Journal of International Women's Studies

Volume 12
Issue 1 *(January/February)*

Article 8

Jan-2011

Gender and Increased Access to Schooling in Cameroon: A Marginal Benefit Incidence Analysis

Tabi Atemnkeng Johannes

Armand Gilbert Noula

Gender and Increased Access to Schooling in Cameroon: A Marginal Benefit Incidence Analysis

By Tabi Atemnkeng Johannes[1] and Armand Gilbert Noula

Abstract

Of great importance to policy makers is to know if females and poor households benefit more or less than the males or rich households from an expansion in access to public education. This is marginal benefit incidence of public spending which is rarely determined. In this paper, we determine the extent to which an expansion in public education is effective in reducing gender gaps in enrollments and thus, poverty in Cameroon. Government subsidies directed towards higher education are poorly targeted and the poorest income groups receive less than the richest income groups and indeed favor those who are better off. Similarly, gender disparity in access to public schools is higher at the tertiary level and lowest at primary level. Further, contrary to earlier studies which found that primary education expansion mostly benefits the poor, the present paper found that increased subsidy to primary and secondary education is captured by the middle income groups and as such cannot be good as a program that can be directed (explicitly) at fighting poverty. The difference may come from the fact that their enrollment estimates lump together private and public schools enrollments. It is difficult to think of a policy at which private operators will want to expand on their schooling projects.

Keywords: education, marginal benefit, gender, poverty, Cameroon

Introduction

Poverty is now considered as an issue of global interest, with halving extreme poverty by 2015 constituting the first, and perhaps the most critical goal among the Millennium Development Goals (MDGs). With 2015 only six years away, it is becoming clear that many countries in the developing world will not be able to meet the target of halving absolute poverty. In fact, many countries in Sub- Saharan Africa and several in Asia and Latin America are seriously off track for meeting that goal. In a large number of cases, this is related to poor growth performance that has made it difficult to reduce absolute poverty. Thus, many developing countries continue to address concerns for the poor in addition to pursuing growth objectives as enshrined in their Poverty Reduction Strategy Papers (PRSPs). This development approach anchors on the broadening of the initial objectives of structural adjustment to take on board social considerations, as governments and donors now share the same opinion that adjustment efforts cannot be sustainable if the needs of the poor are ignored.[2] Having reached the completion point under the HIPC initiative at the World Bank, the Cameroon government is expected to benefit from enormous debt cancellation which should result to a gain in resources to be

[1] Both authors are Senior Lecturers of the Faculty of Economics and Management, University of Dschang, Cameroon

[2] See Cornia *et al*. (1987) and Woodward (1992) for a discussion of this view as well as the conventional view frequently associated with the World Bank and the IMF.

channeled to the social sectors of the economy such as education and health. The answers to questions as who benefits from increased public spending in education and whether government investment in education is gender biased are indispensable inputs to effective policies and pro-poor programs.

Education is one of the most important factors of human capital development, whereas human capital has been identified as a key determinant of growth and poverty alleviation. The fact that poor households and females are generally disadvantaged in gaining access to important services such as education, an important asset to mitigate poverty, suggests that the state should seek to target the provision of these services to such groups. For instance, if our concern is with aggregate well-being as measured by, for example, Sen's notion of 'capabilities' (Sen, 1999), then we should view the important capabilities of longevity and education as critical constituent elements in well-being. Thus any reduced achievements for women in these capabilities are intrinsically problematic[3]. One peculiar feature that identifies women's poverty is the lack of access to schooling; a significant gender educational gap which characterizes most developing countries. According to the United Nations Educational, Scientific, and Cultural Organization' statistics, in the year two thousand, women represented two thirds of the eight hundred and seventy six millions of the world illiterate; in the same year, eighty-eight million of children did not attend school; among them, three over five are female (UNESCO 2000).

