RESEARCH SERIES No. 107

IMPROVING GIRL'S ACCESS TO SECONDARY SCHOOLING

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The Economic Policy Research Centre (EPRC) is an autonomous not-for-profit organization established in 1993 with a mission to foster sustainable growth and development in Uganda through advancement of research –based knowledge and policy analysis. Since its inception, the EPRC has made significant contributions to national and regional policy formulation and implementation in the Republic of Uganda and throughout East Africa. The Centre has also contributed to national and international development processes through intellectual policy discourse and capacity strengthening for policy analysis, design and management. The EPRC envisions itself as a Centre of excellence that is capable of maintaining a competitive edge in providing national leadership in intellectual economic policy discourse, through timely research-based contribution to policy processes.

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ABSTRACT

Despite the successful implementation of the Universal Secondary Education policy in Uganda in 2007, overall secondary school enrolments have remained low, especially for girls. Among other reasons, high cost of schooling is cited as the major constraint limiting access to secondary education. Uganda's National Development Plan proposes to attain gender equity in secondary school enrolments through the provision of bursaries/stipends to poor girls to enable them attend school. In this study, we examine the potential impacts of this policy proposal (policy I) and compare it with the alternative of providing free transport on top of the stipends (policy II). The findings indicate that both policy proposals would generate net benefits to society but more benefits would accrue to provision of tuition stipends only. Compared to policy II, policy I is more cost effective and therefore the preferred policy option.

Key words: Girls' secondary school enrolment, policy options

1. INTRODUCTION

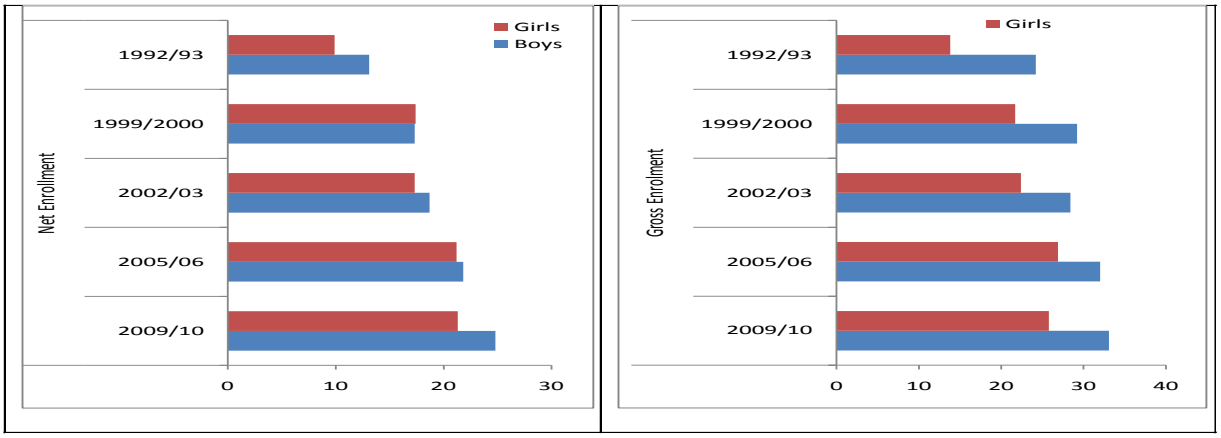
Over the past 15 years, Uganda has devoted large amount of public resources to the education sector. Although the share of education sector in the national budget reduced from 25% in 2000/1 to 15% by 2011/12, the education sector still commands the largest share of the national budget (Ministry of Finance Planning and Economic Development, 2012). Indeed, by 2010/11, Uganda was spending UGX 1,416 billion (US$ 547 million) on education. Most of the education resources have been earmarked for primary education under the Universal Primary Education (UPE) program—with primary schooling accounting for 56% of the education budget in 2010—down from 66% in 2000/1 (MFPED, 2011). The introduction of the UPE program in 1997 led to gender parity in primary school enrolments by 1999 (Deininger, 2003); a situation yet to be realized after the introduction of a similar scheme targeting secondary schooling.

Uganda was among the first African countries to initiate a large scale Universal Post Primary Education and Training (UPPET) program in 2007. As result of this program, the secondary school populations increased by 25% while the population in business and vocational schools increased by 46% (Government of Uganda, 2010). The focus on post primary education led to a reorientation of the education budget—with the secondary subsector accounting for 19% of the public education resources in 2007/08—up from 14% prior to UPPET. A number of multilateral donors such as the African Development Bank have come on board to support the UPPET program by providing funds to expand secondary school infrastructure. Nonetheless, initial assessments also point to inadequate planning for required resources prior to the introduction of the UPPET program. For instance, school administrators were expected to increase enrolments before school facilities were expanded (Chapman *et al*., 2010). Although the Government of Uganda (GoU) devoted more resources to the expansion of post primary schooling, concerns about the gender inequality in secondary enrolment remain. For instance, the National Development Plan notes that only one third of girls that graduate from primary school are still in school by the age of 18 years—compared to 50% for boys (GoU, 2010).

Despite the successful introduction of UPPET in 2007, overall secondary school enrolments have remained very low—especially those of girls. Figure 1 shows the trends in both the net and gross secondary school enrolment rates for children aged 13-18 years during 1992/93 and 2009/10. It is indicated that the enrolment rate for girls remained unchanged after the introduction of USE in 2007 while that of boys increased by only 3 percentage points. The figure also shows widening gender gaps in secondary school attendance. On the other hand, the Government of Uganda (GoU) has devoted large amounts of resources to secondary education in the recent past. For instance, the share of secondary education in the overall education budget increased from 14% in 2001/2 to 21% by 2010/11 (MFPED, 2011). Consequently, policy makers are examining alternative ways for increasing overall secondary

school enrolments, especially for the girls. For instance, the current National Development Plan (NDP) 2010-2015 calls for the provision of targeted bursaries for girls in order to improve gender equity in secondary school enrolments (GoU, 2010).

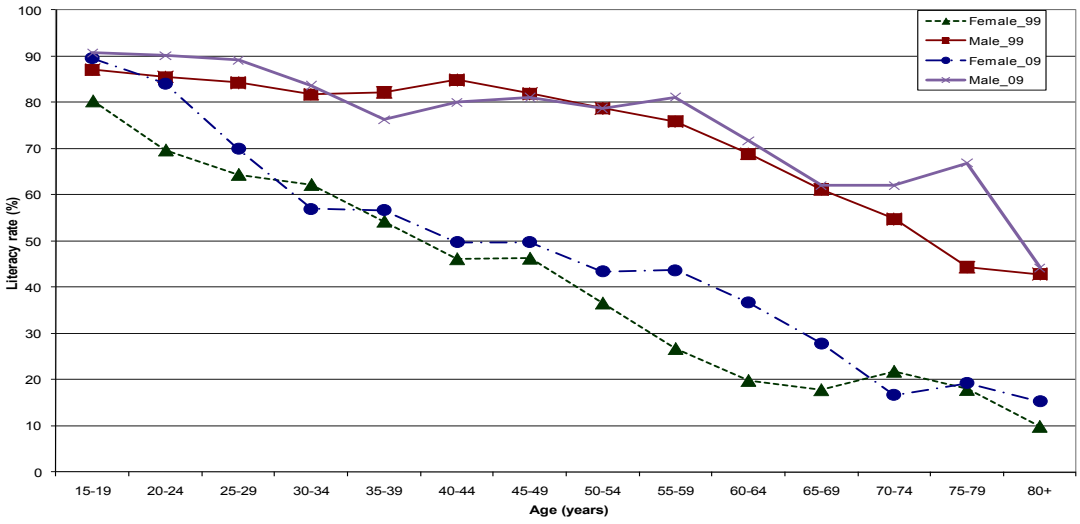
Figure 1: Trends in secondary school enrolments by gender, 1992/93-2009/10



Source: Author's calculations from the 1992/93 HIS; 1999/2000 UNHS; 2002/3 UNHS and 2009/10 UNHS.

