Research Paper 86

Cost Benefit Analysis of the Uganda Post Primary Education and Training Expansion and Improvement (PPETEI) Project

Sarah Ssewanyana,

Goeffrey Okoboi,

&

Ibrahim Kasirye

Abstract

Expanding access to schooling in developing countries is critical for achieving poverty reduction and sustained economic growth. Although countries in sub-Saharan Africa (SSA) have expanded access to primary schooling in the past 15 years, absorbing primary school graduates into secondary school remains a challenge. The Government of Uganda (GoU) introduced the Universal Post Primary Education (UPPE) in 2007 and this further constrained the Ugandan education budget. Because of the limits of the education budget, the GoU had to rely on external support to push to UPPE program. This paper examines the cost effectiveness and benefit cost analysis of the UPPE and Training Expansion and Improvement project supported by the Africa Development Bank (AfDB) during the 2008-2014 period. The project seeks to change the secondary school enrolment profile in Uganda by expanding the number of public secondary school places available. Based on the expected post secondary school earnings as our only benefit considered—the project is very sustainable. Our sensitivity analysis also reveals that the projects remains sustainable even if the expected benefits are reduced by up to 30 percent or even if the project implementation is delayed by up to 3 years.

Keywords: Cost Benefit Analysis: Secondary School Education

1. Introduction

Expanding access to schooling in developing countries is critical for achieving poverty reduction and sustained economic growth. Although countries in sub-Saharan Africa (SSA) have expanded access to primary schooling in the past 15 years, absorbing primary school graduates into secondary school remains a challenge. As a result of implementing UPE programmes, the number of children out of primary school in SSA has declined—from 45 million in 1999 to 32 million by 2007 (UNESCO 2010). However, despite the surge in primary school enrolment as a result of universal primary education (UPE) , the transition from primary to secondary schooling remains low in developing countries. Indeed, the 2010 Education for All Global Monitoring Report shows that 38 percent of children in SSA who are supposed to be in lower secondary school are out of school compared to 26 percent of children out of primary school (UNESCO 2010). Furthermore, unlike the case for UPE where enrolment gaps between the poorest and richest pupils have significantly declined, access to secondary education remains inequitable—to the detriment of poor children. As such, a number of countries in SSA have intensified efforts to expand access to secondary schooling through a replication of UPE type interventions.

Prior to 2007, Uganda was among the SSA that had failed to increase the transition of pupils to secondary school during the implementation of UPE. During the 2003-2006 period, only 50 percent of pupils who passed primary leaving examinations (PLE) joined secondary schooling. Worse still, the majority who enrolled in lower secondary schools, dropped out before the age of 18 years. For instance, only 18 percent of children aged 13-19 years in Uganda were actually in secondary schools in 2005/06 (Uganda Bureau of Statistics (UBoS), 2007).[1] Furthermore, among those in school, the poor and females are under-representated. As part of the wider implementation of the Poverty Eradication Action Plan (PEAP) (2005-2010), the Government of Uganda (GoU) introduced the Universal Post Primary Education (UPPE) in 2007. Specifically, the government decided to provide free tuition to secondary school pupils starting with 300,000 primary school graduates in 2007. Similar to the UPE arrangement, the government provided tuition while parents were expected to provide exercise books, uniforms, meals, and other scholastic materials. In financial terms, under the initiative, the GoU spends Ushs 45,000 (about US$25) per student per year and this translates to Ushs 100 billion or US$56.3 million per year. Combined with the free tuition, the government also made efforts to expand access to secondary education by ensuring that every sub county in Uganda has a secondary school. In 2008, at least 271 sub-counties did not have either a public or private secondary school.