Therefore, it is worthwhile, to examine whether expansion in public education is gender bias. This is important especially as a large body of evidence from a range of countries demonstrates that societies that discriminate on the basis of gender pay a significant price in terms of higher poverty and lower quality of life, slower economic growth and development, and weaker governance (UNDP, 1995). Public education represents a major component of government expenditures in Cameroon (Tabi et al., 2006) and so government intervention at the level of education can have a desirable poverty outcome. However, given the size of social spending in the budget and the desire to enhance the quality of fiscal adjustment while pursuing macroeconomic stability, policy makers must increase the effectiveness of expenditure policy which may be estimated by looking at whether the females and the poor benefit more or less than the non-poor and the males from an expansion in access to public education.

Benefit incidence analysis is a popular tool which is often used by policy makers to evaluate the distribution (e.g., according to a welfare indicator such as per capita income) of the benefits from public programs and expenditures. In most empirical applications, the analyst looks at the distribution of current public spending. Recent applications in Cameroon indicate that spending on primary education is pro-poor whereas spending on secondary and tertiary education are less progressive (Kamgnia, 2003; Tabi et al., 2009). However, as noted by Lanjouw and Ravallion (1999), the distribution of additional spending need not be similar to the distribution of existing

[3] This has, for example, been recognized in the creation of UNDP's Gender-Related Development Index which, derived from a notion of aversion to inequality, suggests that a country with higher gender inequality achieves a lower level of aggregate well-being compared to another with equal average achievements, but lower gender gaps (UNDP, 1995).

spending. If public expenditures reach the rich before reaching the poor, and if there is some level of saturation in the services that can be provided to the rich, then the poor may benefit more from an increase in spending than from existing levels of spending.

Lanjouw and Ravallion proposed an innovative methodology to measure marginal benefit incidence analysis using a single cross-section of data. Based on marginal benefit incidence analysis in Cameroon, Kamgnia et al (2008) found that expansion of public spending on primary education benefits mostly those of the middle income group while for secondary education, the higher income group mostly captures the benefits. The later is neither gender disaggregated. It becomes imperative to also find out if expanding spending on education goes to females or males and of which income quintile. This should help provide a guideline for developing a gender sensitized education policy.

This paper therefore examines issues of gender equity and the targeting of increased public spending on education and also revisits the evidence on the benefit incidence of education in Cameroon. We discuss the structure of Cameroon's educational system in the section that follows. Section three presents an overview of the methods of average benefit incidence and marginal benefit incidence. In section 4, we provide the results and conclude the paper in the last section.

Education System in Cameroon

This article attempts to analyze the extent to which government education spending is effective in reaching the poor and more importantly the girl child who is most of the time underrepresented. To realize these objectives, it would be necessary to present an idea of the structure of Cameroon's education system.

Following the bilingual nature of Cameroon, there are two distinct formal systems of education in Cameroon: English and French. First, there is the basic education consisting of early childhood education which is not compulsory in Cameroon. However, parents who can afford to do so generally send their children to kindergarten at about the age of three years. In the Anglophone sector of the country, the kindergarten is known as a "nursery school" and in the Francophone sector it is called "l'ecole maternelle". Children attend these schools for about two or three years, until the age of five years, when they are deemed ready to start attending elementary or primary school (" l'école primaire") in French.

The duration of primary education was recently changed from seven to six years (from ages five to 11, approximately). After primary school, there are at least three main further channels students can pursue, depending primarily on their family's financial circumstances. These are Secondary/ Grammar Schools and Technical/ Vocational Schools consisting five years of education at the junior level and two years at the senior level, ideally ending at the age of about 18 years. Subsequently the level of education after secondary education is tertiary which encompasses either a professional institutions and academics or universities. However, from the perspective of public finance, there are two broad categories of public spending on education which are generally reported in budget documents of the central government. These are the primary and secondary schools for the national education budget and Higher education for Universities or post secondary institutions.

