ANALYSIS OF THE EVOLUTION OF EDUCATION INEQUALITY IN CAMEROON

DONGMO NANDONG GUSTAVE*

MINISTRY OF ECONOMY, Cameroon Yaoundé Email : dongustavo2005@yahoo.fr

NGUETSE PIERRE JOUBERT

MINISTRY OF ECONOMY, Cameroon Yaoundé Email : nguetse_pierre@yahoo.fr

November 2012

ABSTRACT

Authors recognize the role of education in the reduction of poverty, in economic growth and social inclusion. However, despite efforts granted, educational services are still very unequally distributed in Cameroon. This study attempts to analyze the evolution of education inequality in Cameroon between 2001 and 2007. We used data from the two Cameroon Household survey led in 2001 (CHS II) and in 2007 (CHS III) by the National Institute of Statistics. The study measures education inequality by considering the educational attainment of the economically-active population. The education Gini coefficient is used as a proxy of education inequality and the average years of schooling as a proxy of educational attainment. The decomposition of the education Gini coefficient permits to discovering the contributions of between and within grouping to overall inequality. The study shows the negative relation between the average years of schooling and the Education Gini coefficient. It shows again the positive correlation between the region's level of poverty and the Gini coefficient of education inequality. All the regions have improved their educational attainment and have a more equitable distribution of education. In 2007, the active population of the economic capital and that of political capital are still the most educated and have the most equitable distribution of education. Generally, they reach at the end of the first cycle of secondary school. Conversely, those of the far north regions are less educated, and are generally limited at primary school; and still have the high level of education inequality. Moreover Women, Poor and rural people are generally less educated respectively than Men, Non-Poor and urban people and their distribution of education is also less equitable. However, the national improve concerning education was inclusive and the poorest quintile have made more progress in terms of educational attainment and reduction of education inequality. The finding of this paper suggests that the government should place emphasis on the elimination of illiteracy in order to improve the level of educational attainment and reduce the unequal distribution of education. The greater emphasis should be placed on the population in precarious situation as women, poor and rural people; and must also be given for regions that still have greater education inequality.

Keywords: average years of schooling, education inequality, education Gini coefficient, educational attainment.

1. INTRODUCTION

It is universally recognized that the education is an important factor of the increasing of individual's productivity and income. A good education improve the ability of people to be conform with the requirements of the labor market and therefore help to fit more easily in the productive side of economy. Otherwise, the evolution of the access of the poor people to the education services permits to get an opinion about the likelihood that poor child has to escape the vicious circle of poverty. On a bigger scale, the education contributes to the individual's well-being; it has an important role in the economic growth and contributes to improve the social equity. Some empiric studies showed that a high unequal distribution of education has the tendency to have a negative effect on the scattering of the incomes (O'Neill, 1995,; Park, 1996), on the economic growth (Lopez, Thomas and Wang, 1998) and on the social cohesion (Andy Green, John Preston and Ricardo Sabates, 2003). So, the distribution aspect of education is

