Achieving Universal Primary and Secondary Education in Uganda
Access and Equity Considerations

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Poverty Reduction and Social Protection Groups
The World Bank
Washington D.C.

December 17, 2008

Abstract

Education policy in Uganda has evolved over time from elitism to inclusiveness and is now at the center of the country's Poverty Eradication Action Plan (PEAP). This paper uses the 1992 and 2005 nationally representative household surveys to assess the impact of the 1997 Universal Primary Education (UPE) and the 2007 Universal Secondary Education (USE) policies. Both policies entail the abolition of school fees for these two levels of education. We find that UPE did reduce school fees paid by families at the primary level of education. The reduction in school fees in turn led to a significant improvement in both access to and equity in primary schooling. However the policy did not increase the likelihood of completing primary schooling nor did it have any spillover effects for secondary education. Simulations from a probability model show that USE is likely to induce a big surge in secondary enrolment similar to the one associated with UPE at the primary level of education. This policy also has the potential of significantly improving the distribution of post primary education and training opportunities. The feasibility of these potential outcomes depends however on investment in space and other complementary inputs at levels commensurate with the expected influx of students.

* The authors are grateful to Kalpana Mehra, Roy Katayama, Léandre Bassolé and Francisco Haimovich for assistance with data processing at various stages of this work. The views expressed herein are entirely those of the authors or the literature cited and should not be attributed to the World Bank or to its affiliated organizations.

Introduction

The Millennium Declaration (United Nations 2000) identifies income, health, *education*, shelter and governance as critical components of the living standard that every policymaker should promote for the population. Similarly, Becker (1995) argues that a country's living standard is primarily determined by how well it succeeds in developing and utilizing the skills, knowledge, health and habits of its people. In this context, education plays a critical role in providing *individuals* and *society* with skills and knowledge to maintain and improve their standard of living. A key policy issue facing developing countries in particular is how to design and run their education systems in a way that effectively contributes to rapid socioeconomic development in a global and knowledge-based economy.

Formal education in Uganda comprises three basic levels. The primary level consists of seven grades (or standards) referred to as P1-P7 (where P stands for Primary). Children are supposed to start primary school when they are six years old. Successful completion entails an end of cycle examination, the PLE (or Primary School Leaving Examination). Pupils who have successfully completed primary school have two basic options at the secondary level namely general secondary, and vocational and technical education. General secondary education has two levels: the O-level and the A-level (where O stands for ordinary and A stands for advanced). The O-level or lower secondary takes 4 years and the corresponding grades are S1-S4 (S stands for senior[1]). At the end of this cycle, students sit for the Uganda Certificate of Education (UCE). Only UCE holders are eligible for upper secondary education at the A-level which covers forms S5-S6. At the end of this second cycle, students sit for the Uganda Advance Certificate of Education (UACE). The performance in this examination determines eligibility for university education. Both the UCE and the UACE are national examinations designed for certification and selection (Liang 2002). Total enrolment in primary school in 2007 was estimated at more than 7 million, (exactly 7,414,880) pupils (MoES 2007). For the same year, enrolment in the secondary education was estimated at 842, 683 students.

[1] Some documents translate this "S" as secondary.

Parallel to general secondary education, there is vocational and technical education system offered in the so-called BTVET (Business, Technical and Vocational Education and Training) institutions[2]. This generally takes three years. Primary school graduates also have the option of entering four year teacher training colleges. Most of the BTVET institutions are public (87.1 percent in 2007) unlike secondary education where only 35 percent of schools were government-owned in 2007. The share of private and community secondary schools in 2007 was respectively 47 and 18 percent (MoES 2007). A network of universities and colleges offer tertiary education.

A variety of socio-political crises in the 1970s and 1980s reversed the progress achieved by the education sector in Uganda since independence. It is reported for instance that, in 1985, the level of government expenditure on education was about 27% of that of the 1970s. Due partly to high costs to families, the gross primary enrolment rate stayed relatively constant for two decades after independence. It stood at 50 percent in 1980, the same rate as in 1960. A significant improvement was observed in 1985 when the gross primary enrolment rate increased to 73 percent. However, it remained at that level for about a decade until 1995 (Appleton, 2001).

Over time, education policy in Uganda has been shifting from elitism to promoting inclusiveness. Considering that education has both intrinsic and instrumental value for development[3], the Government of Uganda has placed education at the center of its Poverty Eradication Action Plan (PEAP). In 1997 the government committed itself to the provision of universal primary education (UPE). The UPE policy is in fact an integral part of a broader reform program which can be traced back to the creation in 1987 of the Education Policy Review Commission (EPRC) to formulate policy recommendations for all levels of education. In their 1989 report to the government, the Commission set an ambitious goal for primary education and recommended that education policy should ensure that *every child enrolls at the appropriate age and successfully completes the full cycle*[4] (Grogan 2008). The first response to this recommendation came in 1993 in the

[2] Technical institutions that require completion of secondary education are part of tertiary education.
[3] Indeed education contributes directly to human development and is an investment in economic prosperity.
[4] The Commission felt that this outcome is the minimum required for all citizens to have the basic education needed to lead a fulfilled life. They also noted that society would benefit a great deal from this outcome as it would most likely increase national unity, moral standards and prosperity (Uganda Ministry of Education and Sports 1999).

form of the Primary Education and Teacher Development Project supported by the United Nations Children Fund (UNICEF) which sought among other goals to introduce a country-wide evaluation framework for the overall progress in education.

The sudden increase in the demand for public primary education created a series of challenges for the government. These challenges relate mainly to (1) financing the reform, (2) improving the quality of primary education, (3) *ensuring equitable access to primary education*, and (4) planning beyond primary school. To address these challenges, the government adopted in 1998 the Education Strategic Investment Plan (ESIP)[5]. How well did the government respond to these challenges within the ESIP framework? Two major factors help ease the financing constraint. First, there was an improvement in aid delivery mechanisms. The government and its partners adopted a sector-wide approach (SWAP) instead of a project-based one to deliver support to the education system via the Medium Term Budget Framework (MTBF). The effectiveness of this institutional arrangement was further enhanced by the development of an effective and reliable Education Management Information System or EMIS (Penny et al. 2008). Second, the Heavily Indebted Poor Countries (HIPC) initiative led to an increase in funds available to the education sector.

As for the need to improve the quality of primary education, the government has focused on five areas: (1) curriculum development, (2) provision of basic learning materials, (3) primary teacher development, (4) language of instruction for lower primary, and (5) establishment and maintenance of standards. There is evidence that reform in all these areas has not yet produced a significant improvement in the quality of teaching and learning in Uganda. Test results from the National Assessment of Progress in Education (NAPE) between 1996 and 2000 show deterioration in student performance in terms of numeracy, reading, science and social studies (Bategeka 2005). The key factor explaining this outcome is a lack of coherence and consistency within the whole system composed of policy and administrative reforms and changes in teaching and learning methods (Penny et al. 2008).

[5] Penny et al. (2008) explain that the consultative planning process underpinning ESIP significantly improved the partnership between the Government of Uganda, civil society and aid agencies.