Further evidence of gender inequalities in education in Uganda are shown by male-female gaps in education attainment. Figure 2 shows the trends in literacy rates—defined as the ability to read and write in any language—as captured by the UNHS surveys in 1999/2000 and 2009/10. It is indicated that literacy rates for females aged 15-24 years have significantly increased to nearly those of similarly aged males—at about 85%. Nonetheless, significant gender gaps in education attainment for older individuals still exist. For instance, for individuals aged over 30 years, the gender gap in literacy rates is about 30 percentage points. However, expansion in primary school enrolment under UPE has to some extent reduced the male-female gap in education attainment.

Figure 2: Trends in female-male literacy rates, 1999/2000 and 2009/10



Source: Authors calculations from the 1999/2000 and 2009/10 Uganda National Household Surveys.

High cost remains a major reason why children cannot access secondary education in Uganda. Despite the availability of the UPPET program, most secondary schools charge tuition and other fees. Unlike the case under the UPE program where 75% of the primary schools are public and as such do not charge tuition fees, only 31% of the available secondary schools are owned by government (Ministry of Education and Sports, 2010). With free secondary education limited to public secondary schools, majority of Ugandans continue to pay to access secondary education. Table 1 shows the trends in the reasons for school dropout for children in Uganda during 2004 and 2008 based on the National Service Delivery Surveys (NSDS). It is indicated that most of the children dropping out of school are in the secondary school age category (13-17 years), which accounts for over 82% of all children who have left school. Secondly, the high cost of schooling is the most frequently cited reason for leaving school—32% in 2004 and 25% in 2008 for all children aged 6-17 years. Lack of interest—either by the parent or child—is the second most cited reason for school dropout; this factor is most critical for boys—for instance 24% of boys aged 6-17 years indicate the lack of interest as the main reason.

With respect to secondary education, unlike the case under UPE, the USE programme does not provide scholarships to every qualifying UPE graduate. The USE scholarships are only for pupils who have performed well and if only they attend particular schools. Consequently, there is need to address the financial barriers children continue to face in accessing secondary schooling in Uganda.

Table 1: Reasons for school dropout, 2004 and 2008

	2004			2008		
	All	Female	Male	All	Female	Male
	All children aged 6-17 years					
High cost	32.5	31.9	33.2	25.4	22.2	28.7
Long distances	3	3.1	2.8	0.7	0.7	0.8
Orphaned	7.4	7.4	7.4	4.8	5.6	4.1
Sickness/Calamity in the family	10.5	11.5	9.1	10.2	9.8	10.2
Pregnancy/Marriage	4.1	7.1	-	4.7	8.7	-
War/Insecurity	2.5	1.9	3.1	0.9	1.1	0.9
Lack of Interest	14.6	10.7	18.9	19.3	15.5	23.6
Other reasons	8.3	9.9	7.7	13	13.1	13
Unstated reasons	16.9	16.5	17.8	21	23.3	18.7
Column Total	*100*	*100*	*100*	*100*	*100*	*100*
Estimated number of dropouts	*450,900*	*239,600*	*211,300*	*528,395*	*273,372*	*252,999*
	Children aged 13-17 years					
High cost	31.9	32	31.9	25.4	22.6	27.9
Long distance	2.8	2.8	2.7	0.6	0.6	0.5
Orphaned	7.2	7.5	7.1	4.9	5.2	4.7
Sickness/Calamity in the family	10.4	11.6	9.2	8.2	6.8	9.8
Pregnancy/Marriage	4.8	8.5	-	5.3	9.6	-
War/Insecurity	2.1	1.6	2.7	0.9	1	0.8
Lack of Interest	15.6	11.2	20.8	16.7	16.1	23.7
Other reasons	8.7	9.4	7.7	15.1	12.8	12.2
Unstated reasons	16.5	15.4	17.9	22.9	25.3	20.4
Column Total	*100*	*100*	*100*	*100*	*100*	*100*
Estimated number of dropouts	*370,901*	*198,113*	*171,691*	*456,880*	*239,163*	*217,027*

Source: Author's calculations from the 2004 and 2008 NSDS.
Notes: Dropouts are children who have previously enrolled but are currently out of school.

2. LITERATURE REVIEW

With the achievement of parity in UPE in most developing countries, the emphasis has shifted to closing the gender gap in secondary school enrolment especially in SSA. According to World Bank, ratio of girls to boys in secondary school in SSA was only 0.8 in 2001 although the gross enrolment rate in secondary school had tremendously increased from 18% in 1990 to 27% by 2001 (Suther-land-addy, 2008). Indeed, a number of developing countries have implemented different programs to attract girls in secondary school. For instance, Bangladesh initiated the Food for Education program in 1994 and it also operated the female stipend program (FSP) that provided scholarships to poor girls to attend secondary school. The long term effects of this program have been impressive, the share of female students enrolled in secondary schools increased from 5% in 1980 to 50% by 2007 and also the school registered a significant increase in female teachers (Ashadullah and Chaudhury, 2008).

Other countries that have implemented similar schemes include Mexico which initiated the Programa de Educacion, Salud y Alimentacion (*PROGRESA-Oportunidades*), cash transfer scheme in 1997 targeting health and education outcomes. *PROGRESA- Oportunidades*'s largest impacts have been registered in school enrolments—especially of girls. For instance Behrman et al (2005) shows that the scheme reduced the drop-out rate for girls and also assisted girls in the transition from primary to secondary school. In Bangladesh, Ravallion and Wodon (2000) show that the subsidy significantly reduced child labour.

Countries have used a variety of methods to reach to poor girls. In Bangladesh, girls were given a scholarship and had to open up an account to receive the funds. In Pakistan, girls were provided scholarships through community grants. In Columbia, vouchers were allocated by means of a lottery due to over-subscription on the program (Angrist et al, 2002). Furthermore, the lottery winners in Columbia had the choice to enrol in either a public or private school, however with caps on the costs of private schools. Angrist et al (2006), shows that recipients of vouchers were more likely to complete high school. In Mexico, Oportunidades provided households with a relatively higher cash transfer for girls secondary school enrolment compared to boys. Evaluations point to this method of targeting as the reason for the continued school attendance by girls even in adolescence (de BrauW and Hoddinott, 2008). Research has also examined non-conventional methods of attracting girls to secondary schools such as providing sanitary pads to girls. However, evaluations by Oster and Thorton (2011) revealed that menstruation accounted for a very small percentage of reasons why girls did not attend secondary school.