The introduction of UPPE in 2007 further constrained the Ugandan education budget. Before the UPPE programme, the GoU allocated at least 66 percent of the education budget to primary schooling; after the introduction of USE in 2007, the share due to primary schooling reduced while the share allocated to secondary schooling increased. Indeed, a major causality of the introduction of USE was the school facility grant (SFG)—used to construct classrooms and teachers houses under the UPE. Between 2008 and 2010, the SFG

[1] This very low net secondary enrolment may be partly explained by both late enrolment into primary school as a consequence delayed transition and high grade repetition rates in secondary school. In 2005/06, the primary gross enrolment rate was 115 was the net enrolment rate was 85 (UBoS, 2007) and this is explained by delayed enrolment into primary school. On the other hand, the annual education statistical abstract shows that at least 11 percent of primary school pupils are repeating grades with repetition rates highest in the first grade—at 12.4 percent (Ministry of Education and Sports, 2008).

grant was suspended as the UPPE was rolled out. Because of the limits of the education budget, the GoU had to rely on external support to push to UPPE program. For example, the African Development Bank (AfDB) through the Uganda Post Primary Education and Training Expansion and Improvement (UPPTEI) project provided a loan of about US$85 million to expand secondary schooling over the 2009-2014 period. This paper examines the cost benefit analysis of this particular project.

The rest of the paper is structured as follows: The next section provides the background and context on Uganda—especially relating to education reforms. Section 3 describes the UPPTEI project and the expected outcomes from the interventions. Section 4 describes the data, methods, and the results of the cost benefit analysis of the project while section five outlines possible ways of evaluating the impact of the project. The conclusions and implications of the study appear in section 6.

2. Background and context

With an annual Gross Domestic Product (GDP) per capita of US$ 480 (World Bank 2010), Uganda remains one of the poorest countries in SSA. Indeed, the 2010 Human Development Report (HDR) ranks Uganda 143 out of 169 countries based on the Human Development Index (UNDP 2010). Furthermore, due to the predominance of informal activities and weak tax administration system, the country collects only about 13.7 percent of its GDP in taxes (GoU 2010). As such the amount of funds available for financing education interventions as well as other social services are limited. There is competition for overall public budget across and within sectors. In addition, poverty remains the most pressing challenge faced by the country despite the recent improvements in household welfare status.

Despite the very low average incomes, Uganda has made tremendous progress in reducing the incidence of poverty—as captured by household expenditures. Table 1 shows the trends in income poverty during 1992/3 and 2009/10 and it is indicated the incidence of income poverty reduced from 55 percent in 1992/93 to 24 percent by 2009/10. The most recent trends have been driven by the dramatic reduction in poverty in Northern Uganda after the cessation of armed hostilities between the Lord's Resistance Army (LRA) and the Ugandan army (UBoS 2010). Previous changes were mainly driven the favourable prices of major exports such as coffee (Deininger and Okidi 2003; Kappel *et al*. 2005). Furthermore, although the poverty headcount index reduced from 56 percent in 1992/93 to 24 percent by 2009/10; the actual population of the poor only reduced from 9.9 million to 8.9 million during the same period—partly due to the very high population growth rates of 3.2 percent per annum (UBoS 2002).Overall the incidence and distribution of poverty depicted in Table 1 has implications for household's ability to finance schooling—even in an era of free public schooling. In particular, due to poverty, households in some parts of country are unable to meet the additional expenditures demanded under free public education e.g. meals and uniforms.

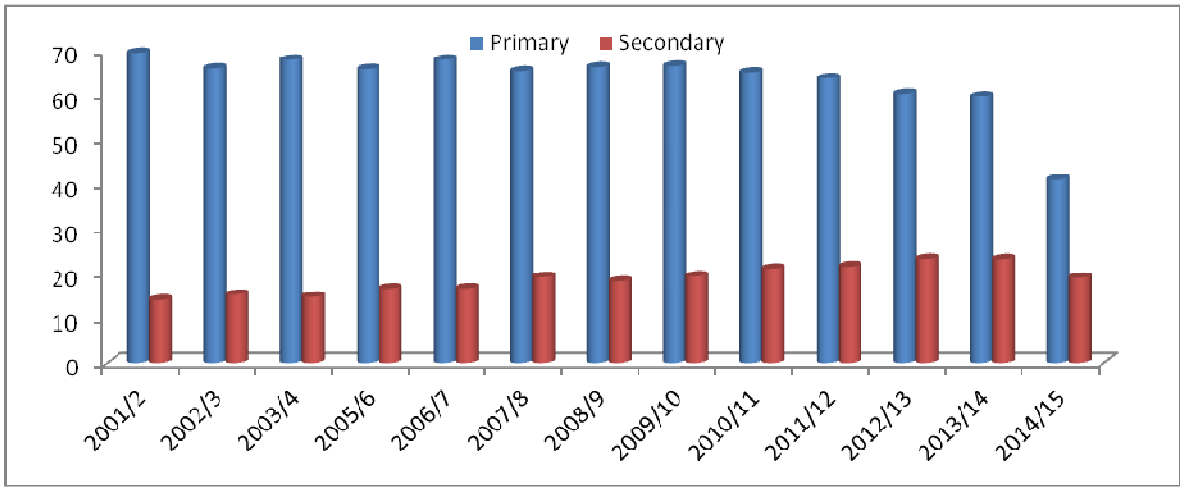
Table 1: Trends in poverty head count, 1992-2010 (%)