Overall education policy seeks to keep increasing in a sustainable manner equitable access to quality and relevant education. Thus, ten years after the introduction of the UPE program, the government launched (in 2007) Universal Post Primary Education and Training (UPPET) based on a partnership with the private sector[6]. The policy is also known as USE for Universal Secondary Education. This policy is particularly designed to address inequality in the distribution of PPET by deliberately targeting able primary school graduates who cannot afford the fees charged at the post primary level. In particular, user fees are abolished (through a scholarship or bursary program) for the targeted socioeconomic groups and conditional grants are made to participating institutions to help with their operational costs. The government is also engaged in a program of facility expansion.

The purpose of this paper is to assess the social implications of education policy reform in Uganda. The general evaluative issue of interest is *the effects of the shift in policy regime (school fee elimination along with associated institutional reforms) on educational outcomes and the distribution of such outcomes*. In particular we focus on the effect of the reform on enrolment, primary school completion and the cost of schooling. As far as equity is concerned, we consider how the policy effects vary with household income (*poverty* dimension), *gender* and *area of residence* (regional inequities). Our assessment relies on both the available literature on the effects UPE and our own econometric analysis of data from two nationally representative household surveys: the 1992 Uganda Integrated Household Survey (UIHS) and the 2005/2006 Uganda National Household Survey (UNHS).

The outline of the paper is as follows. Section 2 reviews some trends in the distribution of school attendance. Section 3 analyzes the effects of the 1997 reform on *enrolment, primary school completion* and *the cost of schooling*. The fact that we have repeated cross-section data imposes a constraint on the identification and estimation of the relevant policy effects and the comparison of outcomes across relevant socioeconomic groups. Section 4 focuses on the more recent USE policy and analyzes its likely impact on the propensity to enroll. Conclusions are presented in section 5.

[6] The partnership is governed by a signed Memorandum of Understanding between the government and the participating private institutions.

2. Trends in the Distribution of School Attendance

Table 2.1 Attendance Rates by Quintile of the per capita Expenditure Distribution

Uganda 1992 and 2005

	6 - 12 years			6 - 8 years			9 - 12 years			13-18 years		
Quintile	**All**	**Girls**	**Boys**	**All**	**Girls**	**Boys**	**All**	**Girls**	**Boys**	**All**	**Girls**	**Boys**
1992												
Total	**66.5**	**64.2**	**68.7**	**55.6**	**53.1**	**58.0**	**76.8**	**74.6**	**78.8**	**12.0**	**10.9**	**13.0**
1	50.2	45.7	53.9	37.2	33.5	40.5	62.3	58.0	65.7	2.6	2.4	2.8
2	62.2	58.7	65.4	50.5	47.3	53.4	73.6	69.7	77.2	6.2	4.9	7.4
3	68.5	66.5	70.5	54.7	51.5	57.9	81.6	81.0	82.2	9.2	9.1	9.3
4	73.7	70.9	76.3	65.2	62.9	67.2	81.8	78.1	85.6	14.5	11.9	17.5
5	84.2	83.1	85.5	79.0	77.6	80.4	88.8	87.6	90.2	27.5	24.1	31.3
2005												
Total	**88.1**	**88.4**	**87.7**	**80.7**	**81.4**	**80.1**	**93.6**	**93.5**	**93.7**	**21.9**	**23.5**	**20.4**
1	78.8	78.9	78.8	67.1	68.1	66.2	87.7	86.7	88.7	4.5	6.4	2.8
2	85.8	86.0	85.5	76.0	75.5	76.5	94.1	95.1	93.1	11.8	11.5	12.1
3	89.7	90.1	89.3	81.9	82.1	81.7	95.8	95.9	95.7	17.4	19.3	15.7
4	93.0	93.3	92.7	89.6	91.2	88.0	95.5	95.0	96.1	22.5	23.4	21.5
5	94.5	94.7	94.3	92.9	93.7	92.1	95.6	95.4	95.9	44.7	44.8	44.6

*All figures are percentages of respective age group.

Source: Computations from UIHS 1992 and UNHS 2005/2006 data

Our empirical analysis is based on the 1992 and 2005 nationally representative household surveys combined with two community surveys for the same years[7]. From the original datasets we retain a sample 16,607 individuals who were between 6 and 18 years old in 1992, and 14, 984 individuals of the same age group in 2005. In addition to the household/individual level information, we also merge the two surveys with a community level questionnaire that contains extra information about the level of development of the community that can be used as controls in our model. For example, we will use existence of primary and secondary (either public or private) school in the community and the

[7] The sampling frame is based on a two-stage sampling design and relies on information from the most recent Census. Enumeration areas (EA) are selected at the first stage and households are randomly drawn from each selected EA. The 1992 UIHS was conducted between March 1992 and March 1993 by the Statistics Unit of the Ministry of Finance and Economic Planning within the context of the Social Dimensions of Adjustment (SDA) project supported by the World Bank and the United Nations Development Program (UNDP). It covers 10 thousand households and 50 thousand individuals. The 2005 UNHS is the latest one available and was carried out by the Uganda Bureau of Statistics (UBOS) between May 2005 and April 2006 with financial support from the World Bank and the UK Department for International Development (DFID). It contains information for 7.5 thousand households and 43 thousand individuals. The data are organized in five modules: Socioeconomic, Agriculture, Community, Price, and a Qualitative module designed to provide information for a deeper understanding of the issues covered in the quantitative modules.

average of fees paid in the community as controls later on in our analysis of correlation of fees paid and school attendance.

Table 2.2 School Attendance and Reasons for Non-Attendance by Region
Uganda 1992 and 2005

	Uganda	Rural	Urban	Center	East	North	West
1992							
School attendance							
6-12 year olds in primary school (%)	66.5	64.6	82.2	78.8	67.1	51.6	65.0
6- 8 year olds in primary school (%)	55.6	52.7	79.2	72.2	52.9	37.7	55.4
9-12 year olds in primary school (%)	76.8	75.7	85.1	85.0	80.3	65.1	73.8
13-18 year olds in primary school (%)	43.6	45.0	34.9	38.5	45.1	50.8	42.1
13-18 year olds in secondary school (%)	12.0	9.1	29.0	18.5	10.8	8.0	8.5
Reasons for never attending/dropping out*							
Calamity in family, pregnancy, disabled	1.2	0.8	6.6	3.2	0.8	0.5	1.0
Lack of interest	49.2	49.5	45.2	44.9	51.5	50.3	48.6
Need to work	1.7	1.7	2.1	0.3	0.8	4.2	0.7
Cost of attendance	42.1	42.0	43.5	45.5	42.4	36.1	46.7
Transport/distance	3.3	3.4	0.7	3.7	2.3	5.0	1.8
Poor quality of school	0.3	0.3	0.0	0.6	0.5	0.2	0.2
Other	2.2	2.2	1.9	1.8	1.7	3.8	1.0
Number of individuals (6-18 years)	16,607	11,027	5,580	4,427	4,172	4,089	3,919
2005							
School attendance							
6-12 year olds in primary school (%)	88.1	87.4	92.1	92.7	89.7	79.2	88.4
6- 8 year olds in primary school (%)	80.7	79.5	89.2	89.4	81.5	67.7	81.2
9-12 year olds in primary school (%)	93.6	93.6	94.1	95.0	96.2	88.4	93.7
13-18 year olds in primary school (%)	57.1	61.2	35.7	45.1	62.4	64.9	60.8
13-18 year olds in secondary school (%)	21.9	18.4	40.0	31.7	22.4	10.3	18.1
Orphans (%)	5.5	7.3	5.2	4.9	7.5	3.2	6.9
Children with one alive parent (%)	16.7	16.4	18.6	19.8	14.9	15.8	15.6
Reasons for never attending/dropping out*							
Calamity in family, pregnancy, disabled	7.5	7.5	8.0	11.4	9.5	5.1	6.8
Lack of interest	56.3	58.8	26.9	29.9	73.7	57.0	57.6
Need to work	8.9	9.3	4.2	3.8	2.5	17.9	4.0
Cost of attendance	12.8	10.1	44.7	36.1	6.5	4.7	15.4
Transport/distance	5.8	6.3	0.0	5.4	2.6	4.6	11.0
Poor quality of school	1.2	1.3	0.5	4.1	0.2	0.7	1.1
Orphaned/displaced	1.1	0.9	3.8	0.6	1.6	1.4	0.5
Other	6.3	5.8	11.9	8.7	3.5	8.6	3.5
Number of individuals (6-18 years)	14,984	11,895	3,089	3,975	4,087	3,238	3,684