extremely important in working out for policies in order to insure a social development and inclusion, and in order to improve the human capital's productivity. It is therefore because of its high role in the economic growth and in the social cohesion of a country that the access to education for all constitutes one of the millennium goals for development (MGD). However, in spite of the efforts granted, in most countries in development, the services of education are still very unequally distributed (Thomas and al, 2001). We denote high disparities according to the residence area, the social class and the gender. In order to well assess these inequalities of education, the researchers like Deaton (1997); Thomas and al, (2001) have elaborated the coefficients of Gini and that of Theil for the sector of the education. These coefficients measure the distribution of the human capital and permit the comparison in the time, of the inequalities of access to the education between countries, the regions, the gender or the social groups. This study concern the situation of Cameroon which is a Central Africa country and where the elementary social services remain very unequally distributed between the different regions of the country. The differences of access to the social services like education can be one of the explanatory factors of the regional disparities of standard of living. Indeed, the second Cameroon Household survey led in 2001 (CHS II) reveals that in the regions of Douala and Yaoundés, the rate of literacy which reveals the ability of people aged of 15 years or more to read and to write in French or in English reaches at 94%, while poverty touches less than 17% of the population. On the other hand, in the poorest regions (Adamaoua, North, Extreme - North) less than four on ten people are literate (INS, 2002); high inequalities according to the gender, the religion, the poverty status and the residence area are also observed. These results remain valid with the CHS III investigation of 2007. The studies related to the education access in Cameroon, notably those of the National institute of Statistic (NIS 2002; NIS 2007), limit themselves to the indicators as the raw of education, the rate of literacy, the middle number of years of study, the rate of increase, the rate of abandonment, etc. But, as Thomas noticed it (2001), these indicators don't capture the absolute or relative distribution of the human capital entirely. This study as several other, intend to analyze the relative distribution of education through the Gini coefficient of education. But, most studies that use this coefficient generally concern the developed countries or groups of countries (Thomas and al., 2001; Zhang and Li, 2002; Sahn and Younger, 2005). Very few studies are dedicated to the particular situation of a poor country. About Cameroon, to our knowledge, any study of this kind has not yet been achieved.

It is probably conscious of the role of the education in the reduction of poverty and the social inclusion that the Cameroonian government has made free and obligatory basis education in 2000. Besides, the same year, Cameroon has also been admitted to the initiative in favor of Poor and Very Indebted Countries. Among the importants axes of this last program that the country accomplished with success until 2007, the improvement of offers and that of the quality of the education is represent. The preoccupations concerning education are specified in the second shutter of the third axis of the strategy of growth and the use, and that is relative to the backing and to the human resource valorization (DSCE, 2009). In spite of all measures so taken, strength is to recognize that the results remain much mitigated since of strong inequalities in the access the education persists and these represent a big loss of well-being on a national scale. This study aims to analyze the evolution of the inequalities in the access to education in Cameroon between 2001 and 2007. It will also be about discovering the possible relation between the inequalities of education and other kind of social inequality notably the health access, poverty and the incomes inequalities. This analysis will permit to assess the progress made by the government in term of education. It will also permit to get an idea on the use of Poor and Very Indebted Countries funds that were as a priority for the education and the health of poor and the vulnerable groups.

2. METHODOLOGY AND DATA

The analysis is done through: (i) an assessment of the educational attainment given by the estimate of the average years of schooling of the economically active population as Thomas et Al. (2001), given by the formula: $\mu = \sum_{i=1}^{7} p_i \times Y_i$ (1), where p_i is The proportion of population with education attainment level i, $Y_1 = 0$, $Y_2 = 3$, $Y_3 = 6$, $Y_4 = 9{,}5$, $Y_5 = 13$, $Y_6 = 15{,}5$, $Y_7 = 18$

(ii) Calculating the Gini coefficient of education following Thomas et al. (2001) with the help of a formula as defined in the following equation : $E_L = \frac{1}{\mu}\sum_{i=2}^{n}\sum_{j=1}^{i-1} p_i \left|Y_i - Y_j\right| p_j$ (2), Where E_L is the education Gini coefficient based on educational attainment distribution ; p_i and p_j, stand for the proportions of population with educational attainment levels i and j ($j = i - 1$), respectively; Y_i and Y_j are years of schooling with educational attainment

levels i and j $(j = i - 1)$, respectively ; n is the number of categories in educationnal attainment (in this paper, $n = 7$).