	1992/93	1999/00	2002/3	2005/6	2009/10
All Uganda	54.9	33.4	38.8	31.1	24.5
Rural	58.5	37.4	42.7	34.2	27.2
Urban	27	9.6	14.3	13.7	9.1
Regions					
Central	45.6	19.3	22.5	16.4	10.7
Eastern	58.8	34.2	45.9	35.9	24.3
Northern	72.2	63.4	62.9	60.7	46.2
Western	53.1	25.9	32.9	20.5	21.8

Notes: The 1999/2000 figures excludes the districts of then *Bundibugyo*, *Gulu*, *Kitgum, Kasese, Pader*.
Source: UBOS UNHS Reports 2000, 2002, and 2006. The figures for 1992/93 are author's calculation based on the IHS 1992

During the implementation of UPE and USE programmes, the Government of Uganda has devoted substantial resources to the education sector. Between 1991 and 2004, the share of the education sector in the total budget increased from 20 percent to 30 percent (Ministry of Education and Sports (MoES) 2004). For the financial year 2011/12 the government has allocated about Ushs1,393 billion (US$535 million) to education programmes (Ministry of Finance Planning and Economic Development (MoFPED) 2011). However, this only represents about 15 percent of the national budget—due to increased focus in the national budget on energy and road construction—whose shares have doubled since 2003/04 financial year to about 15% of the national budget. As a consequence, within the education sector in Uganda, different sub sectors continue to compete for the scarce resources. Figure 1 shows the shares of the primary and secondary sub sectors in the overall education budget during the financial years 2001/2-2010/11 and the projected allocations during the 2011/12-2014/15 period. It is indicated that the share of education resources accruing to the primary sub sector has gradually declined—from 69 percent in 2001/2 to 65 percent by 2010/11. On the other hand, the secondary sub sector has overtime gained prominence within the overall education budget—increasing from 14 percent in 2001/2 to 21 percent by the financial year 2010/11. Nonetheless, both the primary and secondary sub sectors are projected to register reductions in their respective share in 2014/15—due to a projected shift in focus on university/tertiary education in 2014/15.

Figure 1: Share of the primary and secondary education subsector in the education budget (%)



Source: Background to the Budget (various issues): MoFPED.