Globally, the performances of the educational system have improved. At the primary level of education, the female/male parity index rose from 0.85 in 2003 to 0.9 in

2005 and is proof of sexual equality, which is limited by high costs of direct opportunities, as well as persistent socio-economic and cultural constraints. In this regard, efforts are made by the government to be eligible for the Fast Track Initiative on Education for All. Examination of schooling profiles shows a steady amelioration since 2002. One can notice some significant progress of 0.6 in comparison with 2003, in the trend of access to primary education (96.4 per cent in 2004). There is also a high demographic pressure in the first cycle of secondary education, whose slow absorption of the number of students is shown through a transition rate (from primary to secondary education) of about 56 per cent. The school retention rate at the end of the primary education cycle has undergone significant improvement, up from 55.4 per cent in 2003, to 56 per cent in 2004, and 57.4 per cent in 2005 (Government of Cameroon, 2006). In this report, we used three categories of the level of education to study the marginal benefit incidence for public education, i.e. finding out if the poor or girl child is disfavored from an expansion in access to education.

Average and Marginal Benefit Incidence Techniques

Most benefit incidence studies base their analyses on the pioneered works of Meerman (1979 and Selowsky (1979) which provides estimates of the distribution of public expenditures. Almost two decades after, there was a resurgence of interest and incorporation of gender dimension in estimation of the distribution of public expenditures[4]. However, despite the ease with which standard benefit incidence methods is being extended to include a gender character, the literature on marginal incidence is sparse. In this paper, we provide the methods of analyses of both average and marginal benefit incidence with application to spending on education.

Standard benefit incidence tells us who is benefiting from public services, and describes the welfare impact on different groups of people of government spending. It does this by combining information on the unit costs of providing those services with information on the use of these services. Benefit incidence brings together public expenditure accounts and survey data on use of publicly subsidized services. In effect, the analysis imputes to those households using the service the cost of providing that service. This imputation is the amount householders would have to pay if they had to meet the cost of providing the service. Because these are seen as current transfers, only the recurrent budget of the government is relevant for this purpose. If households typically send more boys than girls to these publicly-funded schools, there will be a gender difference in benefit incidence, simply because more of the government subsidy will be utilized by boys than girls.

The method of computing the benefit incidence of government spending on education is formally written as:

$$B_j = \sum_{i=1}^{3} E_{ij} \frac{S_i}{E_i} = \sum_{i=1}^{3} \frac{E_{ij}}{E_i} S_i \qquad (1)$$

where B_j is the amount of the education subsidy that benefits group j, S and E refer respectively to the government education subsidy and the number of public school enrolments, and the subscript i denotes the level of education (primary, secondary and tertiary). The benefit incidence of total spending on education imputed to group j is given

[4] See Glick et.al. (2004) for a review.

by the number of primary enrolments from group (E_{pj}) times the average cost of primary school plus the number of secondary enrolments times the secondary average cost, plus the number of tertiary enrolments times the average or unit cost of the tertiary education. Note that S_i/E_i is the mean unit subsidy of an enrolment at education level i. Moreover, the share of total spending on education imputed to group j (b_j) is:

$$b_j = \sum_{i=1}^{3} \frac{E_{ij}}{E_i}\left(\frac{S_i}{S}\right) = \sum_{i=1}^{3} e_{ij} s_i \qquad (2)$$

e_{ij} defines the share of the group in total enrolments at each level of education and it is determined by household enrolment decisions. The s_i is the shares of public spending across the different types of service, which reflects government behaviour. In some cases, regional or gender variation is also taken into account calling for an additional subscript to denote the region or group specified in the unit cost estimate. Therefore, the share of total education subsidy (S) that accrues to the female or male population could be deduced from equation 2. Clearly, this share is determined by two factors: the share of the gender in total enrollments at each level of education (eij) and the share of each level of education in total education spending (si). In addition to the gender disaggregated benefit incidence, we also measure gender disparity in education (both public and private) by providing the gross enrolment rates, given as:

$$r_{ij}^{g,b} = E_{ij}^{g,b} \Big/ E_j^{g,b} \qquad (3)$$

Where E^g_{ij} (E_{ij}^b) is the number of girls (boys) in quantile j who are enrolled in level i, and E^g_j (E_j^b) is the number of girls (boys) of the corresponding school age in quantile j.

