards with other sources of data.

[10] See Cameroon's Poverty Reduction Strategy Paper, 2003.

[11] Yaounde, Douala, Other towns (all urban centers with more than 50,000 inhabitants), Forest region (the rest of the center, south and east provinces), Rural Haut Plateau (the rest of littoral, northwest and southwest provinces), and the savannah region (the rest of the adamawa, extreme north and north provinces).

The second household survey was conducted by the National Institute of Statistics in 2001, over a six months period. This survey[12] was carried out to remedy mistakes of the first household survey. It was comprised of 11,553 households, of which 10,992 were actually visited. The format in terms of strata and territory was identical to that of the 1996 survey.

In order to have credible results, the National Institute of Statistics had to render compatible the ECAM I and ECAM II household surveys. The main aspects that were likely to justify the above mentioned reasons were principally the difference in results. These differences included: the sample size, the time taken to collect the data and the base used for data collection. To harmonise these surveys, the National Institute of statistics undertook a process, supported by the World Bank from the 17th of June to July 2002 (Institue Nationale des Statistiques, 2002a).

Expenditure between the two periods had to be brought to the same base. Data from 2001 was treated so as to consider the same time length for data collected in 1996. A multiplicative factor was used to correct declarations in rural households. Looking at non-consumption expenditure between these two surveys, similar expenditure collected over the same reference period and based on sample size were regrouped and intergraded by an indicator of the living standard of the population. Concerning expenditure in general, all expenditure having a very high level of disparity between these surveys period were not taken into account by this indicator.

Rendering both surveys comparable, expenditure was corrected from temporal and spatial fluctuation in prices. The year 2001 was considered as the reference year due to its credibility. To equate expenditure for 1996 to that of 2001, a temporal price index was taken considering the month of October 2001 (in ECAM II) as the reference month. Spatially, Yaoundé (2001 survey), was considered as the reference region for the two surveys. To deflate expenditure, the spatial index (Yaoundé in ECAM II), was used to

[12] The main aim of this survey was:(1) To propose an adequate methodology for calculating the living standard of households and a poverty line accepted by major development partners, which would serve as a reference for further analysis. This acts as a follow up of the poverty reduction program; (2) To analyse monetary poverty, poverty in terms of living standards of most households and potential poverty, while establishing the correlation between them; (3) The production of past analysis at a national and regional level, while isolating the two large towns (Douala and Yaoundé) and also distinguishing area of residence (urban or rural) and; (4) To produce an adequate data base to ameliorate different statistics (of the population), notably in establishing household consumption in national accounts and updating calculations used in calculating price indexes

render both surveys comparable. The Paasche index was used to deflate the expenditure in these regions (in both surveys) because it takes into account moderation in each region (Institue Nationale des Statistiques, 2002a).

Finally, as for household size, the Recommended Dietary Allowance equivalence (RDA), was used because it moderates the level of consumption of the individual with Age and Sex.

A poverty line was also developed using the cost-of basic-needs approach. The harmonised poverty line was computed as 185,490 Francs CFA per year (Institue Nationale des Statistiques, 2002a, 2002b), which we also use in this paper.

II.2. Empirical Review of Literature

Under this section we are going to review some empirical works in this domain. Poverty analysis has gone to a higher dimension with the emergence of new approaches in analysing poverty. Throughout the world a lot of work has been done in decomposing poverty.

Kakwani (1997) applied the axiomatic approach to analysing poverty in Thailand. This analysis was carried out within the period 1988-1994. Kakwani (1997) observed that using the axiomatic decomposition approach to analysing changes in poverty in Thailand, the growth effects contributed more than the redistribution effect in explaining poverty changes (Table 1).

Shorrocks and Kolenikov (2001) applied both the Datt and Ravallion approaches (modified) and the Shapley-Owen- Shorrocks approach. This study was carried out in Russia. This analysis was carried out in the period 1985-1999. Shorrocks and Kolenikov (2001) in their study reveal that in both the Datt and Ravallion (modified) approach or the Shaley approach the growth component has contributed more to explaining poverty changes than the redistribution component (Table 1).

Boccanfuso and Kabore (2002) applied both the Datt and Ravallion and Kakwani's approach. This analysis was carried out in Burkina Faso and Senegal, and it was carried out within the period 1995-2000. Boccanfuso and Kabore (2002) reveal in

their study that, for Burkina Faso applying both Datt and Ravallion approach or Kakwani's approach, we notice that the growth components explains changes in poverty more than the redistribution component. As for Senegal applying both Datt and Ravallion approach or Kakawni's approach we discover that it is the growth effect which contributes more to explaining overall poverty change than the redistribution effect (Table 1).

Baye (2006) applied both the Datt and Ravallion approach and the Shapley approach. This analysis was carried out using Cameroon data in the period 1984-1996. Baye (2006) reveals in his studies that for changes in overall poverty, the growth components contribute significantly to overall poverty changes than redistribution effects. In his study, using either the Datt and Ravallion approach or the Shapley approach the growth component is more significant than the redistribution component (see Table 1).

The INS (DSCN) in 2002 applied the Datt and Ravallion approach in Cameroon. This spanned the period 1996 – 2001. It is the growth component that contributed more in explaining poverty than the redistribution component (Table 1).

These authors carried out studies analysing poverty change using FGTα class of indices as poverty measures. The results can be seen in the Table 1. These results were compiled from Kabore (2002), for Kakwani; Shorrock and Kolenikov; Boccanfuso and Kabore; Baye (2004); and INS (2002).