(iii) The decomposition of the education Gini coefficient. This will permit us to detect the contributions of between and within groupings to overall education inequality. That decomposition is then estimated, following Zhang and Li (2002) with the help of this formula:

$$E_L = G_1^2\left(\mu_1/\mu\right)E_1 + G_2^2\left(\mu_2/\mu\right)E_2 + E_B$$

Where E_k is the education Gini coefficient of subgroup k $(k = 1,2)$; G_k the proportion of the population of subgroup k; μ_k the average years of schooling of subgroup k; E_B is the between-group contribution to total inequality in absolute terms ; $G_1^2\left(\mu_1/\mu\right)E_1$ represent the contribution of the subgroup 1 and $G_2^2\left(\mu_2/\mu\right)E_2$ is that of the subgroup 2 to total education inequality in absolute terms, respectively.

The data used are that of the last two Cameroon household survey led in 2001 (CHS II) and in 2007 (CHS III). These are nation-wide household surveys, conducted by the Cameroon's National Institute of Statistics. The two surveys include data collected from over 10 992 and 11 534 households respectively in all the regions of Cameroun. Especially, we will use the data concerning the economically active population (15 years old and above). The census CHS I, CHS II and CHS III provide data on the highest educational attainment of this category of population respectively in the year 1996, 2001 and 2007.

3. RESULTS

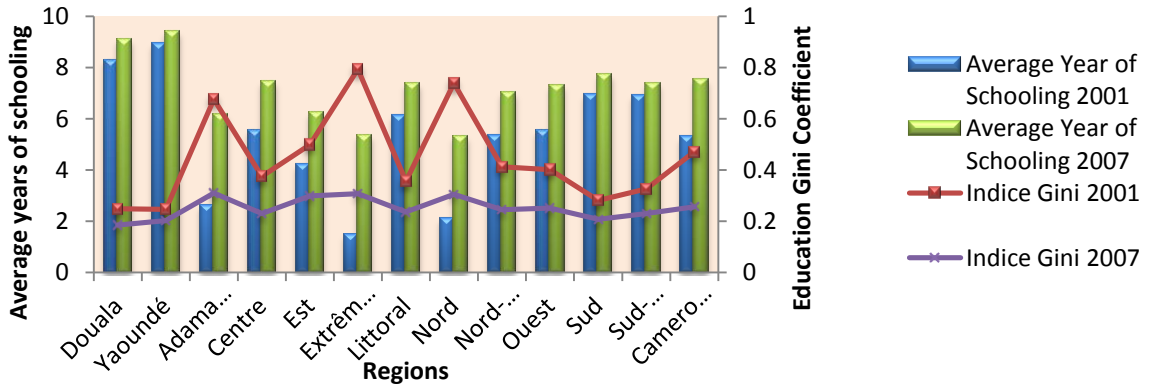
3.1 Proportion of population at different level of schooling

The Cameroonian education system has made progress between 2001 and 2007. The proportion of the uneducated economically active population has strongly decreased the country as a whole, as well as in each region. In the same way, the proportion of the population with at least 9.5 years of study has increased. Three groups are clearly distinguished: the first is the most educated, constituted by Douala, Yaoundé, and regions of Center, Littoral, West and South. Here, the economically active population has generally the partial secondary level of instruction (9.5 years of education). The second group is constituted by the English-speaking regions (Northwest and Southwest). Here, the activate population generally stop their school just after finishing primary school. The third group is least educated. It is formed by the North regions (Adamaoua, North and Extreme North) and the East region. For each of these regions, the half of the active population has 3 only years of study.

3.2 Average year of schooling and Education Gini Coefficient

Between 2001 and 2007, the national and regional level of education had a notorious improvement. The progress was of about 2 years of study on the whole of the country. The national level of schooling is 7.5 years, so people reach at secondary school. In the same way, national education inequalities and that of regions had strongly reduced. The national Gini coefficient has declined by 45.6 %.