However, there are both theoretical and practical reasons to doubt the above mentioned practice (van de Walle 1998; Sahn and Younger 1998, 2000). Given the poor quality of most public expenditure data as well as drawing on budgets at highly aggregated level, the binary approach proposed by Sahn and Younger (1998, 2000 and Glick and Sahn, 2004) is used in this paper[5]. This bypasses the need for estimating the unit subsidy(S/S_i or s/s_i), which then disappears in equations (1) and (2). Focus is made on only whether a service is used or not with users of public services counted and given the benefit of one, while non-users get zero. Secondly, the above assessment of how the education budget is distributed across the population is based on the observed use of government funded schools by the Cameroon population. As such it describes the current situation, and can be described as an exercise in current accounting. Because of this, it may not give an accurate notion of how changes in the education budget will be distributed across the quintiles.

Two papers—Ajwad and Wodon (2001) and Lanjouw and Ravallion (1999)—have proposed methodologies that use a single cross-section of data to identify the distribution of increases, at the margin, in access rates to public services or in outlays for social programs. Both studies used the variation in access rates across regions in a country to capture the expected evolution of access over time, assuming that the distribution of new access in lagging regions will follow the pattern observed in regions

[5]It has been shown that the two approaches show insignificant differences in terms of progressivity of social services (Sahn and Younger, 1998, Tabi et al.2006).

where access rates are higher. At the conceptual level, the approaches used by Ajwad and Wodon (2001) and Lanjouw and Ravallion (1999) differ in the method used for ranking individuals, municipalities, or any other entities that are the basic units of observations. Lanjouw and Ravallion classify individuals as poor or rich according to their rank in the national distribution of income. Ajwad and Wodon classify individuals according to their rank in the local (that is, departmental) distribution of income, rather than at the national level. At the empirical level, two differences exist between the approach of Ajwad and Wodon (2001) and that of Lanjouw and Ravallion (1999). The first difference lies in the manner in which the endogeneity bias in the estimation of the marginal benefit incidence analysis is dealt with. The technique used in both papers consists of regressing access rate in a given quintile against the mean access rate. The mean access rate, however, includes information from the access rates in each quintile. To purge the mean from this endogeneity, Ajwad and Wodon use the leave-out mean as their right-hand side variable. That is, the access rate in any given quintile is regressed against the average of the access rates across all quintiles, except for the quintile for which the regression is performed. Lanjouw and Ravallion, on the other hand, use an instrumental technique, whereby the actual mean is instrumented by the leave-out mean. The second difference is that Ajwad and Wodon constrain the estimates of the marginal benefit incidence analysis to sum to one, and show that without such a constraint, the estimates will be biased downward.

In this paper, we used what Lanjouw and Ravallion (1999) develop as a political economy model in which different population groups such as the poor and the nonpoor have different political power and different costs and benefits from a given public expenditure. The interplay between these factors determines the relationship between the size of a program, or service, total spending on it, and each group's share of its benefits. "Early capture" by the poor occurs when they receive larger shares of a small program but their share declines as the program grows.[6] "Late capture" is the opposite. Even with substantial restrictions, the theoretical model yields no general results on whether early or late capture will occur, so the question requires empirical analysis.

Lanjouw and Ravallion provide the following econometric method which has been used in a few studies (Ajwad and Wodon, 2001; Kamgnia et al, 2008; Demery and Gaddis, 2009), given as:

$$\rho_{i,j,q} = \alpha_q + \beta\rho_k + \mu_q \qquad (4)$$

Where i indexes a small geographical nuit (a division in Cameroon for instance), k indexes a larger one (region or province in Cameroon), and q indexes the welfare quantile. The left-hand variable is the program participation rate for the division and quantile. The regressor is the program participation rate for the region in which the division is located. β_q, then is the marginal effect of an increase in the program participation rates of people in a given region and quantile. Following Lanjouw and Ravallion (1999), the average participation rate is defined as the proportion of the population of a particular quintile that participates in a government sponsored program. Thus, the average enrolment rate can be defined either as the proportion of the school-age

[6] In Lanjouw and Ravallion's specification, the nonpoor bear all the program costs and hold all the political power in the sense that the poor cannot impose on them a program that lowers their welfare. In such cases, the convexity of the program cost function is sufficient to guarantee "early capture" by the poor.

population currently enrolled in a publicly funded school, or simply to proportion of the total population currently so enrolled[7].