Uganda has implemented a number of programs targeting girl's education. Through the Universal Primary Education (UPE) program, Uganda managed to attain gender parity

in primary education by 1999 (Deininger, 2003). As such, the focus shifted to secondary education with the introduction of Universal Secondary Education (USE) in 2007. One of the main projects targeting girl's secondary education is the Post Primary Education and Training Expansion and Improvement (PPETEI) project supported by the Africa Development Bank. This particular project intends to increase the female share of secondary school enrolments to 50% by 2015 through the expansion of school infrastructure and the introduction of a double shift secondary school system in some parts of Uganda (African Development Bank, 2008). Nonetheless, a recent assessment of the cost benefit analysis of the project by Ssewanyana et al. (2012) reveals that not all the intended project goals will be achieved due to insufficient counterpart funding from the Government of Uganda.

Demand side financing interventions are not new in Uganda. Indeed, the country has experimented with schemes such as food for education in Northern Uganda and school fees grants for orphans due to HIV/AIDS. Alderman *et al*., (2008) show that the provision of take home rations to primary school kids in Northern Uganda increased girls' morning attendance by as much as 30 percentage points. Subsequent evaluation also showed that interventions such as in-school feeding programs and take home rations can positively impact on children's cognitive development (Adelman *et al*., 2009). Other examples of past demand side interventions in Uganda include the Community HIV/AIDS Initiatives (CHAI) project—operational during 2002-2007—that provided cash transfers to communities affected by HIV/AIDS which could be used to pay for school fees for secondary school children (Uganda AIDS Commission, 2007). Overall, both the above schemes are geographically restricted and operated as projects for a defined duration.

3. POLICY GOAL AND ALTERNATIVES

The overall goal is to increase access to secondary schooling by enrolling at least 50 percent of the girls of secondary school going age (13 to 18 years) who are currently out of school.

The objective of this policy simulation is to examine how access to secondary schooling of poor girls can be increased over the next 8 years (2013 to 2020). In particular, we propose two policy alternatives, which can complement the existing Universal Secondary Education program. The policy alternatives considered in this study are:

1) Providing stipends to girls to pay for tuition fees in public day secondary schools (hereafter referred to as policy I).
2) Providing stipends and transport vouchers to girls to attend public day secondary schools (hereafter referred to as policy II).

Eligible persons for the two policies should be: 1) females aged 13 to 18 years and successfully completed primary education - have a Primary Leaving Certificate; 2) residents of households headed by persons considered disadvantaged - children, females or persons with disabilities; and 3) currently out of school because of financial constraints. Under policy I, each beneficiary will receive a stipend of 130,000 UGX (50 USD) per year to cater for tuition in a Day school. The policy will be implemented by transferring funds from Government to Day schools where the beneficiaries will be enrolled. Under policy II, each beneficiary will receive a sum of 195,000 UGX (75 USD) per year to cover tuition (50 USD) and transport (25 USD). Transport vouchers will be given to beneficiaries to be used to access free transport from Government contracted transporters.

The choice of policy I is based on the fact that the Universal Secondary education programme is not sponsoring all pupils who have completed primary schooling. The USE program, besides being implemented in a few secondary schools, is restricted to only those pupils who scored 4 – 28 aggregates in the Primary Leaving Examinations. Therefore, Policy I would target poor girls who qualify to join secondary school yet they are not covered by the USE program. The choice for policy II is guided by the reasons cited by parents for not taking their girl children to secondary schools. Besides the high tuition fees, one other reason that prevents some parents from enrolling girls in secondary schools is that unlike primary schools, secondary schools are more distant and this would mean girls walking very long distances in un-safe environments (Lloyd, 2009). Consequently, the provision of stipends and free transport is held as one of the ways of addressing the cost and safety concerns of parents.

4. METHODOLOGY

4.1 Data and sources

The data used in this study was obtained from three sources. First, we used the most recent national household survey—the 2009/10 Uganda National Household Survey (UNHS) conducted by the Uganda Bureau of Statistics (UBoS). This is a multi-topic survey designed along the lines of the World Bank's living standards measurement surveys whose major objective was to track trends in household welfare in Uganda. The 2009/10 UNHS was based on the two stage stratified random sampling. In the first stage, the principal sampling unit was the Enumeration Area (EA) based on the 2002 census as the sampling frame. In the second stage, households were the main sampling units, with 10 households being randomly selected from each EA. Equally important, the sample size is large—at least 34,800 individuals from 6,711 households were covered (UBoS, 2010). This extensive coverage ensured that the data are also representative at the regional level. Using the above information coupled with the household status on the welfare distribution, we estimate the benefits of public secondary schooling in Uganda in 2009/10. Consequently, the UNHS survey is the main basis for the information on the benefits and equity of public education expenditures in Uganda.

The information on current education spending was acquired from the 2010/2011 Background to the Budget by the Ministry of Finance Planning and Economic Development. This publication lists the costs of public spending by sector for: the expenditures in the past fiscal year; the current approved budget; and projected expenditures in the medium term. In addition, it provides a breakdown of expenditures by sub sectors. For the education sector, the BB provides past, current, and future expenditures for district secondary schools. Table 2 provides a snap-shot of current and projected expenditures for the education sector during 2011-2016.

Table 2: Trends in education sector shares of the budget, 2000/01 – 2010/11 and projections for 2011/12 – 2015/16

Table 2: Trends in education sector shares of the budget, 2000/01-2010/11 and projection for 2011/12-2015/16 (%)

						Budget projections[a]				
Sector	2006/7	2007/8	2008/9	2009/2010	2010/2011	2011/2012	2012/13	2013/2014	2014/15	2015/16
Share of the health sector in the national budget (%)	17.5	16.8	15.3	15.3	16.8	14.4	14.8	15.6	15.7	15.3
Total budget (UGX, billions)	4,106	4,486	5,859	7,044	7,376	9,674	11,454	12,644	13,670	15,588
Foreign exchange rate (UGX per US$)[c]	1,780	1,696	1,930	2,029	2,400	-	-	-	-	-
Total budget (US$, billions)	2.31	2.65	3.04	3.47	3.07	4.03	4.77	5.27	5.70	6.50
Proportion of the budget externally financed (%)	25	25	22	24	19	22	25	25	25	23
Taxes as a share of GDP	12.9	12.9	12.2	12.1	12.9					
Fiscal Deficit (as % of GDP)	-5.2	-4.6	-4.2	-4.9	-3.6					

Sources: Background to the Budget (various years) Ministry of Finance Planning and Economic Development (MFPED).

Notes: [a] The budget projections for 2011/12 to 2015/16 are based on the Medium term expenditure framework (MTEF) published in the 2011/12 Background to the Budget (GoU, 2010b)

b Other economic functions include the sectors of: tourism trade and industry; lands, housing and urban development; information and communication technology.

c The foreign exchange rates are based on the official middle rate for a given financial year as published by the Bank of Uganda. For the period 2011/12-2015/16, we assume a fixed exchange rate of UGX 2,400/US$ for the period 2011/12-2015/16

As part of the simulation process, we undertook a number of estimations to generate the current distribution of public education expenditures. First, we estimated the current utilization of public secondary schools by household status on the welfare distribution using the 2009/10 UNHS. This enabled us to establish the benefit incidence of the current secondary education subsidy by gender. Second, based on the annual secondary school expenditures reported in the Background to the Budget and the above annual utilization, we estimated the unit cost of secondary schooling. The unit costs enabled us to allocate the public spending on secondary education across the different wealth categories.