Table 1: Empirical results of poverty decomposition using various Approaches

Author	Method	Country	Period	Measure Of Poverty	Total Variation	Growth Component	Redistribution Component	Residual
Baye (2006)	D & R	Cameroon	1984-1996	FGT 0 FGT 1 FGT 2	+0.2880 +0.1393 +0.0754	+0.2611 +0.1491 +0.0913	-0.0170 -0.0214 -0.0155	+0.0439 +0.0116 -0.0004
	S O S	Cameroon	1984-1996	FGT 0 FGT 1 FGT 2	+0.2880 +0.1393 +0.0754	+0.2830 +0.1549 +0.0911	+0.0050 -0.0156 -0.0.57	- - - - - - - - -
Boccanfuso & Kaboré (2003)	D & R	Burkina Faso	1994-1998	FGT 0 FGT 1 FGT 2	+0.9 -0.16 +0.17	+2.27 +1.26 +0.27	-1.59 -1.42 -0.84	+0.27 +0.00 +0.05
	D & R	Senegal	1995-2000	FGT 0 FGT 1 FGT 2	-18.8 -9.57 -5.90	-35.0 -19.0 -11.2	+3.89 +9.62 +8.65	+12.3 -0.19 -3.34
	K	Burkina Faso	1994-1999	FGT 0 FGT 1 FGT 2	+0.9 +0.16 +0.17	+2.40 +1.26 +0.70	-1.45 -1.42 -0.87	- - - - - - - - -
	K	Senegal	1995-2000	FGT 0 FGT 1 FGT 2	-18.8 -9.57 -5.90	-28.8 -19.1 -12.9	+10.0 +1.86 +6.98	- - - - - - - - -
INS (2002)	D&R	Cameroon	1996-2001	FGT 0 FGT 1 FGT 2	-13.4 -5.1 -2.2	-11.1 -5.8 -3.3	-2.8 +0.2 +0.9	+0.5 +0.5 +0.2
Kakwani (1997)	K	Thailand	1988-1994	FGT 0 FGT 1 FGT 2	-16.27 -6.10 +0.57	-20.31 -7.96 -3.94	+4.04 +1.86 +4.51	- - - - - - - - -
Shorrocks & Kolenikov (2001)	D & R Modified	Russia	1985-1999	FGT 1	+26.00	+38.00	+19.00	-22 Cz= -19
	S O S	Russia	1985-1999	FGT 1	+26.00	+28.00	+17.00	Cz = -19

Source: *These were compiled from Kabore (2003); Baye (2006a) and INS (2002)*

Notes: D&R= Datt and Ravallion method (1992), K = Kakwani's method (1997), SOS = Shapley-Owen-Shorrock approach (1999), D&R (modified) = the modified Datt and Ravallion method (2001) by Shorrocks and Kolenikov.

III. The Shapley Value Decomposition Rule

Prior to the Shapley Value Rule proposed by Shorrocks (1999), other approaches had been used to study factors contributing to changes in poverty. Datt and Ravallion (1992)[13] characterized a change in aggregate poverty between two periods into growth, redistribution and a residual term[14]. The residual term is the main criticism levied against this approach. This approach was modified[15] by Shorrocks and kolenikov (2001), by incorporating a poverty line as one of the components. Kakwani (1997) [16] developed an axiomatic approach with the aim of remedying the short comings of the Datt-Ravallion approach. The axiomatic approach does not only eliminate the residual term, but also renders the analysis symmetrical. The main shortcoming of the Kakwani approach is that it is valid only for two components. The Shapley value decomposition rule proposed by Shorrocks (1999) is the generalization of the axiomatic approach and a rationalization of the averaging method proposed by Datt and Ravallion to eliminate the residual term.

Shapley (1953) proposed a concept in cooperative game theory, which constitutes the backbone of the Shapley decomposition rule, which resolves the question of how to share the payoff or cost amongst players in a coalition. Let K be a super additive set of n players, $K = \{1,2,.....n\}$, being a set of finite players. S, is a coalition formed by the players in K, such that, $S \subseteq K$. To any coalition we attach a characteristic function, v, which shows the intrinsic strength of the coalition. $v(S)$ is the amount of cost/surplus the coalition S, is capable of having without any interaction with another coalition in K. Each additional player in S, such as k has the marginal contribution given by $v(S \cup \{k\}) - v(S)$, with $S \subseteq K - \{k\} and\ k \notin S$. This shows us that player k, is given the extra amount that he brings to the existing coalition of players in S.

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[13] For more details, see Datt and Ravallion (1992); Datt and Gunewardena (1997); Canagaraja et.al. (1997); Baye (2006a); Kabore (2003); etc.

[14] This term is interpreted as the difference between the growth (redistribution) component evaluated at the base and final Lorenz curve (average mean income), respectively. This term tends to be always higher than one or both components and always swaps signs when we move from the base to the final year and vice versa, thus rendering analysis asymmetrical

[15] This poverty line shows change from the base to the final year capturing variations in the behaviour of the population under study.

[16] His approach entails developing axioms which not only ensures that the generating function is linear and additive, but also that it is symmetric. For more details, see Baye (2006a); Kabore (2003); Kakwani (1997).

To determine the weighted marginal contribution of k over all possible coalitions, we have to determine the weight or probability attached to his marginal contribution in the coalition S. S is composed of s elements and we assume entry is done in a manner such that the probability of each player is equal. Arranging the first s elements in S, recalling that $S \subseteq K - \{k\} and\ k \notin S$, we first arrange the elements in S, that is, $s!$, multiplied by the remaining elements in K, that is, $(n-s-1)!$, all divided by the total number of players in K, that is, $n!$. We now obtain the weighting factor or probability as: s!(n-s-1)/n!.

The Shapley value for player k, denoted by $C_k^{sh}(k,v)$, is thus defined as the weighted mean of player k's marginal contribution $v(S \cup \{k\}) - v(S)$ over the set of coalitions, $S \subseteq K - \{k\} and\ k \notin S$. Given by:

$$C_k^{sh}(k,v) = \sum_{s=0}^{m-1} \sum_{\substack{S \subseteq K-\{k\} \\ |S|=s}} \frac{s!(n-s-1)!}{n!} \left[v(S \cup \{k\}) - v(S) \right] \quad \ldots\ldots\ldots\ldots\ldots\ldots (1)$$

This value is symmetric, exact and additive when used in redistributive analysis (Shorrocks 1999). To apply this value, we consider components or factors rather than players in explaining an aggregate poverty changes.