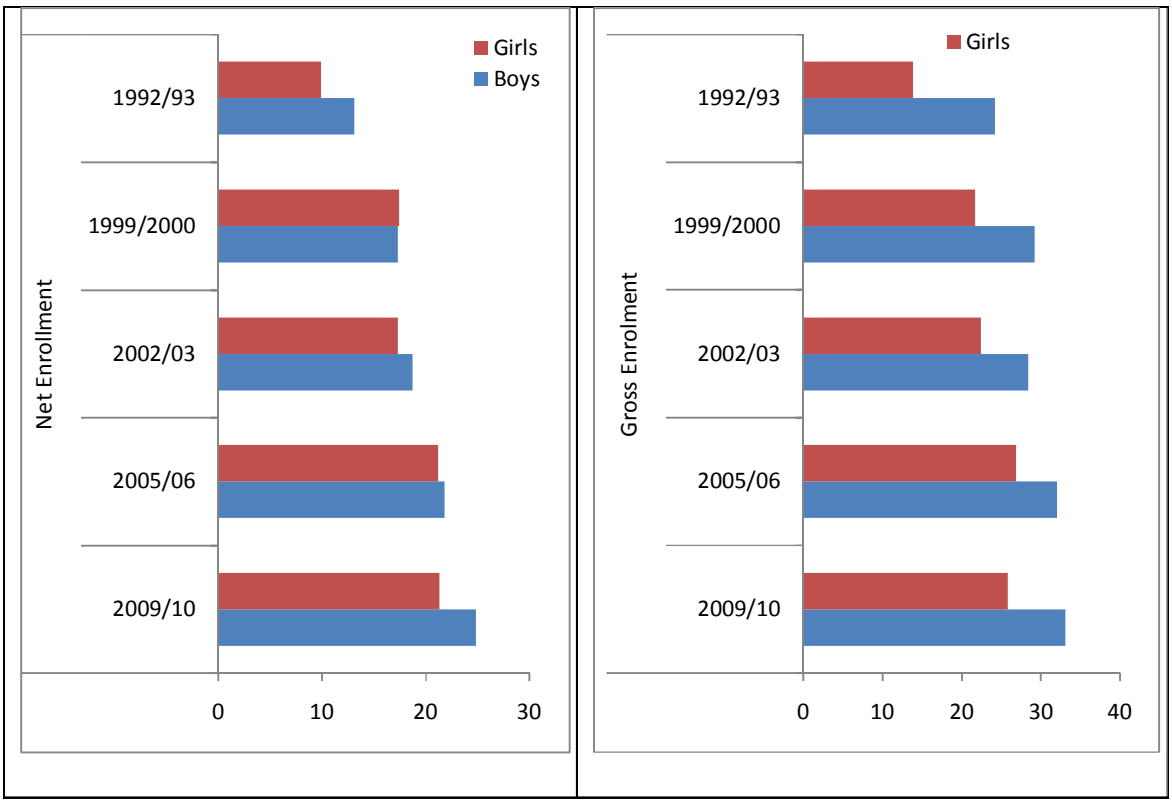
Although post primary education has received increased funding in the recent past, the programme is nonetheless plagued by a number of challenges. First, unlike the case of primary schools, the government does not own most of the secondary schools where the UPE graduates are supposed to enrol. The government only owns 31 percent of the available secondary schools compared to 74 percent of the primary schools (MoES 2008). Secondly, the transition of girls to secondary schools remains a problem—only 33 percent of girls who enrol into primary school remain in school up to the age of 18 years compared to 50 percent for boys (GoU 2010). Third, just as is the case in primary schools, secondary schools are congested places with a student to classroom ratio of 1:60 compared to the desired of 1:35 (GoU 2010). Finally, unlike UPE, where all public primary schools are free and all pupils are eligible to enrol at the nearest public school, a different system operates for secondary education. Specifically, enrol into a secondary school is based on performance at the primary leaving examination (PLE) and most elite public secondary school charge fees similar to those in private secondary schools.[2]

Even after the introduction of the UPPE programme in 2007 and concomitant increase in the secondary school population by 25 percent, the structure of the secondary school population has not changed that much. Figure 2 shows both the net and gross secondary school enrolment rates for children aged 13-18 years based on the nationally representative household surveys. It is indicated that the NER for boys increased by only 3 percentage points (from 22 percent in 2005/06 to 25 percent by 2009/10) while that of girls remained the same. A similar situation is observed for the gross enrolment rates i.e. there are minimal changes after the introduction of UPPE. The same figure also highlights a widening gender gap in secondary school enrolments. Overall, Figure 2 shows that secondary school enrolments remain very low. Furthermore, policy makers in the Ministry of Education are of

[2] The government allowed this two-tier system so that the quality of public secondary schooling does not reduce as was the case when UPE was introduced in primary schools.

the view that increments in secondary school attainment will be much slower than what was observed under UPE (MoES 2011). The current National Development Plan projects that net secondary school enrolments will only increase by 10 percentage points to 35 percent—between 2010/11-2014/15 (GoU 2010). The modest projections are partly driven by the lack of public secondary schools to absorb all the UPE graduates and as such any surge in secondary school population can only be accommodated by the fee paying private schools.