Figure: Average year of schooling and Education Gini Coefficient, 2001 and 2007



The active populations of the political and economic capitals are the more educated, with at least 9 years of teaching (about the partial secondary) in 2007. However, the high progresses during these six years were made by the regions which were less educated in 2001. So, the north regions (Nord, Extreme-Nord, Adamaoua), and that of the East, the less educated in 2001 have achieved the best performances with 2 at 3,8 years of supplementary studies, even though they are still the less educated in 2007. The Extreme-Nord, the less educated region in 2001, has improved its average years of study from 3.87 to 5.4 years. The national Gini education coefficient has declined from 0.47 to 0.26. However, its value depends on regions. In 2001 or in 2007, the regions whose active populations are the more educated have the more egalitarian levels of education. Conversely, the inequalities of education are more intense in the less educated regions. However, the less educated regions knew the strong reductions of the inequalities of education, with decreases of the Gini coefficient of education of about 40% and 61%.

3.3 Relation between the average year of study and the Gini coefficient of education

The data collected in 2001 and 2007 indicate that the average years of schooling and the Gini index of education are negatively correlated. The coefficient of correlation is -0.97 in 2001 and -0.93 in 2007. This relation suggests that the regions whose active populations are the more educated are more inclined to achieve a more egalitarian distribution of education. This result, as Thomas and Al. (2001) said, implies therefore that the improvement of the access to the education and the struggle against the illiteracy should be the actions to lead in order to achieve a better distribution of education, in each region and on the whole of the country. Besides, it would permit to improve the level of education.

3.4 Decomposition analysis

At this level, the analysis of the inequalities is done according to the gender, the statute of poverty, and the residence area.

Women are still less educated than men. In 2001, the Cameroonian active women were 1.56 years less educated than men. However, in 2007, the women average years of schooling tend to come closer of that of men, and the national gap becomes 0.4 years. In the same way, the gaps between the women Gini coefficient of education and that of the men have decreased. Even though on a national level in 2007, the education stays slightly more unequal concerning the women, the gap is not anymore the same that before and in some regions, it arrives that the inequalities of education are less intense in the women population.

Table1: Decomposition of the average years of schooling

Regions	Average Years of Schooling													
	2001							2007						
	All	Men	Women	Poor	Non Poor	Rural	Urban	All	Men	Women	Poor	Non Poor	Rural	Urban
Douala	8.3	9.0	7.5	6.8	7.2		8.3	9.1	9.4	8.8	8.3	9.1		9.1
Yaoundé	8.9	9.5	8.3	6.9	7.7		8.9	9.4	9.8	9.1	7.6	9.5		9.4
Adamaoua	2.6	3.4	1.9	1.5	3.2	1.9	4.1	6.2	6.8	5.3	4.9	6.9	4.9	8.1
Centre	5.6	6.5	4.7	5.6	5.7	5.3	7.9	7.5	7.9	7.0	6.8	7.9	7.4	8.2
Est	4.2	5.3	3.2	3.3	4.5	3.8	6.8	6.2	6.7	5.6	5.4	6.7	5.7	8.3
Extrême-Nord	1.5	2.3	0.8	1.3	1.6	1.3	2.9	5.4	5.8	4.6	4.8	6.1	5.1	6.3
Littoral	6.1	7.1	5.3	5.2	5.9	5.3	7.2	7.4	7.8	7.0	6.6	7.7	6.8	8.1
Nord	2.1	3.1	1.3	1.5	2.3	1.4	4.5	5.3	6.9	5.3	4.4	6.3	4.7	6.8
Nord-Ouest	5.3	6.2	4.7	6.1	7.2	4.6	7.8	7.0	7.3	6.8	6.0	7.8	6.5	8.5
Ouest	5.6	6.5	4.8	5.0	5.9	4.8	7.6	7.3	7.7	6.9	6.2	7.6	6.6	8.5
Sud	6.9	7.8	6.1	5.4	6.5	6.8	8.5	7.7	8.2	7.2	7.4	7.8	7.6	9.1
Sud-Ouest	6.9	7.4	6.4	7.1	8.2	6.3	8.4	7.4	7.7	7.1	6.0	7.8	6.8	8.9
Cameroun	5.3	6.0	4.4	3.6	6.2	4.1	6.9	7.5	7.4	7.0	6.3	7.5	6.4	8.8

The poor people are generally less educated than the non poor. In 2001, they had 2.6 years of education less than the average years of schooling of the non poor. That gap decrease and reached 1.2 year in 2007. Poor people have improved their level of study by 2.7 additional years of schooling and they achieve the completed primary school.