III.1 Growth and Redistribution Analysis

Given a fix poverty line, Z, the change in poverty between the initial and final periods noted t and t+n may be expressed as;

$$\Delta P = P(U_{t+n}, L_{t+n}) - P(U_t, L_t) \quad \ldots\ldots\ldots\ldots\ldots\ldots (2)$$

where $U_{(\bullet)} = average\ mean\ \ income\ and\ L_{(\bullet)} = lorenz\ curve$

Following Shorrocks (1999), the growth component between t and t+n is given by: $G = \frac{U_{t+n}}{U_t} - 1$ and redistribution by: $R = L_{t+n} - L_t$[17]. The exercise can now be expressed

[17] As noted by Shorrocks, this is slightly an overstatement for both components need to be distinguished from variables showing growth and redistribution. Since growth and redistribution are eliminated by setting G and R equal to zero, no serious confusion arises.

as identifying the contributions of growth, C_G^{sh}, and redistribution, C_R^{sh}, in analyzing changes in a poverty measure which is additively decomposable. Adopting the P_α class of poverty measures (Foster et al., 1984), aggregate change in poverty can now be expressed as:

$$\Delta P_\alpha = P_\alpha\left(U_t(1+G), L_t + R\right) - P_\alpha\left(U_t, L_t\right) = V_\alpha(G,R) \quad \ldots\ldots\ldots\ldots\ldots\ldots(3)$$

From equation 3, we are now going to express change in poverty, ΔP_α into growth and redistribution components. Here we have only two factors (G, R), thus two elimination sequences or permutations: (G, R) and (R, G). The probability or weight of each factor is given by: $\frac{1!(2-1-1)!}{2!} = \frac{1!0!}{2!} = \frac{1}{2}$.

It is evident that when dealing with two factors, two extreme situations may arise. The first being when growth is absent, that is, G = 0. The change in poverty is uniquely explained by redistribution within the period under review, while holding average mean income constant.

$$v(R) = P_\alpha\left(U_t, L_{t+n}\right) - P_\alpha\left(U_t, L_t\right) \quad \ldots\ldots\ldots\ldots\ldots\ldots..(4)$$

This situation can be reversed and by the same view we have R = 0. This tells us that; change in poverty is solely explained by a change in average mean income of households or individuals captured by growth.

$$v(G) = P_\alpha\left(U_{t+n}, L_t\right) - P_\alpha\left(U_t, L_t\right) \quad \ldots\ldots\ldots\ldots\ldots\ldots(5)$$

This tells us that, change in average mean income between t and t+n accounts for change in poverty while holding the Lorenz curve fix at its initial period. In order to capture change in poverty by the Shapley value[18] we use Table 2.

Table 2: Applying the Shapley Value to Growth and Redistribution

Permutations	Probability	C_G^{sh}	C_R^{sh}
$\{G,R\}$	$\frac{1}{2}$	$v(G) - v(\varnothing)$	$v(R,G) - v(G)$
$\{R,G\}$	$\frac{1}{2}$	$v(G,R) - v(R)$	$v(R) - v(\varnothing)$

[18] The play k in v is the arithmetic mean of player k in the Shapley procedure.

Determining the growth component:

$$C_{\alpha G}^{sh} = \frac{1}{2}\left[v(G,R) - v(R) + v(G) - v(\varnothing)\right]$$

$$= \frac{1}{2}\left[P_\alpha(U_{t+n}, L_{t+n}) - P_\alpha(U_t, L_t) - \left[P_\alpha(U_t, L_{t+n}) - P_\alpha(U_t, L_t)\right] + P_\alpha(U_{t+n}, L_t) - P_\alpha(U_t, L_t)\right]$$

This process is simply the mathematical mean of the growth component in Table 2.

Solving for the Growth component we have:

$$C_{\alpha G}^{sh} = \frac{1}{2}\left[P_\alpha(U_{t+n}, L_{t+n}) - P_\alpha(U_t, L_{t+n}) + P_\alpha(U_{t+n}, L_t) - P_\alpha(U_t, L_t)\right] \quad \ldots\ldots..(6)$$

Equation 6 shows change in poverty brought about by the growth component while maintaining the Lorenz curve at its initial and final period constant.

For redistribution:

$$C_{\alpha R}^{sh} = \frac{1}{2}\left[v(R,G) - v(G) + v(R) - v(\varnothing)\right]$$

$$= \frac{1}{2}\left[P_\alpha(U_{t+n}, L_{t+n}) - P_\alpha(U_t, L_t) - \left[P_\alpha(U_{t+n}, L_t) - P_\alpha(U_t, L_t)\right] + P_\alpha(U_t, L_{t+n}) - P_\alpha(U_t, L_t)\right]$$

Determining the mathematical mean of redistribution in table 2, we have:

$$C_{\alpha R}^{sh} = \frac{1}{2}\left[P_\alpha(U_{t+n}, L_{t+n}) - P_\alpha(U_{t+n}, L_t) + P_\alpha(U_t, L_{t+n}) - P_\alpha(U_t, L_t)\right] \quad \ldots\ldots\ldots..(7)$$

Equation 7 expresses the change in poverty via the redistribution component while maintaining average mean income constant and equal to its initial and final year. Overall change in poverty can now be expressed as the sum of the growth and redistribution components by:

$$\Delta P_\alpha = C_{\alpha G}^{sh} + C_{\alpha R}^{sh} \quad \ldots\ldots\ldots\ldots\ldots\ldots(8)$$

IV. RESULTS

This section presents results generated by DAD 4.4, software for distributive analysis.[19] In this process, two variables were used: zones and regions. Zones were subdivided into urban and rural areas, while the modalities of regions were Douala, Yaoundé, Other towns, Rural Forest, Rural Haut plateau, and Savannah.

[19] See Jean-Yves Duclos, Abdelkrim Araar and Carl Fortin, "DAD: a software for distributive Analysis/ Analyse distributive" MIMAP Programme, International Development Research Center, Government of Canada and CIRPEE, University of Laval

Tables 3, 4 and 5 show the evolution of poverty between 1996 and 2001 by zones and Tables 6, 7, and 8 present the evolution of poverty by regions. Table 9 submits budgetary outlay for poverty alleviation (assuming perfect target) and Table 10 presents growth-redistribution decomposition of poverty changes by zones, while Table 11 does same by regions.