Figure 2: Net and gross enrolments in secondary schools, 1992/93-2009/10 (%)



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

3. Uganda Post Primary Education and Training Expansion and Improvement (PPETEI) Project

As part of the multilateral donors supporting the education sector in Uganda, the AfDB in 2008 offered a US$ 85 million loan to the GoU (AfDB 2008). The loan was to support the USE as well as the Universal Post Primary Education and Training interventions. The bank through the PPETEI project sought to increase the number of available secondary school places by 100,000 between 2008 and 2013. The projects intended to provide infrastructure, equipment, textbooks and also support teacher training. In particular, the target was to construct and equip 71 secondary schools as well as train 2,500 teachers. The overall project objectives were: to increase the transition rate from primary to secondary education from 68 percent to 80 percent; increase the proportion of girls in secondary school—from 46 percent to 50 percent; increase the net enrolment rate from 18 percent to 30 percent; reduce the number of sub-counties in Uganda without secondary schools from 271 to less

than 100.[3] It is anticipated that through the equipping and construction of new secondary schools, at least 20,000 new secondary school places will be created for the normal shift as well as 40,000 new places under the double-shift program. It is also envisioned that the ratio of text books per student will improve from 1:4 to 1:3.

One of the major justifications for the support by AfDB was the fact there were large welfare and gender gaps in secondary school enrolment in Uganda. Table 2 shows the trends in the net and gross secondary school enrolments for children aged 13-16 years by welfare status and gender—in 2005/6 and 2009/10. First, it is indicated that both net and gross enrolment show wide welfare gaps. Specifically, the net enrolment rates of children from the richest quintile are more than five times the rates for poorest quintile. It is also worth noting that although the net enrolment rates appear to favour girls over boys among the top two quintiles—the gross enrolment rates only favour boys. The latter result suggests that boys are likely to stay in secondary school longer than girls. Second, if one can use the two survey periods to gauge the short term impacts of the UPPET programme, Table 2 shows that the initiative has so far had been most beneficial to male children—increasing their GER for both the richest and poorest quintiles. For other income and demographic groups, the enrolment profiles have remained more or less unchanged.[4] In the next section, we examine the cost benefit analysis of the overall PPETEI project—in relation to the anticipated costs.

Table 2: Trends in net and gross secondary enrolment rates by gender and expenditure quintile, 2005/6-2009/10 (%)

	2005/06			2009/10		
	All	Girls	Boys	All	Girls	Boys
	Net Enrolment Rates (NERs)					
Quintiles						
Q1	3.8	5.3	2.2	5.5	3.5	7.4
Q2	6.9	8.4	5.5	10.1	11.6	8.8
Q3	12.3	16.3	8.6	15.5	14.9	16.1
Q4	16.6	19.5	13.3	19.6	21.8	17.4
Q5	37.9	37.4	38.7	37.9	40.3	34.8
All children 13-16 years	15.5	17.5	13.5	18.7	19.8	17.8
	Gross Enrolment Rates (GER)					
Quintiles						
Q1	11	11.5	11	16.5	9.4	23.1
Q2	27.4	23.6	31.1	27	23.4	30.4
Q3	40.6	39.6	41.6	40.6	36.8	44.1
Q4	51.2	51.7	50.7	56.5	51.8	61.1
Q5	100.2	85.9	118.2	93.5	84.3	105.5
All children 13-16 years	46.2	42.7	50.7	49.2	44.1	55.7

Source: Author's calculations from the 2005/6 and 2009/10 UNHS

[3] In 2008, the GoU owned 911 secondary schools and at least 237 sub counties did not have a public secondary school. At least 83 percent of the sub counties without a public secondary school had a private secondary school. The UPPET program intends to establish new schools in the 38 sub counties without a public or private secondary school.

[4] The NER and GER quoted in Table 2 differ from earlier stated rates due to differences in the age of children considered. This table considers only children aged 13-16 years.

4. Economic analysis of the PPEPI project

In this section, we provide the economic analysis of the PPPEP project—based on the project costs and part of the anticipated benefits. In particular, we undertake a cost benefit analysis relating to increased enrolment and completion of secondary school and we also conduct a sensitivity analysis of the assumptions we make. Similar economic analysis has been conducted for other developing countries e.g. Costa Rica (World Bank 2005)—for the Equity and Efficiency of Education Project. The project costs for the PPETEI are distributed over the 5 years based on the disbursement schedule outlined in the AfDB's project appraisal report.