Considering the national and the regional level, the education is still more unequal distributed within the poor people, even if the gaps had decreased between 2001 and 2007.

Table2: Decomposition of the Gini coefficient of education

Regions	Gini coefficient of education													
	2001							2007						
	All	Men	Women	Poor	Non Poor	Rural	Urban	All	Men	Women	Poor	Non Poor	Rural	Urban
Douala	0.2	0.2	0.3	0.3	0.3		0.3	0.2	0.2	0.2	0.1	0.2		0.2
Yaoundé	0.2	0.2	0.2	0.3	0.3		0.3	0.2	0.2	0.2	0.2	0.2		0.2
Adamaoua	0.7	0.6	0.8	0.7	0.6	0.7	0.6	0.3	0.3	0.3	0.3	0.3	0.3	0.2
Centre	0.4	0.3	0.4	0.4	0.4	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Est	0.5	0.4	0.6	0.6	0.5	0.5	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2
Extrême-Nord	0.8	0.7	0.9	0.8	0.8	0.8	0.7	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Littoral	0.4	0.3	0.4	0.4	0.4	0.4	0.3	0.2	0.2	0.2	0.3	0.2	0.3	0.2
Nord	0.7	0.6	0.8	0.8	0.7	0.8	0.5	0.3	0.4	0.4	0.3	0.3	0.3	0.3
Nord-Ouest	0.4	0.4	0.5	0.5	0.4	0.5	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Ouest	0.4	0.3	0.5	0.5	0.4	0.4	0.3	0.3	0.2	0.3	0.3	0.2	0.3	0.2
Sud	0.3	0.2	0.3	0.4	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Sud-Ouest	0.3	0.3	0.4	0.4	0.3	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Cameroun	0.5	0.4	0.6	0.6	0.4	0.6	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2

The rural area is distinctly less educated than that of the urban zones, and the distribution of education is there more unequal. However, the gap has decreased on the whole. In 2001, the urban populations have 2.8 years of study more than that of the rural zones. This gap is 2.4 years of schooling in 2007. During these five years, the level of educational inequalities of these two areas became closer: the gap between the Gini education coefficients of the two areas of residence passed from 0.25 in 2001 to 0.06 in 2007. Over the national level, the rural zones have achieved the most important progress in terms of reduction of the education inequalities, decreasing their educational Gini coefficient of 0.32 against a decrease of 0.13 for the cities.

3.5 Was the educational improvement inclusive?

In order to answer this question, we will especially analyze the situation of the indicators of education inequalities for the poorest quintile and that of the richest quintile.

The analysis of the growth rates of the average year of schooling and the Gini coefficient of education shows that the poorest populations have contributed to the reduction of the education inequalities. The poorest quintile's average year of schooling have knew a positive growth, while the Gini coefficient of education has declined, on the whole country or in each regions, independently of the area of residence. On a national level, the poorest quintile has known an improvement of its average year of schooling of about 38%. However, poorest still have the difficult to finish the primary cycle. They have in average only 5.2 years of study. The 20% richest achieve in average 4 years of study more than the 20% poorest people. They nearly finish the first cycle of the secondary school. In the same way, the education Gini coefficient of the poorest quintile people has declined by 45% and reach at 0.29.

The performances of the poorest quintile of the rural area were more important than those of the same group resident in urban environment. The poorest quintile of the rural zones have improved its average year of study of 46% and reduced its Gini education coefficient of nearly a half, while the people of this same class and resident in the urban area have improved their average years of schooling only of 17% and a decrease of their Gini education coefficient of 38%. However, poorest quintile of urban area is still more educated than those of rural area, with one more year of schooling. But, the intensity of education inequality in these two groups is close.