IV.1. Spatial Decomposition of Poverty by Zone

The incidence of poverty between 1996 and 2001 fell by about 13% percentage point from 53% to 40%. In Table 3, this fall in the proportion of the poor is decomposed into urban and rural areas. The fall of this index was more pronounce in urban areas than in rural areas, yet rural areas contributed more in explaining the total fall in the number of poor people in Cameroon, 73% in 1996 and 81% in 2001.

The change in the national incidence of poverty (ΔP_0), was statistically different from zero at the 5% significance level. This result is supported by the p-value decision rule. This shows that the decrease in the proportion of poor people in Cameroon in the period under review was statistically significant (Table 3).

Table 3: The Head Count (P_0) Index by Zones for 1996 and 2001

	1996				2001			
Zones	P_0	f_i	AC_i	RC_i	P_0	f_i	AC_i	RC_i
Urban	0.4137	0.3489	0.1444	0.2710	0.2211	0.3479	0.0769	0.1912
	(0.0297)	(0.0428)	(0.0222)	(0.0455)	(0.0115)	(0.0179)	(0.0057)	(0.0164)
Rural	0.5964	0.6511	0.3883	0.7290	0.4988	0.6521	0.3253	0.8088
	(0.0464)	(0.0428)	(0.0401)	(0.0455)	(0.0193)	(0.0179)	(0.0163)	(0.0164)
Cameroon	---	1.0	0.5327	1.0	---	1.0	0.4022	1.0
		(0.00)	(0.0326)	(0.00)		(0.00)	(0.0146)	(0.00)

Hypothesis testing:					
ΔP_0	Standard Error	Lower bound	Upper bound	Confidence Level	P-Value
-0.1305	0.0357	-0.2005	-0.0605	95	0.0003

Source: Computed by author from ECAM I and ECAM II using the DAD 4.4 software on distributive analysis.

Note: P_0= poverty incidence, f_i = proportion of the population, AC_i = absolute contribution, RC_i = relative contribution and ΔP_0 = national change in the value of P_0. The poverty line used is 185,490 francs CFA per adult equivalence per annum The null hypothesis H_0: $\Delta P_0 = 0$, and alternative hypothesis H_1: $\Delta P_0 \neq 0$

The income gap disparity for the poor population in Cameroon as a whole fell by 5% within this period, from 19% in 1996 to 14% in 2001. Table 4, illustrates this fall in

value within the urban and rural areas. In 1996 and 2001, rural areas overwhelmingly explained the national intensity of poverty accounting for 73% in 1996 and 84% in 2001.

At the national level, the income gaps of the poor people faced a decrease (ΔP_1), in value. This value was statistically different from zero at the 5% significance level. This implies rejecting the null hypothesis of no difference (Table 4).

Table 4: The Depth of Poverty Index (P_1) by Zones for 1996 and 2001

	1996				2001			
Zones	P_0	f_i	AC_i	RC_i	P_0	f_i	AC_i	RC_i
Urban	0.1466	0.3489	0.0512	0.2681	0.0631	0.3479	0.0220	0.1554
	(0.0134)	(0.0428)	(0.0084)	(0.0494)	(0.0039)	(0.0179)	(0.0018)	(0.0163)
Rural	0.2145	0.6511	0.1397	0.7319	0.1832	0.6521	0.1195	0.8446
	(0.0242)	(0.0428)	(0.0185)	(0.0494)	(0.0122)	(0.0179)	(0.0088)	(0.0163)
Cameroon	---	1.0	0.1908	1.0	---	1.0	0.1414	1.0
		(0.00)	(0.0167)	(0.00)		(0.00)	(0.0085)	(0.00)

Hypothesis testing:					
ΔP_0	Standard Error	Lower bound	Upper bound	Confidence Level	P-Value
-0.0494	0.0187	-0.0861	-0.0127	95	0.0082

Source: Computed by author from ECAM I and ECAM II using the DAD 4.4 software on distributive analysis.

Note: P_1= depth of poverty, f_i = proportion of the population, AC_i = absolute contribution, RC_i = relative contribution and ΔP_1 = national change in the value of P_1. The poverty line used is 185,490 francs CFA per adult equivalence per annum. The null hypothesis H_0: $\Delta P_0 = 0$, and alternative hypothesis H_1: $\Delta P_0 \neq 0$

Inequality among the poor in Cameroon fell by about 2 percentage points from 9 to 7% within the period under review. In Table 5, the severity of poverty exhibits the same characteristics as the other poverty values. The change in the national severity of poverty (ΔP_2) was not statistically significant at the 5% significance level. The veracity of not rejecting null hypothesis in this case was thus normal. This tells us that, despite a fall in levels of poverty, inequality amongst the poorest of the poor did not change significantly within this period.

Table 5: The Severity of Poverty Index (P_2) by Zones for 1996 and 2001

	1996				2001			
Zones	P_0	f_i	AC_i	RC_i	P_0	f_i	AC_i	RC_i
Urban	0.0691	0.3489	0.0241	0.2680	0.0266	0.3479	0.0093	0.1326
	(0.0074)	(0.0428)	(0.0042)	(0.0525)	(0.0020)	(0.0179)	(0.0008)	(0.0172)
Rural	0.1012	0.6511	0.0659	0.7320	0.0928	0.6521	0.0605	0.8674
	(0.0138)	(0.0428)	(0.0101)	(0.0525)	(0.0090)	(0.0179)	(0.0062)	(0.0172)
Cameroon	---	1.0	0.0900	1.0	---	1.0	0.0698	1.0
		(0.00)	0.0241	(0.00)		(0.00)	(0.0061)	(0.00)

Hypothesis testing:

ΔP_0	Standard Error	Lower bound	Upper bound	Confidence Level	P-Value
-0.0202	0.0113	-0.0423	0.0019	95	0.0738

Source: Computed by author from ECAM I and ECAM II using the DAD 4.4 software on distributive analysis.