As earlier mentioned they are various anticipated benefits of the PPETEI projects—ranging from increased secondary school enrolment by 100,000 to attaining gender parity in secondary schooling, to elimination of sub counties without secondary schools. However, in the economic analysis, we focus on only one benefit—increase in secondary school enrolment—due to data limitations. In particular, we quantify the increased earnings of the secondary school students over students who do not enrol in secondary school—for the students who join secondary school as a result of the available 60,000 new school places. Based on estimates by Ssewanyana and Kasirye (2010), secondary school graduates in Uganda earn on average annually earn US$ 630 more than primary school graduates. We use the Net Present Value (NPV) and the Internal Rate of Return (IRR) as the basis for CBA estimates. The other benefits of the project not considered in the analysis are presented in Table 3.

Table 3: Project beneficiaries and targets

Table 3: Project beneficiaries and targets

Direct target population: 40,000 students from 71 institutions selected by the project. At least 1,000 needy students receive partial scholarships. At least 2,500 teachers and 600 other school staff trained in school management.

Benefit	Baseline	Expected change
Increase in transition rate from primary to secondary	68%	Plus 12% points in 5 years
Increase in the proportion of girls in secondary school	46%	Plus 4% points in 5 years
Increase in GERs in secondary school	25%	Plus 10% points in 5 years
Increase in NERs in secondary school	21.30%	Plus 9% points in 5 years
Increase in number of places in 71 institutions	60,000	20,000 new places created under normal system
		and 40,000 new places under the double shift system
Increase ratio of textbooks per student	1:4	1:3

Source: African Development Bank (2008)

The overall project benefits can be outlined as follows. First, in the absence of the project, a total of 100,000 students would miss secondary education. The estimated annual future (post secondary) earnings lost from this group are US$ 30 million. Second, given that at least 500,000 pupils sat for PLE in 2008 and estimated 340,000 managed to enrol into secondary school, by 2014, it is expected that at least 400,000 (80 percent of 600,000 pupils sitting PLE) will be joining secondary school. Third, it is also expected that the population of girls enrolling in secondary school will increase from 156,000 in 2008 to 240,000 (50 percent of the enrolling population) by 2014. Finally, it is expected that the net enrolment ratio will increase from 21.3 percent in 2008 to 30 percent by 2014. Specifically, the estimated

population of children aged 13-16 years who are actually in secondary school would increase from 703,000 to 1,120,000.[5]

We also assume that students who enrol in secondary school stay and complete the full 6 year cycle. As such, we do assume no dropouts and grade repetition. To some extent, this appears as a very strong assumption given the context of very high dropout rates experienced in the Uganda school system. Indeed, the data from the education abstracts reveal that about half of the students drop out after the fourth grade of secondary schooling—the Ordinary level (MoES 2008). Given that the main reasons students drop out after O-level is due to inadequate finances, we retain this particular assumption since one of the objectives of the intervention is to reduce the financial burden faced by parents.

On the other hand, the benefits of the projects start accruing after 6 years although the project support is for 5 years. In addition, we assume a time horizon of 12 years—to take account of at least 6 years of post secondary school earnings. Finally, we assume that all the students who benefit from the project find wage employment and their earnings are constant in dollar terms over the next 6 years. The costs of the project and the basis for calculating the benefits are provided in Table 4.

Table 4: Unit costs and cost of interventions

Cost of Project	**US$ 93.6 million** (Africa Development Bank: US$ 84; Government of Uganda: US$ 9.6 million during the project life. Constituent costs (i) improvement and expansion of school facilities: US$ 86 million. (ii) improvement in school management and teaching quality: US$ 5.6 million. (iii)project management: US$2.2 million)
Unit Cost of a student in secondary school	US$ 240
Average incremental earnings of primary school graduates over non-graduates	US$630 (Estimates by Ssewanyana and Kasirye 2010)
Unitary cost of education Demand subsidies in secondary education	School fees; US$ 186 per student/year Transportation: US$ 11 Uniforms and sports kits: US$ 11.3 Books and scholastic materials: US$ 23.6 Other school expenditures: US$23 (Estimated by Ssewanyana and Kasirye 2010)
Other parameters	
Discount rate	10%
Projections of enrolled students	60,000
Time horizon	12 years

Source: African Development Bank (2008)

Other assumptions made relate with the costs of getting children through school and associated maintenance of established facilities. We assume that maintenance costs are incurred from the second year of the project and for the first 5 years, these costs are 8 percent of the accrued investment costs. After 5 years, the maintenance costs increase due to wear and tear and we assume a higher maintenance ratio of 15 percent. Furthermore, we

[5] This figure assumes that the annual population growth rate remains 3.2 percent per annum (UBoS 2002).

assume that the GoU will be fully responsible for the maintenance costs and these will be met from an increasing allocation to the education sector recurrent budget over the project lifetime.