Other sources of data used in the simulations included: the Gender and Productivity Survey (GPS) of 2008; Uganda Education Statistical Abstracts; Abstracts of produced by the Uganda Bureau of Statistics; and the Ministerial Policy Statements of the Ministry of finance, Planning and Economic Development.

4.2 Assumptions

In order to conduct the simulations, we made the following assumptions:

1) The inflation rate remains constant over the next eight years. Inflation increases the uncertainty of real returns on investment and it has been associated with a decline in expected profitability of investment (Massimo Caruso, 2001)
2) The Uganda's exchange rate remains stable at UGX 2,600/US$. Exchange rate stability promotes price stability - disappearance of inflation (De rauwe, 2005).
3) The population of the secondary schools grows by half the annual national population growth rates i.e. 1.6% pa.

4) The growth rate of teacher numbers was estimated from the changes in secondary school teacher numbers between 2005 and 2010 as captured by the education statistical abstract. Between the two periods, secondary teacher population increased by 65%, which is equivalent to an annual growth rate of 13%.
5) The completion rate for the two proposed policy options is the same (65%). The completion rates data was generated from the 2000 and 2010 Uganda Education Statistical Abstracts.
6) The annual cost of stipend is UGX 130, 000 per student, as adopted from the 2012 Education ministerial policy statement.
7) The annual salary for each teacher is UGX 480,000 for the lowest paid graduate secondary school teacher.
8) The monthly salary of an administrator is equivalent to the salary of diploma holder (UGX 300,000 per month)
9) The monthly salary of a School inspector is twice that of the lowest paid graduate secondary school teacher - UGX 720,000.
10) Transport costs is half of the stipend i.e. UGX 65,000.
11) Government does not need construct new classroom as is the case under the current Universal Secondary Education policy – using the public private partnerships.
12) The policy alternatives can deliver 100% of the set targets. This assumption is based on the fact that a project that provided stipends to females to cover the direct costs of schooling, was implemented in Bangladesh for 8 years, and by the end of the project, the enrolment of females had more than doubled (Bhatnagar and Dewa, 2002). Uganda is similar to Bangladesh in so many ways including the fact that both countries: are low income countries, have low secondary school enrolment – especially for girls, and are implementing the free primary education program. Thus, based on these similarities, we believe the policy alternatives we are proposing would in the same way lead to 100% enrolment of the targets beneficiaries.

4.3 Data Analysis

The analysis involved computing the Net Present Values, Benefit to Cost ratios and Cost to benefit ratios. These help to determine if the policy proposals will generate net benefits and in an efficient manner. Additionally, sensitivity analysis was undertaken to highlight the impact of fluctuations in benefits and costs on the overall worth of the policies.

4.3.1 Estimations of benefits

The direct benefits of each policy were measured in terms of the number of additional girls enrolled in secondary schools. The target was to enrol 50% of girls who are currently out of school. We also estimated the indirect benefits in terms of additional lifetime earnings. The incremental earnings were computed by multiplying the cumulative number of girls who

will have completed Ordinary Secondary Education (O'level) and the annual wage difference between holders of the O'level certificate and females with less academic achievement. Based on the Gender productivity Survey of 2008, the Economic Policy Research Centre estimated this annual wage difference at 960,000 UGX.

4.3.2 Estimation of costs

Based on some of the stated assumptions, we estimated the costs that would have to be incurred if the two polices were to be implemented. The direct costs include the cost of stipends and transport vouchers. We also noted that the incremental enrolments due to the two policies would create demand for new secondary school teachers, administrators and inspectors. The wages of additional teaching and non-teaching staff were also estimated based on the current salary structures.

4.3.3 Cost –Benefit Analysis and Effectiveness Measure

The estimated benefits and costs were projected over the 8 years period for both policy alternatives. They were discounted using a discount rate of 3%. Net Present values were obtained by subtracting the discounted costs from the discounted benefits. Additionally, both the Benefit-Cost ratios and Cost-Benefit ratios were calculated for each policy alternative.

4.3.4 Sensitivity analysis

One-way and two-way sensitivity analyses were undertaken to ascertain whether the policy alternatives can generate net benefits even if some assumptions were violated. For example, we assume completion rate of 65% and yet this can increase or decrease over the years. A positive change in completion rate would increase the net benefits while a decrease would lower the benefits, in terms of lifetime earnings. On the cost side, if Government decides to meet the current demands of teachers to have their salaries increased, the wage bill of additional teachers would increase and so would the total costs of each policy alternative. Thus, cognizant of the likely changes in the net benefits and costs, we considered the following scenarios.

A. Best case scenarios

- A 10% increase in net benefits, holding total costs constant.
- A 20% increase in net benefits, holding total costs constant.
- A 10% reduction in total costs, holding the net benefits constant.
- A 20% reduction in total costs, holding the net benefits constant.

B. Worst case scenarios

- A 10% reduction in net benefits, holding total costs constant
- A 20% reduction in net benefits, holding total costs constant
- A 10% increase in total costs, holding net benefits constant

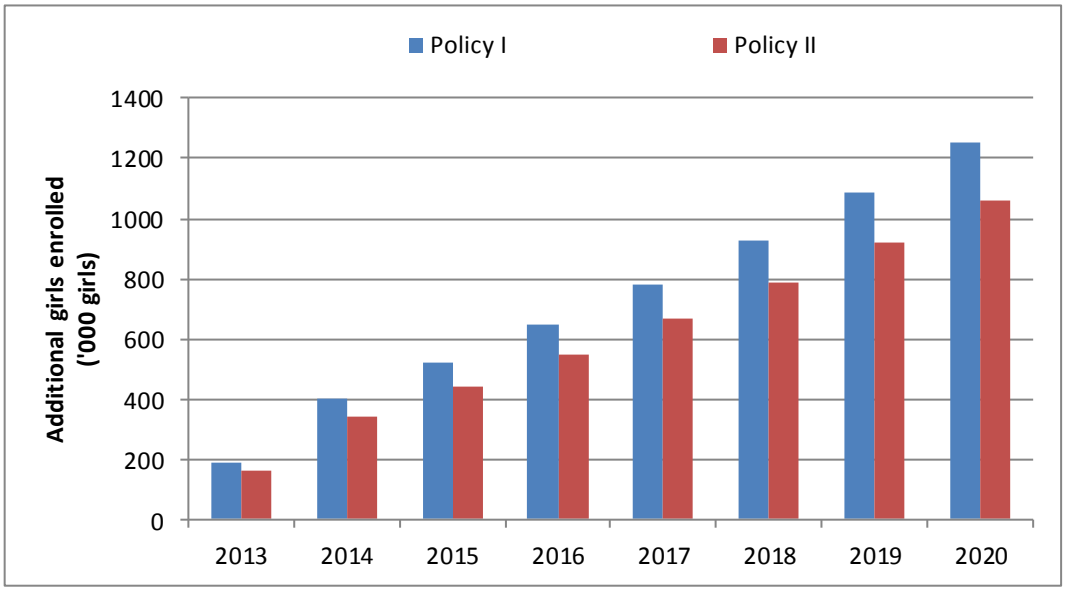
- A 20% increase in total costs, holding net benefits constant
- A 10% reduction in net benefits plus a 10% increase in total costs
- A 10% reduction in net benefits plus a 20% increase in total costs
- A 20% reduction in net benefits plus a 10% increase in total costs
- A 20% reduction in net benefits plus a 20% increase in total costs