Note: P_2 = severity of poverty, f_i = proportion of the population, AC_i = absolute contribution, RC_i = relative contribution and ΔP_2 = national change in the value of P_2. The povety line used is 185,490 francs CFA per adult equivalence per annum. The null hypothesis H_0: $\Delta P_0 = 0$, and alternative hypothesis H_1: $\Delta P_0 \neq 0$

IV.2. Spatial Decomposition of Poverty by Regions

The retreat of the incidence of poverty trickled down to all the regions except for the Savannah region, which experienced a marginal increase in the proportion of poor people from about 44% in 1996 to 45% in 2001 (Table 6). Among these regions, while Douala experienced the largest fall in the incidence of poverty approximately 30 percentages points, Other Towns experienced the least fall in the proportion of poor people from 36% in 1996 to 26% in 2001. Again, while the Rural Haut Plateau contributed most in explaining the national incidence of poverty, Douala explained least (Table 6).

Douala, Yaoundé and Rural Forest experienced a decrease in their values, 2.5, 2.3, and 4.7 percentages point, respectively. This trend was reversed in Other Towns, Rural Haut Plateau and the Savannah regions respectively by, 1.9, 0.2 and 7.6 percentage points. In Table 6, while in 1996, the number of poor people in all regions except Rural Forest (0.7251) and Rural Haut Plateau (0.6292), were below the national incidence, in 2001 in addition to these two exceptions was the Savannah region which stood at 45%.

Table 6: The Head Count Index (P_0) by Regions for 1996 and 2001

	1996				2001			
Regions	P_0	(f_i)	AC_i	RC_i	P_0	(f_i)	AC_i	RC_i
Douala	0.4903	0.0710	0.0348	0.0654	0.1832	0.0872	0.0160	0.0397
	(0.0410)	(0.0096)	(0.0061)	(0.0122)	(0.0205)	(0.0055)	(0.0022)	(0.0056)
Yaoundé	0.3731	0.0976	0.0364	0.0683	0.1855	0.0970	0.0180	0.0448
	(0.0587)	(0.0141)	(0.0084)	(0.0162)	(0.0165)	(0.0060)	(0.0020)	(0.0055)
Other Towns	0.3629	0.1285	0.0466	0.0875	0.2623	0.1637	0.0429	0.1068
	(0.0434)	(0.0193)	(0.0098)	(0.0192)	(0.0198)	(0.0111)	(0.0042)	(0.0114)
Rural Forest	0.7251	0.1816	0.1317	0.2472	0.5540	0.1447	0.0801	0.1993
	(0.0284)	(0.0224)	(0.0180)	(0.0350)	(0.0399)	(0.0192)	(0.0138)	(0.0320)
Rural Haut Plateau	0.6292	0.2791	0.1756	0.3296	0.5075	0.2625	0.1332	0.3312
	(0.0579)	(0.0397)	(0.0335)	(0.0554)	(0.0277)	(0.0235)	(0.0147)	(0.0340)
Savannah	0.4441	0.2422	0.1076	0.2019	0.4569	0.2450	0.1119	0.2783
	(0.0967)	(0.0310)	(0.0247)	(0.0417)	(0.0329)	(0.0250)	(0.0142)	(0.0336)
Cameroon	---	1.0	0.5327	1.0	---	1.0	0.4022	1.0
		(0.00)	(0.0326)	(0.00)		(0.00)	(0.0146)	(0.00)

Source: Computed by author from ECAM I and ECAM II using the DAD 4.4 software on distributive analysis.
Note: P_0= poverty incidence, f_i = proportion of the population, AC_i = absolute contribution, RC_i = relative contribution and figures in parentheses stand for standard deviations. The poverty line used is 185,490 francs CFA per equivalent per adult per annum.

The fall in income gap disparity in Cameroon as a whole was felt in all the regions. In these regions, while the fall in income gap disparity of the poor from the poverty line was largest in Douala, the Savannah region had the least percentage fall. In Table 7, while rural Haut Plateau contributed most in explaining this change in depth of poverty, Douala's contribution to the change in income gap disparity was least. Going through regions, the amount of fall in income gap for all the regions except for the Rural Forest and Rural Haut Plateau were below the national intensity of poverty in both periods.

Table 7: The Depth of poverty (P_1) Index by Regions between 1996 and 2001

	1996				2001			
Regions	P_1	(f_i)	AC_i	RC_i	P_1	(f_i)	AC_i	RC_i
Douala	0.1838	0.0710	0.0131	0.0684	0.0509	0.0872	0.0044	0.0314
	(0.0230)	(0.0096)	(0.0029)	(0.0162)	(0.0066)	(0.0055)	(0.0007)	(0.0051)
Yaoundé	0.1342	0.0976	0.0131	0.0686	0.0484	0.0970	0.0047	0.0332
	(0.0267)	(0.0141)	(0.0035)	(0.0190)	(0.0054)	(0.0060)	(0.0006)	(0.0048)
Other Towns	0.1208	0.1285	0.0155	0.0814	0.0784	0.1637	0.0128	0.0908
	(0.0178)	(0.0193)	(0.0034)	(0.0192)	(0.0069)	(0.0111)	(0.0014)	(0.0115)
Rural Forest	0.2660	0.1816	0.0483	0.2531	0.2089	0.1447	0.0302	0.2136
	(0.0186)	(0.0224)	(0.0074)	(0.0412)	(0.0282)	(0.0192)	(0.0067)	(0.0422)
Rural Haut Plateau	0.2294	0.2791	0.0640	0.3355	0.2089	0.2625	0.0548	0.3877
	(0.0428)	(0.0397)	(0.0164)	(0.0684)	(0.0206)	(0.0235)	(0.0075)	(0.0436)
Savannah	0.1520	0.2422	0.0368	0.1929	0.1405	0.2450	0.0344	0.2433
	(0.0368)	(0.0310)	(0.0089)	(0.0432)	(0.0143)	(0.0250)	(0.0049)	(0.0349)
Cameroon	---	1.0	0.1908	1.0	---	1.0	0.1414	1.0
		(0.00)	(0.0167)	(0.00)		(0.00)	(0.0085)	(0.00)

Source: Computed by author from ECAM I and ECAM II using the DAD 4.4 software on distributive analysis.
Note: P_1= depth of poverty, f_i = proportion of the population, AC_i = absolute contribution, RC_i = relative contribution and figures in parentheses stand for standard deviations. The poverty line used is 185,490 francs CFA per adult equivalence per annum.