Source: Computations from UIHS 1992 and UNHS 2005/2006 data

* Percentages for reasons for non-attendance refer to children 6-12 years old

Table 2.1 presents attendance rates by quintile of the distribution of per capita expenditure for both 1992 and 2005. For each year and each socioeconomic group

considered here, the data clearly show that attendance is an increasing function of household income.

Focusing on 1992, prior to the introduction of UPE, we note a big gap between the poor and the non-poor. The attendance rate for the poorest quintile in the 6-12-year old group is about 50 percent compared to 84 percent for the richest. A similar gap is observed for the other age groups as well. The data also reveal a gender bias for all age groups and income levels. Attendence rates are consistently higher for boys than for girls.

Comparing 1992 attendance rates with 2005 reveals a significant increase in overall attendance among primary school age children (6-12 years old) and that of the poor. At the bottom quintile, attendance rate has increased by more than 28 percentage points (from 50.2 percent in 1992 to 78.8 percent in 2005). However, the gap between the bottom and the top quintile does not seem to be narrowing. The gender difference in attendance seems to have disappeared in 2005. As noted in the introduction, one of the education policy objectives in Uganda is to get students to enroll at the right age. The age of enrolment is indeed a key determinant of dropout rates. Focusing now on the 6-8-year age group, we note that they have the lowest attendance rates both in 1992 and 2005 compared with the 9-12-year age group. However, the enrolment rate seems to have gone up significantly, jumping from 37 percent in 1992 to about 81 percent in 2005.

Attendance rates for secondary school age children (13-18 years old) did also increase between 1992 and 2005. The increase, however, does not seem as dramatic as for the case of primary school age children. While there was a gap between boys and girls in 1992, this seems to have disappeared in 2005. Overall, the enrolment rate for girls is somewhat higher than that of boys (23.5 percent versus 20.4 percent).

Table 2.2 presents information on attendance and reasons for non-attendance by region. There is a bias in favor of urban residents both for the 6-12-year and the 13-18-year age groups. For the primary school age group this bias has shrunk significantly between 1992 and 2005. The difference between enrolment rate for urban children and that of rural children decreased from about 18 percent in 1992 to about 5 percent in 2005.

For the secondary school age children, this difference remained at about 20 percent[8]. Looking at the regional distribution of attendance, we note that for both years, the Central Region has the highest attendance rates for all age groups while the Northern Region has the lowest.

The information about the reasons for non-attendance or dropping out reveals two key determinants of this outcome: lack of interest and the cost of attendance. However, the importance of cost as a reason for not attending school has significantly declined. The overall percentage of children non-attending school for cost-related reasons decreased form 42 percent in 1992 to about 13 percent in 2005. The urban-rural comparison shows that the level of this constraint has not changed in the urban areas and has not declined much for the Central Region (going from about 46 percent in 1992 to about 36 percent in 2005). Lack of interest remains a severe constraint to attendance. The overall score for this factor increased from 49 percent in 1992 to 56 percent in 2005. Looking at the regional distribution we note that it decreased only for the Central Region, moving from 45 percent in 1992 to 30 percent in 2005

These observed trends in enrolment suggest that the UPE policy may have induced a dramatic increase in primary school attendance, but (as noted earlier) may have also led to a decline in the quality of education. For policy analysis it is important to ascertain that this is not due to some diffuse change in the overall socioeconomic environment. We need to determine the extent to which the outcome can be attributable to the policy shift. In the next section, we present some econometric evidence that ought to increase our confidence, to a significant extent, that the increase in primary enrolment is due to the 1997. We will also demonstrate that the policy shift had no significant spill-over effects on secondary school outcomes. Furthermore, we will assess the equity dimension of these results by considering the impact across various socioeconomic groups.

[8] These observations are consistent with those made by Deininger (2003) when comparing the situation in 1992 with that prevailing in 1999. He observes a reduction of the urban bias in access to primary education and no change in the bias for access to secondary education.

3. The Impact of UPE

As noted earlier, the UPE policy is in fact an integral part of a broader reform program. But it is commonly characterized by the elimination of fees at the primary school level. This is accomplished through two types of grants designed to increase equitable access to primary education: the capitation and school facilities grants (SFG), the purpose of the *capitation grant* is to shift some of the burden of school fees from the parents to the government[9], and to provide schools with resources necessary to run the school and support teaching and learning. The capitation grant is meant to cover tuition fees only. Families remain responsible for writing material, uniforms and lunches. This grant is paid to schools in nine monthly installments at an annual rate of 5000 Ugandan shillings (about $3.00) per pupil in P1 to P3 and 8100 Ugandan shillings ($4.75) per pupil in P4 to P7 (Penny et al. 2008)[10]. The SFG is designed to assist schools in the neediest communities to build classrooms, latrines and teachers' houses, and to procure furniture. After a favorable review in 1999, it became the only mechanism through which public funds are channeled to the construction of school facilities. By 2004, a total of 29,000 have been built. Both grants are conditional to the extent that funding is given to Districts or municipalities under strict guidelines and regulations and the supervision of the Ministry of Education and Sports[11].

Identification Strategy

We would like to assess the impact of the UPE policy on schooling outcomes such as enrolment or P7 completion, and on inequality associated with income, gender and area of residence. In addition, we are interested in the extent to which the policy did reduce the cost of education. Ideally, we need a causal model for the identification and hence estimation of the impact of an intervention such as UPE. Given that the effect of a cause can be understood only in relation to another cause (Holland 1986), the analysis of

[9] In 1991, it is reported, parents paid up to 90 percent of recurrent and capital expenditure for primary education (Oketch and Rollestone 2007).

[10] For students in P7 the government also pays the registration fees to the National Examination Board or NEB (Bategeka 2005).