The regressor is run separately for each quantile. In addition, because ρ_{ijk} is included in $\rho_{k,}$ there is an upward bias in the estimation. As mentioned earlier, Lanjouw and Ravallion resolve this by instrumenting ρ_k with the left-out mean, that is, the participation for all of region k except those individuals in division i and quantile q. The intuition behind the regression is that by observing variations in regional participation across the country, it is possible to understand how increased coverage affects the participation of different population groups. If β_q is greater than one, it indicates that a general expansion in coverage is correlated with a disproportionately large increase in participation for that division and quantile.

An important assumption is that across locations the same political process determines the correlation between program size or coverage and incidence. Lastly, the margin that this model estimates is the incidence of an increase in program participation. The model does not address the policies that might bring about the program expansion, nor does it consider in this case the demand for education. Rather, it makes a more general appeal to the political economy behind the policies to argue that, whatever policies are used, the outcome must respect the political constraints implied by each group's cost, benefits, and political power.

Results and Discussion

The fiscal system has become one of the few and most important instruments available for the government of a poor country to combat poverty and gender equity. One of these components of fiscal policy is investment in human capital or education. The main objective of this paper has been to determine the marginal benefit incidence analysis of the Cameroon education sector, i.e. assessing how pro-poor and gender equalizing is the expansion in access to public schools. The 2001 Cameroon Household Surveys compiled by the National Institute of Statistics was used. The micro data sets provide information on the income of households and enrollments in public and private schools, colleges and universities at various levels of education. The "benefit" that we use is a simple 0/1 indicator of service use. We have therefore, identified those who attended public or private schools but made no attempt to value those benefits in monetary terms. As such, the analysis identifies the distribution of beneficiaries across the per capita expenditure distribution and gender, not implicit or explicit monetary benefits.

However, before observing the situation of gender disaggregated benefit incidence, we present in Table 1 below a picture of gross enrollment rates by income quintile with special focus on gender disparity at the primary, secondary and tertiary level

[7]Lanjouw and Ravallion (1999) normalize school enrolments in India on the school-aged population (using the *net* primary enrolment rate as the measure of the average participation rate). Younger (2003) prefers to normalise enrolments (in his case secondary enrolments in Ecuador) on the total population. Our preference is to normalize on the total population (assumed to be equal in all quintiles) as in Demery and Gaddis (2009). They argued that the school-aged population varies significantly across the quintiles. We have therefore in our case, considered enrollment rates not the same as benefit incidence. The denominator for the sum of beneficiaries is the 'eligible' population, e.g. school age children rather than the entire population as it is for benefit incidence.

in both public and private schools. Gross enrollment rates reveal gender differences especially when reported by income quintiles and this indicates lack of access to educational facilities for women. This occurs for all levels of education and with the bias becoming more significant for higher levels of education and lower levels of income.

Table 1: Gross enrollment rate by gender and income quintile

Quintile	Primary school		Secondary school		Tertiary level	
	males	females	males	females	males	females
1	68%	63%	21%	19%	0.3%	0
2	69%	65%	32%	30%	2.3%	1%
3	76%	75%	43%	41%	4%	0.5%
4	79%	76%	52%	45%	3.3%	1.3%
5	83%	82%	62%	60%	7.7%	4.7%
All group	75%	72%	42%	41%	3.9%	1.9%

Note: The table gives the school enrollment rates as a percentage of children aged 5-11 for the primary, 12-18 for the secondary and 19-21 for the higher institution. Calculations based on the 2001 Cameroon Household Sample Survey.

This implies parents had more interest to let their children of all sexes be enrolled as their incomes increased: an indication that access to schooling for the girl child is constrained by household financial resources. Females are therefore less likely to be enrolled the higher the level of education and it can be seen that the average enrollment rates tend to be lowest for the poorest quintile, and to increase as consumption per person increases.