The national fall in inequality among the poor was experienced in all the regions except the Rural Haut Plateau. In the Rural Haut Plateau, the number of the poorest of the poor increased by a percentage point from about 10% to 11% within this period. In Table 8, while Douala experienced the largest slump in inequality among the poor, the Savannah had the least fall. Globally, Rural Forest, Rural Haut Plateau and the Savannah accounted for most of the change in the national severity of poverty summing, respectively to 78% in 1996 and 86% in 2001. Finally, for both 1996 and 2001, inequality among the poorest of the poor was lower than the national values for all the regions, except for Rural Forest and Rural Haut Plateau.

Table 8: The Severity of Poverty (P_2) by Regions for 1996 and 2001

	1996				2001			
Regions	P_2	(f_i)	AC_i	RC_i	P_2	(f_i)	AC_i	RC_i
Douala	0.0887	0.0710	0.0063	0.0700	0.0213	0.0872	0.0019	0.0266
	(0.0135)	(0.0096)	(0.0016)	(0.0184)	(0.0033)	(0.0055)	(0.0003)	(0.0052)
Yaoundé	0.0635	0.0976	0.0062	0.0688	0.0195	0.0970	0.0019	0.0271
	(0.0147)	(0.0141)	(0.0018)	(0.0209)	(0.0030)	(0.0060)	(0.0003)	(0.0051)
Other Towns	0.0550	0.1285	0.0071	0.0786	0.0336	0.1637	0.0055	0.0789
	(0.0093)	(0.0193)	(0.0016)	(0.0195)	(0.0033)	(0.0111)	(0.0007)	(0.0119)
Rural Forest	0.1237	0.1816	0.0225	0.2497	0.1089	0.1447	0.0157	0.2258
	(0.0107)	(0.0224)	(0.0035)	(0.0431)	(0.0235)	(0.0192)	(0.0045)	(0.0560)
Rural Haut Plateau	0.1093	0.2791	0.0305	0.3390	0.1123	0.2625	0.0295	0.4226
	(0.0261)	(0.0397)	(0.0090)	(0.0767)	(0.0157)	(0.0235)	(0.0049)	(0.0548)
Savannah	0.0721	0.2422	0.0175	0.1939	0.0624	0.2450	0.0153	0.2190
	(0.0192)	(0.0310)	(0.0045)	(0.0464)	(0.0080)	(0.0250)	(0.0024)	(0.0373)
Cameroon	---	1.0	0.0900	1.0	---	1.0	0.0698	1.0
		(0.00)	(0.0095)	(0.00)		(0.00)	(0.0061)	(0.00)

Source: Computed by author from ECAM I and ECAM II using the DAD 4.4 software on distributive analysis.
Note: P_2 = severity of poverty, f_i = proportion of the population, AC_i = absolute contribution, RC_i = relative contribution and figures in parentheses stand for standard deviations. The poverty line used is 185,490 francs CFA per adult equivalence per annum.

IV.3. Budgetary Outlays

Holding fix the poverty line (185490 francs CFA) and assuming perfect targeting, an examination of budgetary outlays required to eradicate poverty was computed for the sample (Table 9). This value was obtained through the poverty debt index:

$$P_1 = \frac{1}{N}\sum_{i=1}^{m}\frac{(Z - y_i)}{Z}$$

$$\Rightarrow\ N\,ZP_1 = \sum_{i=1}^{m}(Z - y_i)$$

P_1= Depth of poverty, Z = poverty line, N = number of people in the sample population, M = Number of poor people, y_i = average real spending of a household member i.

This budgetary outlay (considering sample studied) tells us how much money the government may have to spend to bring the income gap of those households below the poverty line on to the poverty line itself, that is, fill the poverty gap of the population. Going through results obtained from the sample studied, rural areas require a larger amount of budget allocated than urban areas. The rural areas needed about 44.8 million franc CFA in 1996 and 243.6 million franc CFA in 2001, an increase of 198.7 million

franc CFA. This trend is identical to urban areas increasing from 16.4 million franc CFA in 1996 to 44.757 millions franc CFA in 2001, an increase of 28.3 millions franc CFA (Table 9).

Reviewing regions, the budgetary outlay needed to eradicate poverty was highest in the Rural Haute Plateau with 20.6 million franc CFA in 1996 and 111.8 million franc CFA in 2001. The lowest budgetary outlay needed to eradicate poverty was in Douala with 4.2 million franc CFA in 1996 and 9.1 million franc CFA in 2001. Considering sample studied, the budgetary outlays required to eradicate poverty in 1996 was 61.3 million franc CFA and 288.3 million franc CFA in 2001. This shows an increase within this period of 227.0 million franc CFA.

Table 9: Budgetary Outlays for Poverty Alleviation (assuming perfect targeting and the Samples under consideration)

Locality	N_i		P_1		Budgetary outlays(Million FCFA)	
	1996	**2001**	**1996**	**2001**	**1996**	**2001**
ZONES						
Urban	604	3824	0.1466	0.0631	16.4	44.8
Rural	1127	7168	0.2145	0.1832	44.8	243.6
REGIONS						
Douala	123	959	0.1838	0.0509	4.2	9.1
Yaoundé	169	1066	0.1342	0.0484	4.2	9.6
Other Towns	222	1066	0.1208	0.0784	5.0	26.2
Rural Forest	314	1590	0.2660	0.2089	15.5	61.6
Rural Haut Plateau	483	2885	0.2294	0.2089	20.6	111.8
Savannah	419	2693	0.1520	0.1405	11.8	70.3
Cameroon	1731	10992	0.1908	0.1414	61.3	288.3

Source: computed by author.
Note: N_i= sample sizes. P_1= depth of poverty. The poverty line used is 185,490 francs CFA per adult equivalence per year.