5. RESULTS

5.1 Projections of costs and benefits

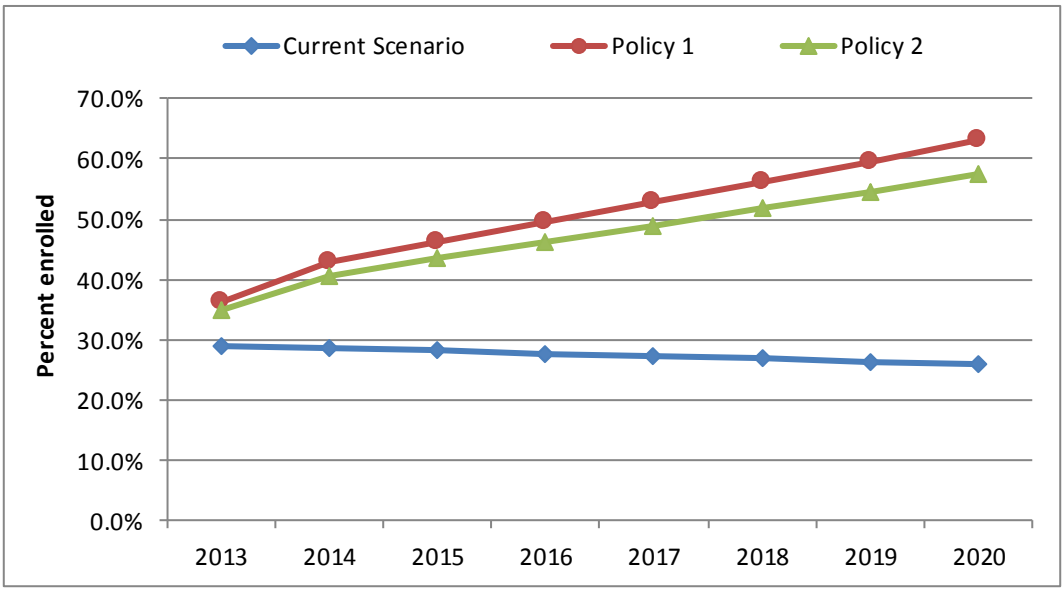
The direct benefit that is accrued to both policy I and 2 is the increase in the number of girls enrolled in secondary schools. Both policies remarkably increase the number of new girls enrolling for secondary schooling (Figure 3 and 4). However, except in the first year of policy implementation, policy option1 leads to higher enrolments than option II. By the end of the 8 years, policy I leads to enrolment of 50% of girls who are currently out of school (1,249,985 girls). By the end of 2020, policy II will have led to enrolment of 42.5% girls who are currently out of secondary school (1,062,487). The difference of 187,498 enrolled girls is brought about by the difference in effectiveness of the two proposed policies. Based on similar studies, we assumed that policy I is 100% effective while policy option II is 85% effective.

Figure 3: Incremental enrolments accrued to policy options I and II



The total percentages of girls enrolled for secondary schooling are far above the projected enrolment without any policy intervention (Figure 5). Policy I increases enrolment by 34% to 63% while policy II increase enrolment by 28.4% to 57.5%.

Figure 4: New enrolment ratios by policy option



Beyond the direct benefit of increasing enrolment of girls not currently enrolled, both policy options are associated with the indirect benefit in terms of additional earnings. According to the Gender and productivity survey of 2008, the annual wage difference between females who have completed Ordinary level (O'level) secondary education and those with lower academic qualifications is about 960,000UGX. Going by the current completion rate of 65%, we computed the additional earnings that accrue to each of the proposed policy option. The findings presented in Table 3 indicate that overall policy I leads to more incremental earnings than policy II. By 2020, policy I will have led to 10,796.9 billion UGX additional earnings for the girls that will have actually completed O'level. Policy II on the other hand, will lead to 18.4% lower additional earnings (9,122.7 billion UGX) than policy I. It is thus evident that policy I generally generates more benefits than policy II.

However, it should be noted the net present values for both policy options are positive, implying that implementing any of the two policy options will generate net benefits to society. Nonetheless, the NPV of policy I is 23.7% more than that of policy option II. Despite the glaring clear higher benefits accrued to policy I, at this point we cannot conclude that it is better than policy II. The effectiveness of the two polices must be considered first. The effectiveness measure used in this study is the cost per additional girl enrolled. The cost: benefit ratios show that policy option I is the preferred choice because it generates more benefits and at the least cost.

Table 3: Net present values and benefit: Cost Ratios of Policy options I and II

	Policy I			Policy II		
Year	Discounted Total Benefits (UGX billion)	Discounted Total Cost (UGX billion)	NPV (UGX billion)	Discounted Total Benefits (UGX billion)	Discounted Total Cost (UGX billion)	NPV (UGX billion)
2013	120.8	90.8	30.0	102.0	90.9	11.1
2014	360.9	161.2	199.8	304.8	161.8	143.0
2015	657.4	196.0	461.3	555.3	197.3	357.9
2016	1,009.5	230.5	779.0	852.8	232.6	620.2
2017	1,416.5	264.4	1,152.1	1,196.8	267.6	929.2
2018	1,877.9	298.1	1,579.9	1,586.7	302.4	1,284.4
2019	2,393.0	331.3	2,061.6	2,022.0	337.0	1,685.1
2020	2,961.0	364.3	2,596.7	2,502.2	371.5	2,130.8
Total	***10,796.9***	***1,936.6***	***8,860.4***	***9,122.7***	***1,961.0***	***7,161.7***
Cost: Benefit ratio		***0.18***			***0.21***	
Benefit: Cost ratio		***5.58***			***4.65***	

5.2 Sensitivity analysis

Tables 4 and 5 present findings from the sensitivity analysis. We note that in the best case scenario (20% increase in benefits, holding costs constant), the total benefits accrued to policy I increase by 24.4% from 8,860 billion UGX to 11,020 billion UGX, while the net benefits for policy II increase by 25.5%. In the worst case scenario, we considered a 20% reduction in benefits coupled with a 20% increase in costs. The findings revealed that even in the worst position, both policy options would still yield net benefits to the society, as indicated by the positive net present values. However, the worst case scenario would reduce the net benefits accrued to policy I by 40.3% (to 6,314 billion UGX from 8,860 billion UGX); the benefits accrued to policy II would reduce by a much higher percentage (44%). Thus, we conclude that both policy options remain socially acceptable even in the presence of fluctuations in policy effectiveness, teachers' wages, transport costs, and other costs associated with the implementation of the policies.