[11] For instance, guidelines from the MoES require primary schools to spend capitation grant as follows: 50 percent on instructional material, 30 percent on co-curricular activities such as sports and clubs, 15 percent on utilities and maintenance, and 5 percent on school administration (Bategeka 2005).

the incidence of any public policy entails a *normalized* comparison of outcomes *with* and *without* the policy. Normalization is the process of controlling for confounders. This is easily done in the context of a random experiment. Unfortunately, we have only observational data.

Our strategy is to mimic the above idea within the framework of regression analysis. Given that UPE took effect in 1997, observations for 1992 represent the base case without the policy while schooling outcomes observed in 2005 are presumably due in part to the continued implementation of UPE. Furthermore, we exploit the apparent discontinuity in the probability of enrolment observed in 1997. The UPE initiative has indeed had a remarkable impact on primary enrolment rates. Gross enrolment rates in primary school jumped from 77 percent in 1996 to 137 in 1997 and net enrolment rose from 57 percent to 85 percent. By 1999, when 19 percent of the population was of primary school age, enrolment in P1 increased threefold with girls accounting for 47 percent of enrolments (Oketch and Rollestone 2007).

If we let $\mathbf{S_{it}}$ stand for an indicator of attendance status (enrolled or not enrolled) of child **i** in year **t**=1992 or 2005. We think of this outcome as a function of individual, household and community characteristics ($\mathbf{X_{it}}$) such as gender, income, parental education. In addition, this indicator depends on a time trend (**T**) and unobservables ($\varepsilon_{\mathbf{it}}$) assumed to be independently and identically distributed. The time variable **T** is a dummy variable which is equal to one for 2005 (to mark exposure to UPE regime), and zero for 1992 (indicating no-exposure). Following Deininger (2003) we use regressions of the form:

$$S_{it} = \alpha + \beta X_{it} + \gamma T + \delta X_{it} T + \varepsilon_{it} \qquad (3.1)$$

The *interaction terms* in the above equation play a crucial role in our assessment and interpretation of various effects of the policy shift to the UPE regime. We think of the dummy variable **T** (representing the shift in policy regime) as having a moderating influence on the effects of the individual and household characteristics on the schooling

outcomes. The dummy variable **T** is a *moderator* variable[12]. The coefficient (γ) associated with the moderator variable here represents the effect of any secular trend captured by **T**. The other coefficients in the model are easily interpreted within the logic of Difference-in-Difference estimation.

Table 3.1 A Difference-in-Difference Interpretation of Interaction Effects

	Male	**Female**	**Difference**
	(1)	**(0)**	
Pre-UPE (1992)	$\alpha+\beta_m$	α	β_m
Post-UPE (2005)	$\alpha+\beta_m+\gamma+\delta_m$	$\alpha+\gamma$	$\beta_m+\delta_m$
Difference	$\gamma+\delta_m$	γ	δ_m

To be specific, let's consider the case of the impact of UPE on gender bias. Thus, we include a dummy variable, say $\mathbf{X_m}$, equal 1 for boys and zero otherwise. The policy impact on gender bias is equal to the conditional expectation of the response variable (e.g. enrolment status) in 2005 for boys minus the conditional expectation of enrolment status for girls. When focusing on the gender dimension, all other explanatory variables are held constant (e.g. at their mean value). We can safely ignore these to consider the interaction effects on the basis of this simpler expression: $S = \alpha + \beta_m X_m + \gamma T + \delta_m X_m T + \varepsilon$. The conditional expectation for boys is therefore equal to $E(S \mid T = 1, X_m = 1) = \alpha + \beta_m + \gamma + \delta_m$. That for girls is: $E(S \mid T = 1, X_m = 0) = \alpha + \gamma$. The impact of the UPE regime on the gender bias is thus given by the conditional first difference: $E(S \mid T = 1, X_m = 1) - E(S \mid T = 1, X_m = 0) = (\beta_m + \delta_m)$. This result is reported at the intersection of the third row and fourth column of table 3.1. Given the dichotomous

[12] By definition, a moderator is a qualitative or quantitative variable that affects the direction or strength of the relationship between a response variable and a predictor or independent variable (Baron and Kennedy 1986). For instance, the shift in policy regime (the moderator) may affect the impact of gender (a predictor) on schooling outcomes (response variables).

nature of the variables involved, we can write this result as follows: $\frac{\Delta E(S \mid T=1)}{\Delta X_m} = (\beta_m + \delta_m)$.

Table 3.2. Impact of UPE on the Probability of School Attendance for Various Age Groups

Variables	(1) Age 6-12	(2) Age 6-8	(3) Age 9-12	(4) Age 13-18	(5) Age 6-18
T	0.719***	0.526***	0.832***	0.518***	0.685***
	(6.001)	(2.720)	(5.797)	(3.198)	(6.960)
Household Income	0.096***	0.107***	0.083***	0.042***	0.067***
	(10.05)	(7.622)	(6.755)	(3.497)	(8.778)
Income*T	-3.524e-02***	-1.387e-02	-4.852e-02***	-2.815e-03	-2.591e-02**
	(-2.889)	(-0.704)	(-3.327)	(-0.173)	(-2.573)
Male	0.056***	0.050***	0.060***	0.186***	0.108***
	(5.156)	(3.130)	(4.433)	(13.00)	(12.37)
Male*T	-0.058***	-0.064***	-0.049***	-0.135***	-0.088***
	(-4.274)	(-2.941)	(-3.169)	(-7.005)	(-7.790)
Father's Education	0.067***	0.060***	0.069***	0.113***	0.087***
	(10.99)	(6.480)	(9.375)	(13.99)	(17.74)
Father's Education*T	-0.045***	-0.030**	-0.055***	-0.070***	-0.056***
	(-6.007)	(-2.421)	(-6.576)	(-6.617)	(-8.958)
Mother's Education	0.069***	0.089***	0.066***	0.068***	0.075***
	(9.227)	(7.634)	(7.483)	(6.669)	(12.33)
Mother's Education*T	-0.057***	-0.067***	-0.056***	-0.040***	-0.052***
	(-6.219)	(-4.408)	(-5.546)	(-3.037)	(-6.851)
Eastern Region	-0.050***	-0.113***	0.009	0.046**	-0.012
	(-3.396)	(-5.039)	(0.505)	(2.255)	(-0.964)
Eastern*T	0.057***	0.087***	0.025	0.063**	0.058***
	(3.150)	(2.996)	(1.228)	(2.317)	(3.730)
Northern Region	-0.167***	-0.211***	-0.116***	0.093***	-0.066***
	(-10.18)	(-8.849)	(-5.653)	(4.215)	(-4.962)
Northern*T	0.107***	0.104***	0.096***	-0.066**	0.036*
	(4.962)	(3.068)	(3.766)	(-2.051)	(1.944)
Western	-0.040***	-0.054**	-0.025	0.055***	-0.001
	(-2.633)	(-2.365)	(-1.329)	(2.637)	(-0.104)
Western *T	0.021	-0.005	0.037*	-0.005	0.007
	(1.100)	(-0.182)	(1.646)	(-0.173)	(0.417)
Urban	-0.034**	0.035	-0.101***	-0.030	-0.045***
	(-2.325)	(1.634)	(-5.036)	(-1.451)	(-3.660)
Urban*T	0.032*	-0.037	0.097***	-0.059**	0.008
	(1.811)	(-1.331)	(4.314)	(-2.038)	(0.481)
Constant	-0.512***	-0.723***	-0.300**	-0.348***	-0.385***
	(-5.591)	(-5.404)	(-2.532)	(-2.934)	(-5.257)
Observations	16383	7640	8743	10586	26969
R-squared	0.175	0.205	0.169	0.167	0.157