We provide below a gender disaggregated benefit incidence analysis for public school enrollment. It can be used to describe why the poorest income quintile has less access to public education especially at the higher level of education. The answer is to be found, in part, in the greater gender enrollment bias among the poorest sections of the society. Tables 2 to 4 show the average enrollments in public education institutions by expenditure quintile and by gender. At the primary school level, it can be seen that the average enrollment rates tend to be highest for the poorest quintile, and to decrease as consumption per person increases. The average odds of enrollment also suggest that subsidies to primary schooling would mildly favor the non-poor and the females. Thus, at lower income levels, the females fair better as opposed to overall enrollment observed in both public and private schools. This is an indication that gender gap is generally lower in public primary schooling. At the secondary and higher school levels, the rich and the males mostly benefit from public investments or subsidies, though the females fair better at richer households. Generally, government subsidies directed towards primary education are pro-poor throughout the periods of study. In as much as children from poor households are more likely to be enrolled in public primary schools, a greater part of the enrollments are male.

Table 2: Average public primary school enrollment

Quintile	Males		Females		Total	
	Enrollment rate (%)	Average odds of enrollment (mean=1.0)	Enrollment rate (%)	Average odds of enrollment (mean=1.0)	Enrollment rate (%)	Average odds of enrollment (mean=1.0)
1	84	1.04	85	1.04	84.8	1.05
2	81.6	1.01	85.3	1.05	82.3	1.01
3	79.8	0.99	81.8	1.01	79.9	0.98
4	79.2	0.98	76.6	0.94	78.9	0.97
5	77.3	0.96	76.4	0.94	78.8	0.97

Note: The table gives the average primary school enrollment rates as a percentage of eligible household members, and the odds of enrollment, defined as the ratio of the quintile-specific enrollment rate to the mean rate. Calculations based on the 2001 Cameroon Household Sample Survey.

Table 3: Average public secondary school enrollment

Quintile	Males		Females		Total	
	Enrollment rate (%)	Average odds of enrollment (mean=1.0)	Enrollment rate (%)	Average odds of enrollment (mean=1.0)	Enrollment rate (%)	Average odds of enrollment (mean=1.0)
1	66.4	0.86	65.1	0.88	69.2	0.88
2	78.8	1.02	68.6	0.94	78.6	1.00
3	82.1	1.06	77.9	1.06	81.7	1.04
4	78.4	1.01	78.6	1.07	84.1	1.07
5	79.7	1.03	75.8	1.04	78.7	1.00

Note: The table gives the average secondary school enrollment rates as a percentage of eligible household members, and the odds of enrollment, defined as the ratio of the quintile-specific enrollment rate to the mean rate. Calculations based on the 2001 Cameroon Household Sample Survey.

Table 4: Average enrollment in higher public institutions

Quintile	Males		Females		Total	
	Enrollment rate (%)	Average odds of enrollment (mean=1.0)	Enrollment rate (%)	Average odds of enrollment (mean=1.0)	Enrollment rate (%)	Average odds of enrollment (mean=1.0)
1	12.7	0.62	2.1	0.14	14.8	0.61
2	16.1	0.78	6.3	0.43	16.2	0.66
3	19.9	0.96	15.9	1.08	24.2	0.99
4	19.6	0.95	19.3	1.31	24.6	1.01
5	34.7	1.68	29.7	2.02	41.9	1.72

Note: The table gives the average enrollment rates in higher institutions as a percentage of eligible household members, and the odds of enrollment, defined as the ratio of the quintile-specific enrollment rate to the mean rate. Calculations based on the 2001 Cameroon Household Sample Survey.

However, government subsidies directed towards higher education are poorly targeted and the poorest income group receives less than the richest income group and indeed favors those who are better off. The latter are in line with the findings of (Kamgnia, 2003; Kamgnia et al, 2008; Tabi et al. 2009) in Cameroon. Similarly, the gender disparity in access to public subsidy is higher at tertiary level and lowest at primary level, which also reflects poor targeting. Gender disparity or female biased enrollment is more prevalent among poor households.