Table 4: Sensitivity of the Net Present Value of policy I to changes in anticipated benefits and costs

One-way sensitivity on benefits					
	Base case	10% decrease in benefits	20% decrease in benefits	10% increase in benefits	20% increase in benefits
Discounted benefits (UGX billion)	10,797	9,717	7,774	11,877	12,956
Discounted costs (UGX billion)	1,937	1,937	1,937	1,937	1,937
NPV (UGX billion)	8,860	7,781	5,837	9,940	11,020
Benefit: Cost Ratio	5.58	5.02	4.01	6.13	6.69
One-way sensitivity on costs					
	Base case	10% decrease in costs	20% decrease in costs	10% increase in costs	20% increase in costs
Discounted benefits (UGX billion)	10,797	10,797	10,797	10,797	10,797
Discounted costs (UGX billion)	1,937	1,743	1,549	2,130	2,324
NPV (UGX billion)	8,860	9,054	9,248	8,667	8,473
Benefit: Cost Ratio	5.58	6.19	6.97	5.07	4.65
Two-way sensitivity on benefits and costs					
	Base case	10% decrease in benefits + 10% increase in costs	20% decrease in benefits + 10% increase in costs	10% decrease in benefits + 20% increase in costs	20% decrease in benefits + 20% increase in costs
Discounted benefits (UGX billion)	10,797	9,717	8,638	9,717	8,638
Discounted costs (UGX billion)	1,937	2,130	2,130	2,324	2,324
NPV (UGX billion)	8,860	7,587	6,507	7,393	6,314
Benefit: Cost Ratio	5.58	4.56	4.05	4.18	3.72

Table 5: Sensitivity of the Net Present Value of policy II to changes in anticipated benefits and costs

One-way sensitivity on benefits					
	Base case	10% decrease in benefits	20% decrease in benefits	10% increase in benefits	20% increase in benefits
Discounted benefits (UGX billion)	9,123	8,210	6,568	10,035	10,947
Discounted costs (UGX billion)	1,961	1,961	1,961	1,961	1,961
NPV (UGX billion)	7,162	6,249	4,607	8,074	8,986
Benefit: Cost Ratio	4.65	4.19	3.35	5.12	5.58
One-way sensitivity on costs					
	Base case	10% decrease in costs	20% decrease in costs	10% increase in costs	20% increase in costs
Discounted benefits (UGX billion)	9,123	9,123	9,123	9,123	9,123
Discounted costs (UGX billion)	1,961	1,765	1,569	2,157	2,353
NPV (UGX billion)	7,162	7,358	7,554	6,966	6,769
Benefit: Cost Ratio	4.65	5.17	5.82	4.23	3.88
Two-way sensitivity on benefits and costs					
	Base case	10% decrease in benefits + 10% increase in costs	20% decrease in benefits + 10% increase in costs	10% decrease in benefits + 20% increase in costs	20% decrease in benefits + 20% increase in costs
Discounted benefits (UGX billion)	9,123	8,210	7,298	8,210	7,298
Discounted costs (UGX billion)	1,961	2,157	2,157	2,353	2,353
NPV (UGX billion)	7,162	6,053	5,141	5,857	4,945
Benefit: Cost Ratio	4.65	3.81	3.38	3.49	3.10

5.3 Equity distribution of enrolments and incremental earnings

Figures 5 and 6 show how benefits of public expenditure on the policy I are distributed among rich and poor households. Based on the current distribution of public expenditure on secondary education, girls from the poorest households would benefit least from the policy alternatives. With the current distribution, 20% of the poorest girls would receive 12% of the benefits compared to 23% of the benefits that go to the 20% richest girls. After reallocations, keeping the budget fixed, the distribution of benefits tilts in favour of girls from the poorest households. The benefits for the bottom 20% poorest girls more than double – increase to 25% from 12%. On the other hand, the benefits to the top 20% richest girls decrease to 10% from 23%. Therefore, the policy alternatives will be pro-poor if a deliberate move is taken to allocate public funds to secondary schools that are mainly attended by poorer children – Day schools.

Figure 5: Distribution of benefits by quintile

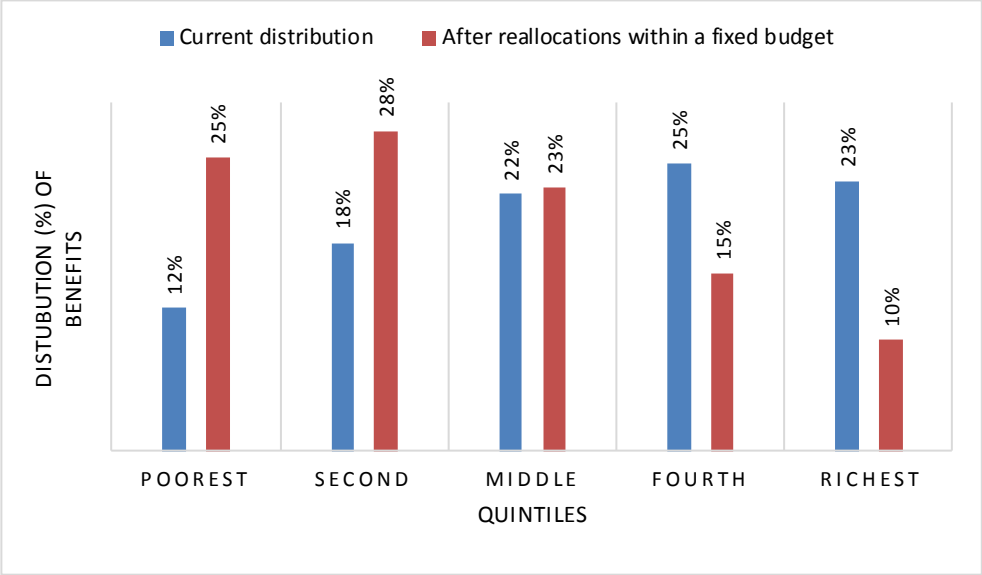
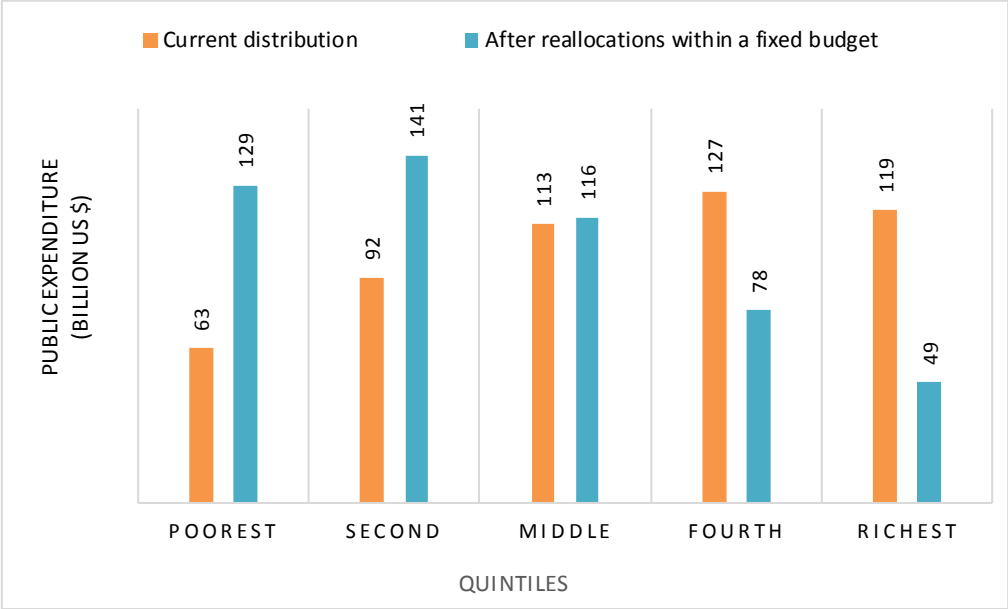


Figure 6: Distribution of total spending on girls' enrolment in public secondary school



We note that although the policy proposals are likely to generate great benefits, some issues might arise during implementation and hence affect the success of the projects. Such issues include but are not limited to: failure to select the most deserving beneficiaries, untimely release of funds, poor learning environment at school and home; lack of community support and irregular or missing monitoring and evaluation of the programs. Therefore, successful implementation of the policies would require:

- Commitment of the girls' parents/guardians to pay for the uncovered schooling costs such as meals, uniforms and exercise books. This is important because the proposed types of scholarships do not cover the full cost of schooling.