Source: Authors' Computations; *** p<0.01, ** p<0.05, * p<0.1
Coefficients for repair dummy variables not shown
Robust t statistics in parentheses

The conditional first differences reported in the last column of table 3.1 show changes in gender bias over time. The last element in that column is the coefficient of the

interaction term and is equal to the difference in these conditional first differences. Similarly, the conditional first differences reported in the last row of table 3.1 show how expected enrolment changes over time for each group. It is clear that the coefficient of the interaction term is also equal to the difference in these first differences. This result can be stated in terms of the following second order characteristic of the relevant conditional distribution: $\frac{\Delta^2 E(S \mid T, X_m)}{\Delta T \Delta X_m} = \delta_m$.

Baseline

Table 3.2 presents estimation results for equation (3.1) applied to a pooled dataset combining observations for 1992 and 2005. The specification uses a linear probability model because it is consistent with the difference-in-difference interpretation of the parameters discussed above. These results confirm that household income, gender, parental education and area of residence are key factors affecting the probability of school attendance in 1992. The estimates of the coefficients associated with these characteristics are all statistically significant at the highest degree. In particular, these estimates confirm most of the suggestions by the descriptive evidence discussed earlier. The likelihood of enrolment increases with household income, hence the big gap observed in 1992 between poor and non poor.

Regardless of the age group considered, the probability of enrollment in 1992 was at least 5 percent higher for boys than for girls. Parental education (both father and mother) have a strong and positive effect on the probability of attendance. With respect to regional disparities, the results seem to suggest that, other things being equal, rural children faced a higher probability of attendance than their urban counterparts. For the primary school age group, children in the Central region were more likely to be enrolled than their peers in the Eastern, Northern and Western regions. The reverse is true for the secondary age group. Now, children in the Eastern, Northern and Western regions were at least 5 percent more likely to be enrolled compared to their peers in the Central region.

Moderator Effects on Income, Gender and Area of Residence

Table 3.3. Impact of UPE on the Probability of School Attendance by Level of Education

Variables	(1) Less than Primary	(2) Some Secondary
T	0.681***	0.095
	(6.622)	(0.270)
Household Income	0.065***	0.091***
	(8.182)	(3.333)
Income*T	-2.258e-02**	7.558e-03
	(-2.150)	(0.218)
Male	0.106***	0.130***
	(11.69)	(4.150)
Male*T	-0.088***	-0.113***
	(-7.573)	(-2.751)
Father's Education	0.090***	0.076***
	(17.27)	(4.936)
Father's Education*T	-0.057***	-0.037*
	(-8.691)	(-1.861)
Mother's Education	0.082***	0.029*
	(12.69)	(1.748)
Mother's Education*T	-0.060***	-0.003
	(-7.471)	(-0.133)
Eastern Region	-0.017	0.041
	(-1.351)	(0.973)
Eastern*T	0.048***	0.099*
	(3.043)	(1.837)
Northern Region	-0.076***	0.106**
	(-5.506)	(2.129)
Northern*T	0.028	-0.054
	(1.525)	(-0.734)
Western Region	-0.002	-0.018
	(-0.117)	(-0.368)
Western*T	-0.006	0.090
	(-0.371)	(1.522)
Urban	-0.044***	-0.025
	(-3.367)	(-0.696)
Urban*T	0.025	-0.053
	(1.482)	(-1.101)
Constant	-0.380***	-0.587**
	(-4.951)	(-2.146)
Observations	24440	2529
R-squared	0.167	0.119

*** p<0.01, ** p<0.05, * p<0.1
Robust t statistics in parentheses

Has the policy shift made any difference with respect to the situation prevailing in 1992? As explained earlier, the answer to this question hinges on the sign and significance of the coefficients of the interaction terms (δ_j) and of the moderator effect (β_j

$+\delta_j$). First of all we note that the coefficient of the time dummy (γ) is positive and significantly different from zero, implying that the probability of enrollment significantly increased over time for everybody. Furthermore, the interaction coefficient for income is negative and significant for the primary age group. This is not the case for the secondary age group. Thus the policy shift has relaxed, to some extent, the income constraint on the probability of enrolment to primary school but not for secondary school. However, the policy did not remove this constraint completely because we are able to reject the hypothesis that the effect of income in 2005 ($\beta_y + \delta_y$) is equal to zero.

Our results also show that UPE has eliminated gender bias in primary education, but not in secondary education. Indeed, we are unable to reject the hypothesis that gender had no impact on the probability of primary school attendance. Yet we easily reject it for the secondary age group. Regional disparities in primary enrollment have also been reduced by UPE according to our results. For secondary enrollment, there seems to be no significant reduction in regional disparities, except maybe for the Northern region compared to the Central region.

We re-estimated the same model on two different sub-samples depending on the level of education. The results are reported in table 3.3 where column one corresponds to those who have less that primary education and column 2 contains results for those who have completed primary education or have some secondary education. These results confirm the importance of income, gender and parental education as key determinants of school attendance. The results for the area of residence are also similar to those discussed above, particularly when comparing the primary school-age group with the secondary school-age group. As far as the moderator effects are concerned, they seem more significant for those with less than primary education than for the second group. In particular, there is no significant shift in the propensity to enroll for the group with some secondary education. Furthermore, the policy did not relax the importance of the income constraint for this group.

Age at Enrolment and Completion

As noted earlier in the introduction, the EPRC recommended that education policy ensures that every child enrolls at the appropriate age and successfully completes

the full cycle. Recognizing the fact that age at which students enroll in school is a key determinant of drop-out, Grogan (2008) uses data from the 1995 and 2000 DHS along with the 2001 DHS EdData survey[13] for Uganda to assess the impact of UPE on the likelihood of enrolling in school before the age of nine. In the first step of her analysis, she demonstrates that starting school before age 9 is associated with a 16-26 percent increase in the probability of completing at least seven years of schooling[14].

Furthermore, using the framework of regression discontinuity from the program evaluation literature, Grogan (2008) shows that school fee elimination associated with the UPE policy had a causal and positive effect on the propensity to attend primary school before age nine. The overall effect is estimated at 3 percent. Looking beyond this average effect, it is found that among girls who benefited from UPE before their ninth birthday, the probability of enrolling before this age increased by 5 percent. No such effect was observed for boys in similar circumstances. In the rural areas, UPE led to 3.4 percent increase in the propensity to enroll prior to age nine.