Table 5 gives the estimated marginal odds of being enrolled in public primary and secondary schools, obtained by regressing participation rates of each quintile across divisions on the province or region average participation rate. Following the discussions above, the numbers in Table 5 can be interpreted as the gain in subsidy incidence per capita for each quintile from a one Franc increase in aggregate spending on each level of schooling. For example, an extra 100 Francs per capita spent on primary schools will increase the public expenditure per capita going to the poorest quintile by 81 Francs. The marginal odds of participation estimates suggest that an expansion of primary schooling would be decidedly pro-rich at the margin. While the average odds of participation in Table 1 suggest that the share of the total subsidy in primary education going to the poorest quintile is 21% (1.05 times one fifth), the marginal odds in Table 5 imply that the poorest quintile would obtain just 16% of an increase in the total subsidy going to primary education. Thus, benefit incidence over estimates the poverty impact of public spending in education. There is also a gender difference between the average and marginal odds of participation by the poor. The average odds of poor kids being in school are the same for boys and girls (i.e. 1.04, Table 2). However, the marginal odds are higher for boys than girls (0.83 versus 0.53). Observing also from secondary schooling, we find that marginal gains from expanding primary and secondary schooling in Cameroon are less well distributed than average gains with the males and the middle income groups benefiting most. The result on marginal benefit incidence based on income quintile supports that of Kamgnia et al, (2008).

Table 5: Marginal odds of public school enrollments

Quintile	Primary school			Secondary school		
	males	females	Total	males	females	Total
1	0.83 (10.95)	0.53 (4.43)	0.81 (11.38)	0.72 (2.69)	0.18 (0.47)	0.74 (3.18)
2	0.96 (12.13)	0.85 (10.99)	0.95 (15.73)	0.83 (5.17)	1.05 (4.50)	0.73 (5.01)
3	0.93 (9.24)	0.88 (8.59)	0.95 (12.52)	1.11 (8.26)	0.90 (4.62)	0.96 (8.64)
4	1.12 (17.25)	1.11 (7.55)	1.12 (17.64)	0.89 (4.57)	0.25 (1.10)	0.39 (2.86)
5	1.01 (7.84)	0.64 (3.70)	0.87 (7.92)	0.59 (2.88)	0.61 (2.35)	0.77 (5.18)

Notes: The table gives the instrumental variables estimate of the regression coefficient of the quintile-specific school enrollment rates across departments on the average rate by region for that program, based on the 2001 Cameroon Household Survey. The leave-out mean state enrollment rate is the instrument for the actual mean. The numbers in parentheses are t-ratios.

Conclusion

The findings of this paper indicate that gross enrollment rates is typically biased, with males being more likely to be enrolled in school, and with the bias becoming more noticeable with higher levels of schooling. Secondly, enrolment rate is higher for rich households than poor households at all levels of education. The results also strongly demonstrate how expansion of public schools would benefit males more than females as well as middle income households or relatively rich homes. Indeed, the marginal odds suggest that increased subsidies to primary and secondary education are captured by the middle income groups (see for instance Kamgnia et al., 2008) and as such cannot be good as a program that can be directed (explicitly) at fighting poverty. This is as opposed to Lanjouw and Ravallion (1999) who found that primary education expansion mostly benefits the poor. The difference may come from the fact that their enrollment estimates lump together private and public schools enrollments. It is difficult to think of a policy at which private operators will want to expand on their schooling projects.

Gender inequality is therefore, a critical component of overall inequality in the benefit incidence of education spending. It does so for a combination of reasons: first, households choose to enroll males more than females at all levels of schooling; second, expansion of public schools does not reduce gender disparities and as a result, public spending is not sufficiently contributing in the reduction of gender disparity.

Based on marginal benefit incidence analysis, three sets of policies can be recommended to improve gender equality in the society. First, the poorest segment of the society receives the lowest per capita subsidy; therefore, public policies related to public spending on education should be targeted towards the rural areas where poverty is higher. Second, in the presence of higher gender inequality, region specific education policy may be helpful for gender equality, especially public spending in rural areas on female education will play a vital role as compared to urban areas. A reallocation of spending towards primary and secondary schooling would lead to an improvement in the share of the total budget going to females (as well as to poorer groups in the community). However, such decisions should not rest on benefit incidence estimates alone. This should be based on a sound understanding of how household behavior would be affected by such expenditure reallocations and other socio-economic factors that act as obstacles to female enrolment.