Table 5 provides the summary of the cost benefit analysis undertaken. Based on the discount rate of 10 percent, we estimate that the project's benefit cost ratio is 3.2. The project would yield a net present value after investments of US$120 million over the 12 year period and produce an internal rate of return of 25 percent. The relatively high benefit cost ratio may be partly explained by the currently very large difference in earnings between secondary school graduates and those who dropout after the completion of primary school. It is expected that as the population of the secondary school graduates increases and that of primary school graduates who dropout decreases, the gap in earnings will decline.[6]

Table 5: Summary of cost benefit analysis, US$ millions

	Total Investment and	Present value	
Year	operation costs	Total Benefits	NPV
2009	2.81	0	-2.55
2010	21.75	0	-17.98
2011	35.64	0	-26.78
2012	31.79	0	-21.71
2013	15.24	0	-9.46
2014	7.488	0	0.00
2015	14.04	30	8.19
2016	14.04	60	21.44
2017	14.04	90	32.21
2018	14.04	120	40.85
2019	14.04	150	47.65
2020	14.04	180	52.88
Total	199	630	124.75
		BC	3.2
		IRR	25%
		NPV	$120.52

As earlier mentioned we assess to what extent some changes in the stated assumptions affects the expected benefits of the projects through a sensitivity analysis exercise. In particular, we focus on: (i) if the expected benefits of the projects are reduced e.g. arising from changes in economic conditions; and (ii) delays in the project implementation e.g. because the Ministry of Education and Sports takes considerably more time to acquire the land to construct the new secondary schools. In the first case, we consider the alternatives of: 10 percent reduction in benefits; 20 percent reduction in benefits; and 30 percent reduction in benefits. For the second case, we consider the following alternatives: 1 year delay in the project implementation; a 2 years delay in the project implementation; and 3

[6] Due to data limitations, we do incorporate this possibility in our estimations.

years delay in the project implementation. The summary results for the above two scenarios are presented in Table 6. In all the scenarios considered, the project would remain sustainable.

Table 6: Summary of sensitivity analysis

	Scenario of reduction in benefits			
	Base	10%	20%	30%
Total Benefit (US$ millions)	630	567	504	441
Benefit Cost ratio	3.2	2.8	2.5	2.2
Internal Rate of Return	25%	23	21	18
	Scenario of delays in implementation of the project			
	Base	1 year	2 years	3years
Total Benefit (US$ millions)	630	450	300	180
Benefit Cost ratio	3.2	2.4	1.8	1.1
Internal Rate of Return	25%	21%	14%	4%

However, the above results should be interpreted in the Ugandan context characterized by demand side challenges—notably high school dropout rates and low school attendance. For instance, out of the 179,000 students enrolling in secondary school in 2003, only 40 percent managed to reach the last grade of secondary school by 2008 (MoES, 2008). The largest dropout is registered after four years of secondary schooling, where more than half of the students who attended the Senior Four do not proceed to Senior Five after sitting for the Uganda Certificate of Education exams. Consequently, the results of our sensitivity analysis should be interpreted in the context of significant potential dropout after four years—due to either inadequate school fees or poor performance in national exams.

5. Potential evaluation of the project

A number of methods can be used to evaluate whether the project has attained its intended objectives. First, with regards to increase in the transition from primary to secondary school, the Ministry of Education and Sports undertakes an annual headcount and the results are published in the Education Statistical Abstract. Analysis of this information after 5 years of project implementation could provide evidence of an increases in the proportion of students enrolling in secondary school. Secondly, as a complement to the official education statistics, we would propose an impact evaluation survey in the communities benefiting from the project. In particular, we would undertake a sample surveys in at least 50 communities (25 communities having schools that have benefited from the project and another 25 communities as controls). Within the selected communities, we would undertake a detailed household sample survey—whose major objective would be to collect information on schooling of children. In addition to the household survey, we would undertake unannounced visits to the schools to capture information on school enrolment and attendance. Standard econometric techniques would be used to gauge: (1) whether the project has improved overall transitions from primary to secondary; (2) whether the proportion of girls has improved as result of the project; and (3) whether benefiting schools

on average have higher scholastic materials such as textbooks compared to schools that did not benefit from the project.