The EPRC recommendation focused on both enrolment at appropriate age and successful completion of the full cycle. Given Grogan's finding that early start significantly increases the probability of completing at least seven years of schooling, we analyze the impact of the policy shift on primary school completion. In particular, we focus on the probability of completing P7 for various age groups. Our results are presented in table 3.4. The results for the full sample appear on column 1. As in the case of enrolment, household income, age, parental education and urban residence have a positive and significant effect on the probability of completing P7. Interestingly the coefficient of the moderator variable is negative and significant. This suggests that the

[13] It is reported that this survey collected information on the age at which children started and finished schooling, educational attainment and reasons for non-attendance. It also collected information on the extent to which parents and guardians were aware of the UPE program, and their assessment of the quality of local schools.

[14] The oldest cohort in the sample was born in 1982 and the author uses this as the reference birth year. The youngest was born in 1992. Given the structure of the education system in Uganda, the 1982 and 1983 cohorts were 11 and 10 respectively in 1994. Thus, those who started school at the age of 10 should have completed at least 7 years of schooling by the time of the EdData survey (Grogan 2008). The data show that 87 percent of this group had completed at least 7 years of education. The same data also show that starting school after the age of 9 is associated with a greater risk of dropping out before completion. With respect to the reference birth year 1982, no significant differences in the probability of enrolling before age 9 were found among children born in 1983 through 1987. However, those born between 1988 and 1992 had a greater propensity to enroll before age 9 than those born in the reference birth year.

Table 3.4. Probability of Completing P7

Variables	(1) All Ages	(2) At 13	(3) At 14	(4) At 15	(5) At 16
T	-0.221***	-0.337*	-0.912***	0.255	-0.368
	(-3.233)	(-1.712)	(-3.365)	(0.840)	(-0.954)
Household Income	0.034***	0.021*	0.013	0.091***	0.109***
	(8.196)	(1.744)	(0.904)	(4.121)	(4.373)
Income*T	2.443e-02***	2.975e-02	9.665e-02***	-2.139e-02	5.668e-02
	(3.486)	(1.489)	(3.578)	(-0.678)	(1.455)
age	0.031***				
	(48.87)				
Male	0.005	-0.010	0.006	-0.010	0.027
	(1.108)	(-0.856)	(0.422)	(-0.394)	(0.890)
Male*T	-0.022***	-0.010	-0.046	-0.045	-0.130***
	(-3.039)	(-0.527)	(-1.638)	(-1.164)	(-2.678)
Father's Education	0.019***	0.022**	0.015*	0.039**	0.052**
	(6.947)	(2.557)	(1.675)	(2.409)	(2.533)
Father's Education*T	0.004	0.014	-0.013	0.030	-0.031
	(0.827)	(0.986)	(-0.776)	(1.308)	(-1.076)
Mother's Education	0.025***	0.033**	0.055***	0.072***	0.103***
	(6.484)	(2.184)	(4.042)	(3.492)	(4.077)
Mother's Education*T	-0.008	0.022	0.010	-0.002	-0.046
	(-1.408)	(1.082)	(0.443)	(-0.0711)	(-1.359)
Eastern Region	-0.012*	0.021	-0.049**	-0.031	0.012
	(-1.796)	(1.373)	(-2.140)	(-0.852)	(0.250)
Eastern*T	-0.001	-0.055*	0.006	-0.060	-0.035
	(-0.122)	(-1.919)	(0.132)	(-1.058)	(-0.456)
Northern Region	-0.010	0.030*	-0.021	-0.011	-0.069
	(-1.455)	(1.720)	(-0.923)	(-0.273)	(-1.538)
Northern*T	-0.025**	-0.065**	-0.043	-0.128**	-0.030
	(-2.247)	(-2.291)	(-0.923)	(-2.124)	(-0.383)
Western Region	-0.003	0.041**	-0.003	0.009	-0.037
	(-0.413)	(2.118)	(-0.145)	(0.237)	(-0.861)
Western*T	-0.026**	-0.061*	-0.063	-0.129**	-0.021
	(-2.452)	(-1.875)	(-1.488)	(-2.168)	(-0.293)
Urban	0.042***	-0.009	0.037	0.073	0.101*
	(4.663)	(-0.375)	(1.320)	(1.566)	(1.726)
Urban*T	0.013	0.044	0.200***	0.161**	0.048
	(0.936)	(1.088)	(3.238)	(2.312)	(0.600)
Constant	-0.712***	-0.298**	-0.185	-0.959***	-1.132***
	(-17.36)	(-2.519)	(-1.336)	(-4.573)	(-4.778)
Observations	26969	2018	1866	1778	1633
R-squared	0.239	0.173	0.236	0.253	0.222

*** p<0.01, ** p<0.05, * p<0.1
Coefficients for repair dummy variables not shown
Robust t statistics in parentheses

policy shift may not have improved the chances of P7 completion. Also, the interaction of this variable with the household income has a positive and significant effect on the

probability of P7 completion, meaning that the policy shift has tightened the income constraint on the chances of completing P7.

We disaggregated the above results by running the same probability model on different age groups, 13-16 (see column 2-5). These results are more or less in line with the aggregate ones. No age group saw an improvement in its chances of completing P7 following the policy shift. Furthermore, household income remained a seriously binding constraint on the likelihood of primary school completion, particularly for the 14 year old. The interaction term (for income) has a positive and significant effect on the probability of completion of P7 at 14. Achieving this outcome after the policy shift became harder for poor households than for nonpoor. In the context of Uganda's school system, primary school completion at age 14 is pretty close to on time completion, if one enrolls at age 6, allowing only one repetition.

The Cost of Attendance

Deininger (2003) argues that the big surge in enrolment associated with the reduction of the cost of schooling is evidence that this cost was a significant impediment to primary school attendance by the poor. Using data from the 1992 Uganda Integrated Household Survey (UIHS) and the 1999/2000 Uganda National Survey (UNHS), this author presents some econometric estimates showing a significant decrease of the importance of parental income as a determinant of children's enrolment. We are able to confirm these findings using the same baseline dataset (i.e. 1992) and the 2005/2006 UNHS within a different modeling framework to account for potential selection bias. The descriptive statistics presented in table 2.2 also show that the percentage of children not attending primary school for cost reasons dropped from 42 in 1992 to about 13 in 2005. It is possible that this may have led to an increased in delayed enrolment. The same data also show that the percentage of 13-18 year olds in primary school increased from about 44 in 1992 to 57 in 2005. We now proceed to a more rigorous analysis of the impact of UPE on the cost of school attendance.