- School inspectors would have to be employed to monitor and evaluate policy implementation. This is because, monitoring and evaluation allows timely identification of problem areas and opportunities to adjust activities to better meet the set targets (American Institute for Research, 2007). The school inspectors are expected to conduct regular school inspections, review progress reports and conduct independent assessments.
- Communities will be facilitated to form committees that will actively participate in reviewing the selection criteria and selecting the neediest beneficiaries. Involving local communities generates community support, which is so much needed for the success of the projects.
- All stakeholders must attempt to create conducive environment for the chosen girls. For example, not overburdening girls with too much house chores and denying them time to read. The American Institute for Research (2007) asserts that although financial support encourages parents to send their girls to school, without proper supportive learning environment, many girls give up before completing the full cycle (in our case O'level).

5.4 Paying for the alternatives

Table 6 presents the budgetary implications of implementing the policy alternatives. If Government of Uganda is to implement policy I, the usual education sector budget will have to increase annually by an average of 26%, from 1715.4 billion shillings in 2013 to 4691.2 billion shillings in 2020. As a share of GDP, the education sector budget will form between 6.9% (in 2013) to 12.6% (in 2020) of GDP. In 2011/12, the approved education budget allocation as a percentage of GDP was 6.2% (MFPED, 2012), but this needs to increase to 10% to support implementation of Policy I. Moreover, in the recent past, the MoES has been able to mobilize additional resources targeting specific interventions. For instance, the UPPET project supported by the Africa Development Bank has constructed a number of new secondary schools. Consequently, it possible that external donors could finance additional interventions targeting girls without necessarily affecting the current resource envelop for the secondary school budget.

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Table 6: Changes of public expenditure on education sector with the new policy proposals

	2013	2014	2015	2016	2017	2018	2019	2020
Implementing policy I only								
Annual expenditure on policy I (billion UGX)	90.8	166.0	208.0	251.8	297.6	345.5	395.6	448.0
Budget allocation (business as usual)	1,624.6	1,863.4	2,137.3	2,451.5	2,811.9	3,225.3	3,699.4	4,243.2
New budget requirement with Policy I only	1,715.4	2,029.4	2,345.3	2,703.3	3,109.5	3,570.8	4,095.0	4,691.2
Needed increment in usual education budget	5.6%	8.9%	9.7%	10.3%	10.6%	10.7%	10.7%	10.6%
Required growth in education budget	22.2%	25.5%	26.3%	26.9%	27.2%	27.3%	27.3%	27.1%
GDP at constant 2002 price (billion UGX)	24,868	26,335	27,889	29,534	31,277	33,122	35,076	37,146
New education budget as a % of GDP	6.9%	7.7%	8.4%	9.2%	9.9%	10.8%	11.7%	12.6%
Implementing policy II only								
Annual expenditure on policy II (billion UGX)	90.9	166.7	209.3	254.1	301.1	350.5	402.4	456.9
New budget requirement with Policy II only	1,715.5	2,030.1	2,346.7	2,705.7	3,113.1	3,575.8	4,101.7	4,700.0
Needed increment in usual education budget	5.6%	8.9%	9.8%	10.4%	10.7%	10.9%	10.9%	10.8%
Required growth in education budget	22.2%	25.5%	26.4%	27.0%	27.3%	27.5%	27.5%	27.4%
New education budget as a % of GDP	6.9%	7.7%	8.4%	9.2%	10.0%	10.8%	11.7%	12.7%
Implementing both policies I and II								
Total cost of policy I and II combined	181.8	332.7	417.3	506.0	598.8	696.0	798.0	904.9
New education budget with both policies	1,806.4	2,196.1	2,554.7	2,957.5	3,410.7	3,921.3	4,497.3	5,148.0
Needed increment in usual education budget	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Annual growth in education budget	27.8%	34.4%	36.1%	37.2%	37.9%	38.2%	38.2%	37.9%
New education budget as a % of GDP	7.3%	8.3%	9.2%	10.0%	10.9%	11.8%	12.8%	13.9%

6. CONCLUSION AND RECOMMENDATION

This study was conducted with the objective of evaluating two policy alternatives for increasing secondary school enrolment of girls who are currently out of school. The proposed policy options were: 1) providing stipends to girls to pay for tuition fees in public Day secondary schools; and 2) providing girls with stipends and transport vouchers to enable them attend public Day secondary schools. The results showed that both policies would remarkably increase enrolment. The net present values and benefit: costs ratios indicate that both policies are worth investing in. However, the cost: benefit ratios show that policy option I is more effective. Results from the sensitivity analysis revealed that the net benefits accrued to both policy I and 2 remain socially acceptable even in the event that the benefits significantly reduce and the costs remarkably increase. Thus, policy option I is the preferred alternative, as it will efficiently lead to secondary school enrolment of 50% of girls who are currently out of school. Nonetheless, we recommend that funds permitting, both policies should be implemented. Stipends only (policy I) should be given to girls living reasonably close to day secondary schools; while a policy II (stipends and transport) should be given to girls living far away from participating schools.

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APPENDICES

Appendix 1: Additional enrolment of girls in secondary schools and the associated costs of implementing Policy I

Projections for 8 years	2013	2014	2015	2016	2017	2018	2019	2020
Population of secondary school going age (13 - 18 years)	2,709,930	2,796,648	2,886,141	2,978,497	3,073,809	3,172,171	3,273,681	3,378,438
Population of girls aged 13 - 18 years enrolled in secondary schools	786,086	798,663	811,442	824,425	837,616	851,018	864,634	878,468
Gross secondary school enrolment of girls	29.0%	28.6%	28.1%	27.7%	27.3%	26.8%	26.4%	26.0%
Population of girls aged 13 -18 years not enrolled in secondary school	1,923,844	1,997,985	2,074,699	2,154,072	2,236,193	2,321,153	2,409,047	2,499,970
Policy I objective (enrol 50% of the female not in school in the next 8 years	10.0%	20.0%	25.0%	30.0%	35.0%	40.0%	45.0%	50.0%
Annual enrolment based on policy I	192,384	399,597	518,675	646,222	782,668	928,461	1,084,071	1,249,985
New total secondary school enrolment of girls with policy I implemented	978,470	1,198,260	1,330,117	1,470,647	1,620,284	1,779,479	1,948,705	2,128,453
New gross secondary school enrolment of girls	36.1%	42.8%	46.1%	49.4%	52.7%	56.1%	59.5%	63.0%
Requirements for implementation of policy I								
Number of teachers	99,976	112,973	127,659	144,255	163,008	184,200	208,145	235,204
Pupil /Teacher ratio	25	25	26	27	28	28	29	30
Number of new teachers needed	4,810	9,990	12,967	16,156	19,567	23,212	27,102	31,250
Number of new Administrators (one Administrator per school)	5,254	5,937	6,709	7,581	8,567	9,680	10,939	12,361
Number of new School Inspectors (two per District)	224	224	224	224	224	224	224	224
Number of anticipated beneficiaries of stipend	192,384	399,597	518,675	646,222	782,668	928,461	1,084,071	1,249,985
Recurrent Costs (UGX billion)								