A comparison of the growth ratio of the two indicators of education in the two extremities of standard of living permitted us to assess the relative inclusion of education in favor of the poor. On the whole of the country and in each region, the growth ratio of the average year of schooling of as well as the decreasing rate of the Gini coefficient of education of the poorest quintile is greater than those of the richest quintile. Thus, the educational

performances have more benefitted to the poorest. Concerning the residence area, it's in the urban area where the poorest people knew a contribution to the reduction of the educational inequalities greater than that of the richest quintile: Here, the poorest quintile have improved their average year of schooling by 17% against 8% concerning the richest, and their indication of Gini has declined by 38% against 22% for the richest. In rural zone, the growth of the average year of schooling of the richest quintile and the decrease of the Gini coefficient of education was nearly the same than that of the poorest.

4. CONCLUDING AND REMARK

This article tempted to value the intensity of the education inequalities in Cameroon between 2002 and 2007. The question is assessed through the calculation of the average year of schooling and the Gini coefficient of education. These indicators are calculated to the national level, and decomposed according to the regions, the gender, the residence area and the poverty statute. The results shows that during these five years, some notorious progress have been achieved so much in terms of reduction of the education inequalities to the national level that on a regional scale. On the whole of the country, the average years of schooling have increased by two years while the Gini coefficient of education has decreased by 0.2. However, some disparities persist on the one hand between the regions, and on other hand according to the gender, the residence area, the of poverty statute. On the whole of the country and whatever is the region or the area of residence, the good performances in education have benefitted to the lower quintile of poverty in absolute terms. The 20% poorest people have improved their average years of schooling by about two fifth, and reduced their Gini coefficient of education by 45%. These evolutions are generally more pronounced to the poorest than the richest. But moreover, the gaps of levels of study are still important, and the richest quintile achieves in average four years of study more than the poorest quintile, that is nearly of the half of a cycle of schooling.

The results of this study suggest the improvement of the access to the education and the struggle against the illiteracy in order to achieve a better distribution of education and to improve the level of education. A particular emphasis should be placed on the underprivileged populations and zones in which the inequalities of education persist again. So, the government should continue with the law on the exemption from payment and the obligation of the basic education by a notorious reduction of fees at the secondary school and in the universities, and establish scholarships at these cycles. This will help to reduce the loss ratio in the secondary cycle and in higher education and to improve the level of education. It will also permit to households to allow more financial resources in the education equipment, so the quality of education can be improved.

5. REFERENCES

Eirene P. Mesa Measuring Education Inequality in the Philippines

Jamel Trabelsi, Levent Unsaldi, Jean-Claude Vérez mai 2009 Les inégalités dans le domaine de l'éducation en Turquie

Kuznets,Simon 1955"Economic Growth and Income Inequality"American Economic Review; March 1955,pp1-28.

Lam, David and Deborah Levison. 1991. "Declining Inequality in Schooling in Brazil and its Effects on Inequality in Earnings." Journal of Development Economics 37(1-2): 199-225.

López, Ramón; Thomas, Vinod; and Wang, Yan. 1998. "Addressing the Education Puzzle: The Distribution of Education and Economic Reform." Policy Research Working Paper #2031. The World Bank, Washington, D.C.

Sahn D. and Younger D. (2005) "Decomposing World Education Inequality." Cornell University

Thomas, V., Y. Wang, and X. Fan (2000) Measuring Education Inequality: Gini Coefficients of Education, World Bank Institute, World Bank

Zhang J. and Li T. (2002) "International inequality and Convergence in Educational Attainment, 1960-1990." Review of Development Economics, 6 (3): 85-98

"Basic Poverty Analysis and Measurement Course: Inequality Measures (Module 6)." (2005) World Bank Institute. 25 March 2007. <info.worldbank.org/etools/docs/library/207207/Module6.pdf>