Our assessment of the impact of the policy shift on the cost of attendance is based on a model analogous to equation (3.1) which was applied to the other outcomes of

interest. The dependent variable now is the logarithm of school fees paid (as reported by the household). The results for three variants of this model are reported in

Table 3.5. Impact of UPE on the Cost of Attendance

Variables	(1) All	(2) Primary	(3) Secondary
T	1.068***	1.139***	0.986***
	(13.11)	(13.20)	(4.200)
Public School	0.039	0.018	-0.221**
	(1.353)	(0.550)	(-2.112)
Public*T	-1.105e+00***	-1.408***	0.386***
	(-24.71)	(-28.63)	(2.997)
Level	1.512***		
	(36.93)		
Age	0.079***	7.629e-02***	1.268e-01***
	(22.26)	(21.95)	(4.533)
Male	0.003	0.017	-0.078
	(0.115)	(0.735)	(-0.916)
Male*T	-0.002	-0.003	-0.096
	(-0.0548)	(-0.0590)	(-0.763)
Father's Education	0.071***	0.055***	0.172***
	(5.754)	(4.246)	(4.042)
Father's Education*T	0.007	0.037	-0.123**
	(0.298)	(1.536)	(-2.030)
Mother's Education	0.110***	0.113***	-0.007
	(7.350)	(7.102)	(-0.144)
Mother's Education*T	0.036	0.056*	0.064
	(1.313)	(1.932)	(0.891)
Eastern Region	-0.685***	-0.714***	-0.366***
	(-20.58)	(-19.65)	(-3.367)
Eastern*T	0.498***	0.532***	-0.033
	(7.973)	(7.898)	(-0.206)
Northern Region	-1.229***	-1.242***	-1.252***
	(-34.75)	(-32.70)	(-9.409)
Northern*T	0.572***	0.463***	0.842***
	(7.988)	(6.143)	(3.935)
Western Region	-0.987***	-0.996***	-0.716***
	(-29.49)	(-27.88)	(-5.679)
Western*T	0.693***	0.736***	0.873***
	(12.22)	(12.42)	(5.046)
Urban	0.569***	0.590***	0.117
	(22.10)	(21.38)	(1.234)
Urban*T	0.201***	0.231***	0.403***
	(4.085)	(4.417)	(2.948)
Lambda	-1.155	-1.023	-1.304***
	()	()	(-6.980)
Constant	8.314***	8.266***	
	(140.9)	(135.3)	
Observations	19479	17455	
R-squared	.	.	

table 3.5. All these specifications take in account the fact that we observe school fees only for students who are enrolled and not for those who do not attend school. These creates a potential for selection bias which we deal with by explicitly modeling the propensity to attend school and applying Heckman's (1976) two-step estimator.

This approach requires a simultaneous modeling of both selection and outcome. Analogously to instrumental variable estimation, identification hinges on the exclusion restriction. In other words, the approach relies on the variation of at least one exogenous variable that affects participation (enrolment) but not the outcome (fees paid). The specification presented in the first column of table 3.5 uses the full sample and excludes household income from the outcome equation. The results for the primary and secondary levels of education reported in columns 2 and 3 employ community-level cost and peers attendance rate as identification. Thus at the household level the construction of these variables excludes the information pertaining to the household under consideration.

The results presented in table 3.5 show that, over time, there has been a significant increase in school fees paid by families at all levels of schooling. The finding is based on the fact that the coefficient of the time trend in all three equations is positive and significant (at one percent level). Because the coefficient of the dummy indicator for public schools is not significantly different from zero particularly for primary schools, there may not have been any difference in fees between the public and the private sector in 1992. But, the fact that the interaction term (public dummy and policy shift) is negative and significant means that in 2005, students in public primary schools were paying less than they used to pay in 1992. This suggests that UPE may have been pro-poor to the extent that it brought down the cost of attending public primary schools.

Interestingly, the moderator effect of the policy is negative and significant for the primary level of education, but positive and significant for the secondary level. This suggests that the policy shift may have indeed moderated the increase in school fees at the primary level but there was no spillover effect to the secondary level. In particular, our results show that in 2005 fees paid at the secondary level of education were higher in public than in private schools. The negative and significant coefficient of the dummy indicator of public schools suggests that this was not the case in 1992. This is bound to have had a negative impact on the enrolment of poor children in secondary schools.

With respect to regional disparities, we find that students in the urban areas have always paid higher fees than their counterparts in the rural areas. The policy reform did not change this. Also, we find that, on average, the Central region paid higher fees than any other region in 1992, but the policy seems to have reduced this gap to some extent.

4. What to Expect from the Universal Secondary Education Policy

The success of the UPE policy (at least in terms of increased enrolment) immediately raised second generation issues involving post primary education and training. These include (Penny et al 2008): (1) Financing education reform; (2) Improving the quality of primary education; and (3) Increasing access, equity and efficiency for post primary education and training (PPET). Thus policy development for PPET is a natural outcome of the UPE strategy as policy makers realized right away that increasing the number of students reaching the final year of primary school (P7) would induce an increased demand for places in the secondary. Furthermore, failure to expand access to PPET would undermine the sustainability of UPE as parents of primary school age children would realize that there are limited opportunities beyond primary school.

Table 4.1. Age-Specific Enrolment Ratio (in %) for Secondary School in 2000

Age	Age-Specific Enrolment Ratio
13	2
14	8
15	15
16	19
17	22
18	20
19	16
20	11
21	8
22	7
23	3
24	2
25	1
NER	13
GER	19

Source: Liang (2002)

Before considering the current policy response to the above challenges, we quickly review how the prevailing system has fared in some of the areas of interest, focusing on *access* and *equity*. There is no official age of entry into secondary education. In principle, a child who starts primary school by age six, does not dropout nor repeat a class would be thirteen years old by the time she enters secondary education. Naturally, late entry enrolment into primary combined with repetition in that cycle will entail late enrolment in the secondary as well. Table 4.1 shows age-specific enrolment ratio for secondary school in 2000. These data indicate that the enrolment ratio increases from 2 percent for thirteen-year old, reaches a peak of 22 percent at age 17 and declines progressively to 1 percent at age 25. It is clear that overage enrolment carries over to secondary school, and that is probably one of the factors driving down the net enrolment ratio, estimated at 13 percent in 2000.

Table 4.2. Transition Rates in Public Schools from P7 to S1 (in %)

	2000	2001	2002	2003	2004	2005	2006	2007
Boys	61	56	65	57	61	69	68	70
Girls	70	66	74	63	63	70	71	73
Overall	65	61	69	59	62	69	70	72

Source: Ministry of Education and Sports (2007)

The low coverage observed for secondary education is certainly a result of an interaction between the transition rate from primary to secondary school and the dropout rate at the secondary grades. Table 4.2 shows that the primary to secondary transition rate has increased from about 36 percent in 1997 (Liang 2002) to about 72 percent in 2007 (MoES 2007). Overall, transition rates for girls tend to be higher than those for boys. This is an indication of a narrowing of gender disparity with respect to this measure of performance. However, the enrolment patterns in secondary education and BTVET system still show significant gender disparity (see tables 4.3&4.4).