6. Conclusions and policy implications

This paper examines the cost effectiveness and benefit cost analysis of the Uganda Post Primary Education and Training Expansion and Improvement project supported by the Africa Development Bank during the 2008-2014 period. The project seeks to change the secondary school enrolment profile in Uganda by expanding the number of public secondary school places available as well as introduce a double shift system in some secondary schools—to expand access to secondary schooling. We face a major limitation in the analysis as we do not have any outcome measure. Nonetheless, we hypothesize that the benefits of the project can be represented by the expected earnings. Based on the expected post secondary school earnings as our only benefit considered—the project is very sustainable. Our sensitivity analysis also reveals that the projects remains sustainable even if the expected benefits are reduced by up to 30 percent or even if the project implementation is delayed by up to 3 years. Furthermore, the intervention has equity implications—favouring poor girls based on the net enrolment rate indicators whereas in the long term boys benefit more due to staying in secondary school longer.

Secondly, based on the gaps in secondary school attainment, the project is going to make only a small change in the secondary school enrolment profile for Uganda. Majority of UPE graduates join fee paying private schools. The fact that the government does not have enough secondary schools to take up the UPE graduates suggests serious resource constraints in the education sector. It is possible that the GoU may require to spend an additional US$90 million annually—in order to change the secondary school profile of the country. The government should use internal resources to expand such required secondary school space. As demonstrated since 2007 when the GoU intensified efforts to expand the country's infrastructure, substantial internal resources can be raised to address the current shortcomings in Uganda's secondary school system.

References

African Development Bank (2008), *Uganda Post Primary Education and Training Expansion and Improvement Project (Education IV Project): Project Appraisal Report*.

Deininger, K. and J. Okidi (2003) "Growth and Poverty Reduction in Uganda, 1992-1999: Panel Data Evidence", *Development Policy Review*, (21): 481-509.

Government of Uganda (2010) *National Development Plan 2010/11-2014/15* (Kampala: National Planning Authority).

Kappel, R. T., S. Steiner and J. Lay (2005), "Uganda: No more Pro-poor Growth?", *Development Policy Review*, 23(1): 27-53.

Ministry of Education and Sports (2008), *Education Statistical Abstract 2008(*Kampala: Ministry of Education and Sports).

Ministry of Finance, Planning and Economic Development (2011), *The Background to the Budget 2011/2012 Fiscal Year: Promoting Economic Growth, Job Creation and Improving Service Delivery* (Kampala: Ministry of Finance, Planning and Economic Development).

Ssewanyana, S and I. Kasirye (2010), "Gender differences in Uganda: The case for access to education and health services", EPRC Research Series #68.

Uganda Bureau of Statistics (2010), *2009/10 Uganda National Household Survey: Socio-economic report* (Kampala: Uganda Bureau of Statistics).

_____, (2007), *2005/6 Uganda National Household Survey: Socio-economic report* (Kampala: Uganda Bureau of Statistics).

_____, (2003) Uganda National Household Survey 2002-2003: Social Economic Report (Entebbe: UBoS).

_____, (2002) Uganda Population and Housing Census 2002 (Kampala: Uganda Bureau of Statistics).

_____, (1999) Uganda National Household Survey 1999-2000: Social Economic Report (Entebbe: UBoS).

_____, (1993) Integrated Household Budget Survey 1992-1993 (Entebbe: Statistics Department).

United Nations Development Program (2010), Human Development Report 2010: The Real Wealth on Nations: Pathways to Human Development (New York: United Nations).

UNESCO (2010), EFA Global Monitoring Report 2010: Reaching the marginalized (Oxford: UNESCO and Oxford University Press).

World Bank (2010), World Development Indicator database for 2009 (Washington, DC: The World Bank).

_____, (2005) *Project Appraisal Document on a Proposed Loan in the Amount of US$30 Million to the Republic of Costa Rica for the Equity and Efficiency of Education Project*.