IV.4. Zonal Decomposition into Growth and Redistribution Components

The fall in the proportion of poor people in Cameroon is evident, about 13%. In Table 10, while the growth component accounted for most of the fall in the number of poor people in Cameroon that of the redistribution component was marginal. Both the national fall in the number of poor and the growth component were all significant at the 1% significance level.

In zones, urban areas had a trend identical to that of the country as a whole with growth contributing more than redistribution in explaining this fall in the incidence of poverty. What is peculiar here is this fall in value in urban areas (19%) was larger than the national value. In rural areas, the fall in the proportion of poor people was accounted for by growth which helped pull down poverty. Here, redistribution instead contributed in marginally increasing the number of poor by 0.2%. The fall in the proportion of poor people in rural areas, about 9.8%, was below national levels.

The intensity of poverty in Cameroon fell by about 5% within the period under review. As shown in Table 10, while the growth component accounted for the fall in the income gap disparity of the poor people in Cameroon, the redistribution component contributed in increasing this gap. Changes (growth and national) were all statistically different from zero at a 1% significance level.

Looking at the depth of poverty in zones, in urban areas, the amount of income gap disparity of the poor people decreased between 1996 and 2001. Both the growth and redistribution contributed in decreasing the intensity of poverty in these areas. The amount of fall in the depth of poverty for urban areas was greater than the national level.

In rural areas, the tendency observed was identical to that of the nation. While the growth component accounted for the fall in the income gap disparity among the poor people, the redistribution component instead help push up the depth of poverty. It is primordial to note that, the fall in the number of income gap disparity among the poor in the rural areas was higher than the national value. This change was, however not statistically significant.

Table 10: Zonal Decomposition into Growth and Redistribution Components

	Shapley Approach		
Zone	**Growth Component**	**Redistribution Component**	**Total Change**
Urban			
P_0	-0.1201 *	-0.0726	-0.1927 *
	(0.0072)	(0.0072)	(0.0319)
P_1	-0.0518 *	-0.0316	-0.0834 *
	(0.0141)	(0.0141)	(0.0140)
P_2	-0.0265 *	-0.0161	-0.0425*
	(0.0069)	(0.0069)	(0.0077)
Rural			
P_0	-0.1003*	0.0027	-0.0976 **
	(0.0142)	(0.0142)	(0.0503)
P_1	-0.0523**	0.0210	-0.0313
	(0.0284)	(0.0284)	(0.0271)
P_2	-0.0308 **	0.0224	-0.0084
	(0.0164)	(0.0164)	(0.0165)
Cameroon			
P_0	-0.1151*	-0.0154	-0.1305 *
	(0.0103)	(0.0103)	(0.0357)
P_1	-0.0572 *	0.0078	-0.0494 *
	(0.0167)	(0.0167)	(0.0187)
P_2	-0.0326 *	0.0124	-0.0202 **
	(0.0090)	(0.0090)	(0.0113)

Source: Computed by author from ECAM I and ECAM II using the DAD 4.4 software on distributive analysis.
Note: P_0 = incidence of poverty, P_1 = depth of poverty, P_2 = severity of poverty, figures in parentheses stand for standard deviations. * and ** indicates significance for 1% and 10% respectively.

Inequality among the poor in Cameroon fell by approximately 2% between 1996 and 2001. It is evident from Table 10 that, while growth helped reduce the severity of poverty in the country as a whole, redistribution helped in increasing the poorest masses of the poor. However, while the growth component was significant at 1%, the fall in inequality (national) among the poor was significant at 10%.

The severity of poverty in urban areas fell by 4% within this period accounted for by the growth and redistribution component. This fall in severity of poverty was larger than the national level. The proportion of the poorest of the poor in rural areas also fell by 0.8% within this same period. This marginal fall in value was because, while growth helped reduce the severity of poverty in these areas, the redistribution component rather helped in pushing up inequality among the poor.

IV.5. Regional Decomposition into Growth and Redistribution Components

The fall in the proportion of poor people in Cameroon was actually felt in most regions, except for the savannah region, which registered a marginal increase by a percentage point (Table, 11).

In Douala and Other towns, both growth and redistribution helped reduce poverty. The proportion of poor people in Rural Forest and the Rural Haut Plateau also experienced a decrease in its incidence of poverty. In these two regions, while the growth component pushed down the proportion of poor in these areas, the redistribution component rather accounted for a marginal increase in poverty. As for Yaoundé, while growth marginally accounted for a fall in the proportion of poor people, the redistribution component overwhelmingly explained the slump in the proportion of poor people living in this area. An exception to the fall in the incidence of poverty was observed in the Savannah. In this region, while growth pushed up the number of poor people, redistribution marginally pushed down the incidence of poverty. This marginal decrease did not help reduce the overall proportion of poor people in this region.

The fall in intensity at the national level trickled down to all the regions within the period under review. In Douala and Other towns, both growth and redistribution helped reduce the income gap disparity of the poor in their various localities, with redistribution playing a marginal role. In Rural Forest and Rural Haut Plateau, this was entirely accounted for by the growth component. In these two regions, redistribution rather helped enlarge the income gap disparity among the poor. In Yaoundé, while redistribution overwhelmingly explained the fall in the income gap disparities, the growth component only had a marginal impact. The savannah like all the other regions experienced a fall in the intensity of poverty explained solely by redistribution. Here, growth rather helped push up the depth of poverty. With the exception of Other Towns, Rural Haut Plateau and the Savannah, all the other regions experienced a fall in income gap disparity that is larger than the national average.