References

Ajwad, Mohamed Ihsan, and Quentin Wodon (2001), Do Governments Maximize Access Rates to Public Services Across Areas?" World Bank, Latin America Poverty Group, Washington, D.C.

Cornia G. A., Jolly, R. and Stewart, F (eds.) (1995), Adjustment with a Human Face: Protecting the Vulnerable and Promoting Growth. Oxford University Press and UNICEF, Oxford.

Demery Lionel and Isis Gaddis (2009), Social spending, poverty and gender equality in Kenya: a benefit incidence analysis. Paper prepared with the support of Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ), Nairobi

Glick, P., Rumki Saha and S.D. Younger (2004), "Integrating Gender into Benefit

incidence and Demand Analysis". CFNPP Working paper No. 167, Cornell University

Government of Cameroon (2006), Cameroon: Poverty Reduction Strategy Paper – Progress Report, IMF Country Report No. 06/260, July, 2006

Kamgnia, Bernadette D (2003), "Targeting and Benefit Equity in the Use of Health Care Facilities in Cameroon", *African Journal of Economic Policy*, Vol. 10, No. 2

Kamgnia Dia B, S L Wangun, C Tatsinkou and J Afor (2008), "Bénéfices acquis et ciblage des pauvres dans les dépenses publiques de santé et d'éducation au Cameroun" *PEP-PMMA Working paper May : Universite laval*

Lanjouw, Peter, and Martin Ravallion. (1999), "Benefit Incidence, Public Spending Reforms, and the Timing of Program Capture." The World Bank Economic Review 13:257-73.

Meerman, Jacob. (1979), Public Expenditure in Malaysia: Who Benefits and Why. New York: Oxford University Press.

National Institute of Statistics, 2002. "Living Conditions and poverty profiles in Cameroon in 2001: Main report on the second Cameroon Household Survey", August, National Institute of Statistics: Republic of Cameroon.

Sahn, David and S.D. Younger (1998), "Fiscal Incidence in Africa: Microeconomic Evidence," AERC Working papers CR-2-5, Nairobi.

Sahn, David and Stephen D. Younger (2000), "Expenditure Incidence in Africa: Microeconomic Evidence." Fiscal Studies 21(3):329-347.

Selden, Thomas M. and Michael J. Wasylenko(1995),"Measuring the Distributional Effects of Public Education in Peru. " In Dominique van de Walle and Kimberly Nead, eds., Public Spending and the Poor: Theory and Evidence. Baltimore: Johns Hopkins University Press.

Selowsky, Marcelo (1979), Who Benefits from Government Expenditure? A Case Study of Colombia. New York: Oxford University Press.

Sen, Amartya. 1999. *Development as Freedom.* New York: Alfred A. Knopf, Ch.8.

Tabi A. J., Akwi T. and Etoh-Anzah, A. P. (2006), "The Distributive Impact of Fiscal Policy in Cameroon: Tax and Benefit Incidence", *PEP-PMMA Workingpaper No.16. Universite laval*

Tabi A. J., Akwi T. and Etoh-Anzah, A. P.(2009), "Who Benefits from Combined Tax and Public Expenditure Policies in Cameroon" Journal of Developing Areas, Vol. 3, No.1

UNDP (1995, 1996), Human Development Report. Various Issues. New York: Oxford UniversityPress.

United Nations, (2000) "The World's Women 2000. Trends and Statistics", United Nations Headquarters, New York. Chapter 4: Education and Communication

van de Walle, Dominique (1998), "Assessing the welfare impacts of Public Spending", World Development 26 (3)

Woodward, D. (1992), Debt, Adjustment and Poverty in Developing Countries. Pinter Publishers in Association with Save the Children, London.

World Bank. 2001. Malawi: Public Expenditure Review.

Younger, Stephen D (2003), "Benefits on the Margin: Evaluating Alternatives to Traditional Benefit Incidence Analysis." *World Bank Economic Review* 17(1):89-106.