Teachers' wages (Newly employed) (Graduate@ UGX 5,760,000 per teacher/ annum)	44.95	90.74	114.46	138.58	163.11	188.04	213.37	239.10
Administrative staff Costs (minimum of diploma holder @ UGX 3,600,000 per annum)	18.91	21.37	24.15	27.29	30.84	34.85	39.38	44.50
School Inspectors' wages (Minimum of BSc Education Holder @ UGX 720,000 per month)	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94
Stipend (Annual Tuition cap itation grants @UGX130,000 per girl enrolled)	25.01	51.95	67.43	84.01	101.75	120.70	140.93	239.10
Annual Total Cost Post Complementary Policy	***90.81***	***165.99***	***207.97***	***251.82***	***297.64***	***345.53***	***395.62***	***524.63***
Unit Cost of policy I (UGX)	***472,032***	***415,401***	***400,967***	***389,679***	***380,284***	***372,153***	***364,937***	***358,427***

Appendix 2: Additional enrolment of girls in secondary schools and the associated costs of implementing Policy II

Projections for 8 years	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
Population of secondary school going age (13 - 18 years)	2,709,930	2,796,648	2,886,141	2,978,497	3,073,809	3,172,171	3,273,681	3,378,438
Population of girls aged 13 - 18 years enrolled in secondary schools	786,086	798,663	811,442	824,425	837,616	851,018	864,634	878,468
Gross secondary school enrolment of girls	29.01%	28.56%	28.12%	27.68%	27.25%	26.83%	26.41%	61.13%
Population of girls aged 13 -18 years not enrolled in secondary school	1,923,844	1,997,985	2,074,699	2,154,072	2,236,193	2,321,153	2,409,047	2,499,970
Policy Objective (enrol 50% of the girls not in school in the next 8years)	10.00%	20.00%	25.00%	30.00%	35.00%	40.00%	45.00%	50.00%
Possible enrolment assuming Policy Option II is 85% effective	8.50%	17.00%	21.25%	25.50%	29.75%	34.00%	38.25%	42.50%
Additional enrolment based on policy II	163,527	339,657	440,873	549,288	665,268	789,192	921,460	1,062,487
New total secondary school enrolment of girls with policy II implemented	949,613	1,138,321	1,252,315	1,373,713	1,502,883	1,640,210	1,786,094	1,940,955
New gross secondary school enrolment of girls	35.04%	40.70%	43.39%	46.12%	48.89%	51.71%	54.56%	57.45%
Requirements for implementation of policy II (Stipends & Transport)								
Number of teachers	99,976	848,668	888,555	930,317	974,042	1,019,822	1,067,754	1,117,938
Student: Teacher ratio	25	25	26	27	28	28	29	30
Number of new teachers needed	6,633	13,390	16,890	20,451	24,071	27,750	31,487	35,283
Number of new Administrators (one Administrator per school)	5,254	5,937	6,709	7,581	8,567	9,680	10,939	12,361
Number of new School Inspectors (two per District)	224	224	224	224	224	224	224	224
Number of anticipated beneficiaries of stipends and free Transport	163,527	339,657	440,873	549,288	665,268	789,192	921,460	1,062,487
Recurrent Costs (UGX billion)								
Teachers' wages (Newly employed) (Graduate@ UGX 5,760,000 per teacher/annum)	38.21	77.13	97.29	117.80	138.65	159.84	181.37	203.23
Administrative staff Costs (minimum of diploma holder @ UGX 3,600,000 per annum)	18.91	21.37	24.15	27.29	30.84	34.85	39.38	44.50
School Inspectors' wages (Minimum of BSc Education Holder @ UGX 720,000 per month)	1.94	1.94	1.94	1.94	1.94	1.94	1.94	1.94
Free transport fare (Voucher @UGX 65,000 Per girl per year)	10.63	22.08	28.66	35.70	43.24	51.30	59.89	69.06
Annual Tuition Fee @ UGX 130,000 per girl per year	21.26	44.16	57.31	71.41	86.48	102.59	119.79	138.12
Annual Total Cost Post complementary policy	***90.95***	***166.67***	***209.35***	***254.13***	***301.15***	***350.52***	***402.37***	***456.85***
Unit Cost of Policy Option II (UGX)	***556,158***	***490,695***	***474,843***	***462,661***	***452,674***	***444,144***	***436,662***	***429,982***

Appendix 3: Distribution of benefits policies I and II based on current distribution of benefits and reallocations with fixed budgets

Current unit cost of public secondary schooling	241,125					
Projections based on current distribution of benefits						
Number of girls enrolled	**Poorest**	**Second**	**Middle**	**Fourth**	**Richest**	**Total**
Policy I (tuition only)	260,523	380,142	469,111	525,515	493,163	2,128,453
Policy II (tuition and transport)	237,573	346,655	427,787	479,222	449,719	1,940,955
Public expenditure (billion UGX)	**Poorest**	**Second**	**Middle**	**Fourth**	**Richest**	**Total**
Policy I (tuition only)	63	92	113	127	119	513
Policy II (tuition and transport)	57	84	103	116	108	468
Current distribution of benefits	**Poorest**	**Second**	**Middle**	**Fourth**	**Richest**	**Total**
Policy I (tuition only)	12%	18%	22%	25%	23%	100%
Policy II (tuition and transport)	12%	18%	22%	25%	23%	100%
Reallocations within fixed budgets	**Poorest**	**Second**	**Middle**	**Fourth**	**Richest**	**Total**
Subsidy (%)	100%	75%	50%	30%	20%	
Weight of quintiles	**Poorest**	**Second**	**Middle**	**Fourth**	**Richest**	**Total**
Policy I (tuition only)	260,523	285,106	234,556	157,655	98,633	1,036,472
Policy II (tuition and transport)	237,573	259,991	213,893	143,767	89,944	945,168
Unit subsidy (UGX) for either policies						**495,164**
Total cost (billion UGX)	**Poorest**	**Second**	**Middle**	**Fourth**	**Richest**	**Total**
Policy I (tuition only)	129	141	116	78	49	513
Policy II (tuition and transport)	118	129	106	71	45	468
New distribution of benefits	**Poorest**	**Second**	**Middle**	**Fourth**	**Richest**	**Total**
Policy I (tuition only)	25%	28%	23%	15%	10%	100%
Policy II (tuition and transport)	25%	28%	23%	15%	10%	100%

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