Table 11: Regional Decomposition into Growth and Redistribution Components

Regions	Shapley Approach		
	Growth Component	**Redistribution Component**	**Total change**
Douala			
P_0	-0.2097 *	-0.0974	-0.3071*
	(0.0199)	(0.0199)	(0.0459)
P_1	-0.0931*	-0.0398	-0.1329*
	(0.0285)	(0.0285)	(0.0239)
P_2	-0.0495 *	-0.0179	-0.0674 *
	(0.0150)	(0.0150)	(0.0139)
Yaoundé			
P_0	-0.0367	-0.1509*	-0.1876*
	(0.0092)	(0.0092)	(0.0610)
P_1	-0.0200	-0.0658 **	-0.0858 *
	(0.0285)	(0.0285)	(0.0273)
P_2	-0.0099	-0.0340 **	-0.0440 *
	(0.0135)	(0.0135)	(0.0150)
Other Towns			
P_0	-0.0770 *	-0.0236	-0.1005 **
	(0.0099)	(0.0099)	(0.0477)
P_1	-0.0332**	-0.0092	-0.0424**
	(0.0169)	(0.0169)	(0.0191)
P_2	-0.0168 **	-0.0046	-0.0214 **
	(0.0082)	(0.0082)	(0.0099)
Rural Forest			
P_0	-0.1976 *	0.0265	-0.1711 *
	(0.0164)	(0.0164)	(0.0490)
P_1	-0.1203 *	0.0632	-0.0571 ***
	(0.0307)	(0.0307)	(0.0338)
P_2	-0.0722 *	0.0573	-0.0148
	(0.0156)	(0.0156)	(0.0258)
Rural Haut plateau			
P_0	-0.1296 *	0.0078	-0.1217***
	(0.0236)	(0.0236)	(0.0642)
P_1	-0.0664 ***	0.0459	-0.0205
	(0.0374)	(0.0374)	(0.0475)
P_2	-0.0408	0.0438**	0.0030
	(0.0207)	(0.0207)	(0.0305)
Savannah			
P_0	0.0186	-0.0058	0.0128
	(0.0087)	(0.0087)	(0.1022)
P_1	0.0053	-0.0168	-0.0115
	(0.0530)	(0.0530)	(0.0395)
P_2	0.0027	-0.0124	-0.0097
	(0.0271)	(0.0271)	(0.0208)

Source: Computed by author from ECAM I and ECAM II using the DAD 4.4 software on distributive analysis.
Note: P_0 = incidence of poverty, P_1 = depth of poverty, P_2 = severity of poverty, figures in parentheses stand for standard deviations. * , ** and *** indicates significance for 1%, 5% and 10% respectively.

National fall in inequality among the poor was clearly reflected in the regions except the Rural Haut Plateau where the severity of poverty increased by approximately 1%. In Douala and Other Towns, both growth and redistribution explained the fall in the severity of poverty. In Rural Forest, while the growth component help push down the severity of poverty, the redistribution component instead helped increase poverty. In Yaoundé, while the redistribution component overwhelmingly accounted for the fall in inequality among the poor, growth's effect was marginal. In the Savannah, the marginal fall in inequality levels was totally explained by the redistribution component. Here, the fall in average income of households helped mitigate these results. An exception to the fall in severity of poverty was seen in Rural Haut Plateau. Here, the impact of growth was largely mitigated by redistribution.

A central observation emanating from this paper is that the fall in poverty between 1996 and 2001 was due more to increase in average mean incomes of households than redistribution. This result, however, caution that while growth overwhelmingly accounts for the fall in poverty, the role of redistribution should not be under estimated. This is in line with the view that sever limits may be imposed to the effects of growth if redistribution is neglected (Mckay, 1997). Thus, for growth to be more effective, it should be beneficial to the poor in a sustainable manner.

V. Concluding Remarks

In this paper, we investigate the specificities of poverty within the period 1996 to 2001, its evolution and factors that contributed to observed changes. Specifically, the paper: (1) examined the spatial decomposition of poverty within the period 1996-2001; (2) simulated budgetary outlays needed to eradicate poverty assuming perfect targeting; and (3) decomposed poverty changes into Growth and Redistribution components based on the Shapley value rule

Cameroon experienced a fall in the FGT class of poverty measures within the period under review. National incidence, depth and severity of poverty retreated in both rural and urban areas. Urban areas experienced a sharper fall in poverty measures than rural areas. All regions experienced a fall in poverty measures, with the exception of the incidence of poverty in the Savannah region, which marginally increased.

Budgetary outlays needed to eradicate poverty assuming perfect targeting were simulated. Rural Haut Plateau needed most of the budget in 1996 and 2001 to help fill the income gap needed to bring the poor up to the poverty line. This result mimics the importance of policies that empower the poor. Empowering the vulnerable population segment such as women and young people, for instance, can be done by enabling them have access to credit facilities, enhance their skills and also put into place follow-up institutions to assist these segments.

Decomposition results indicated that the significant decrease in poverty between 1996 and 2001 can be attributed more to growth, translated by an increase in household average income than to distributional shifts in income. Growth objectives as articulated in the Poverty Reduction Strategy Paper must be enhanced by encouraging small and medium size firms to thrive and prosper in rural areas hardest hit by poverty and; by updating existing infrastructures in urban areas and invest in rural infrastructure so as to interconnect rural areas via better network systems.

The undeniable role of redistribution is clearly observed in some regions. In areas such as Yaoundé, the role of redistribution cannot be denied when it comes to reducing the income gap of the poor as well as the poverty levels of the poorest of the poor. Also, in the Savannah region, redistribution played a key role in reducing all poverty measures, while the effects of growth clearly increased the incidence poverty.

Enhancing positive growth will helped to reverse massive rural exodus and engender a fall in inequality in urban areas. These results generally fall in line with the predictions in the literature (Baye, 2006a; Boccanfuso and Kabore, 2003; Kakwani, 1997; Bigsten et al., 2003; etc) that growth contributes more in explaining changes in poverty. Notwithstanding, for growth to be efficient in terms of poverty reduction, it should not be highly skewed in favour of the richest deciles of the distribution of living standards.

To round-up, it is vital for policy-makers to consolidate the objectives and policies enshrined in the Poverty Reduction Strategy Paper, with a view to generating long term growth that is distributionally sensitive by creating jobs for the rural poor.

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