Table 4.3. Enrolment Trends in Secondary Education

		2003	2004	2005	2006	2007
	Male	191,718	211,244	232,713	233,943	267,619
Public	Female	144,644	159,563	175,413	178,424	216,212
	Total Public	*366,362*	*370,807*	*408,126*	*412,367*	*483,831*
	Male	182,941	166,954	168,641	209,773	191,200
Private	Female	164,306	150,160	152,335	191,947	167,652
	Total Private	*347,247*	*317,114*	*320,436*	*401,720*	*358,814*
	Male	374,659	383,652	400,814	443,716	458,819
Overall	Female	308,950	313,855	327,748	370,371	383,864
	Grand Total	*683,609*	*697,507*	*728,562*	*814,087*	*842,683*

Source: Ministry of Education and Sports (2007)

Table. 4.4. Enrolment Trends in BTVET Institutions

	2003	2004	2005	2006
Male	18,271	17,860	11,320	26,652
Female	8,042	7,654	4,266	13,783
Total	26,313	25,514	15,586	40,435

Source: Ministry of Education and Sports (2007)

Information contained in table 4.5 reveals that the current secondary education system acts as a bottleneck between primary school and tertiary education. The completion rate at the O-level has stayed below 25 percent. The estimate for 2007 is as low as 16 percent. Clearly, most students exit the education system at this point to look for work in the labor market. This information also confirms gender disparity in secondary education in Uganda.

Table 4.5. Completion Rate at S4 (in %)

	2000	2001	2002	2003	2004	2005	2006	2007
Boys	18	23	25	20	28	25	26	18
Girls	14	19	19	17	22	22	23	14
Overall	16	21	22	18	25	23	25	16

Source: Ministry of Education and Sports (2007)

There are other dimensions of equity beyond gender parity. The consideration of these entails looking at the distribution of the indicators of interest among policy relevant socioeconomic groups such as rural versus urban residents, various regions of the country, households at different income levels or other vulnerable groups such as orphans. This point is illustrated by the distribution of dropout rates by type of school and location (see table 4.6). These data reveal that the dropout rates are higher in non-government schools than in public schools. Schools located in the rural areas have higher dropout rates on average than school in the peri-urban or urban areas.

Table 4.6. Drop-out Rates by School Type and Location (2001)

	Government	Non-Government
Rural	11.5	15.5
Peri-Urban	9.9	11.0
Urban	4.7	9.0
Overall	10.2	12.8

Source: Liang (2002)

The above quick review reveals that *access* to PPET in Uganda is still very limited and may not be *equitably* distributed. Furthermore, there is evidence that the *quality* of PPET (in terms of efficiency and learning outcomes) is in need of improvement. Limited efficiency is demonstrated by low transition and completion rates (as noted above). An analysis of the results from UCE and UACE for 2000 provides evidence of poor learning outcomes. Overall performance on these examinations is particularly low for mathematics and science (Liang 2002). While there is a growing number of candidates overall, the numbers for mathematics and science remain low. In addition, performance in these subjects is significantly worse than for humanities and social sciences. This creates a severe constraint for the ability of Uganda to cope in a global economy driven by knowledge and technology.

To assess learning achievements at the secondary level of education, competency tests in Mathematics and English were given to students in Form 1 and Form 3. The results are presented in table 4.7 and they broadly confirm the main conclusions from the analysis of UCE and UACE results discussed above. They also reveal some heterogeneity in achievements based mainly on school characteristics. It is known that

poor and disadvantaged students are concentrated in secondary schools with the following characteristics: rural, community, small, and day or mixed. These students will tend to have higher failure rates in math and English than those from wealthier families. Yet, the poor and disadvantaged are also less likely to enroll in secondary school. Table 4.8 presents the same information as table 4.7 but along the gender dimension. These results also reveal a gender bias in mathematics. The performance of girls in this subject is significantly worse than that of boys. This does not seem to be the case for English.

Table 4.7. Failure Rates (in %) for Education Quality Test

	Form 1 Math	Form 3 Math	Form 1 English	Form 3 English
Rural	40	50	33	31
Urban	40	49	15	13
O-Level	40	47	23	17
A-Level	24	44	7	5
Government	35	43	27	29
Private-Religious	36	45	18	17
Private-Community	59	77	38	32
Day Schools	51	66	32	29
Mixed Schools	49	60	32	36
Boarding Schools	27	33	16	11
Small (<200 students)	57	68	47	35
Medium (201-600 students)	54	68	37	40
Large (>600 students)	24	32	7	8

Source: Liang (2002)

Table 4.8. Failure Rates (in %) for Education Quality Test

	Form 1 Math	Form 3 Math	Form 1 English	Form 3 English
Male	37.5	47	27	23.3
Female	46	54	23	22.1
Overall	40.5	50	25	22.7

Source: Liang (2002)

Ten years of UPE operation along with the pre-USE system have led to the following distribution of schooling (see table 4.9) in Uganda in 2006, a year before the government decided to implement universal secondary education. This distribution of schooling reveals that the highest percentage of people with no education is found in the lowest quintile. This percentage decreases with the level of income. Finally, we note that 43 percent of people in the highest quintile have achieved secondary education and beyond compared to about 8 percent for the lowest quintile.

Table 4.9. The Distribution of Schooling in Uganda in 2006

Quintile	No Schooling	Some Primary	P7 Completed	Some Secondary	S6 Completed	Beyond Secondary	Total
1	34.9	48.4	8.9	7.3	0.2	0.4	100
2	23.5	52.5	12.8	10.2	0.3	0.7	100
3	21.1	46.1	15.9	15.1	0.5	1.3	100
4	15.7	43.3	16.1	20.8	1.4	2.9	100
5	11.6	30.8	15.2	30.7	2.3	9.5	100

Source: Uganda Bureau of Statistics (UBS) 2006.

In response to these challenges, the government launched in 2007 a policy for achieving universal secondary education in partnership with the private sector. The overall objective of this initiative is to make quality secondary education available to all primary school leaving students who desire secondary education. *The policy is analogous to UPE to the extent that it also entails user fee elimination through a targeted scholarship program along with investment in facility expansion*.

As of August 2007, a total of 161,554 students (92,459 males and 69,095 females) were eligible for USE in 1,155 schools. About 25 percent of these eligible students were enrolled in 363 participating institutions from the private sector. The remaining 75 percent were enrolled in public schools (MoES 2007). Participating private schools receive a USE grant of 47,000 Ugandan Shillings per student per term. Furthermore there were 2,502 (1,995 males and 307 females) eligible students in 46 government BTVET institutions.

Table 4.10. Probability of Enrolment in Secondary School after Completing P7

Variables	(1) Age 13	(2) Age 14	(3) Age 15	(4) Age 16
T	-0.088	0.688	0.887	0.438
	(-0.502)	(0.859)	(1.162)	(0.515)
Household Income	-0.004	0.079	0.142***	0.125*
	(-0.338)	(1.463)	(2.846)	(1.839)
Income*T	-4.932e-03	-5.652e-02	-1.042e-01	-4.189e-02
	(-0.267)	(-0.801)	(-1.384)	(-0.502)
Male	0.026	0.057	-0.074	0.153**
	(0.862)	(1.020)	(-1.008)	(2.388)
Male*T	-0.071	-0.156*	0.200**	-0.256***
	(-1.314)	(-1.711)	(2.218)	(-2.652)
Father's Education	-0.012	-0.026	0.079**	0.125***
	(-0.869)	(-0.731)	(2.342)	(3.687)
Father's Education*T	0.040	0.072*	-0.033	-0.062
	(1.313)	(1.683)	(-0.724)	(-1.468)
Mother's Education	0.013	0.121*	-0.060*	-0.034
	(0.888)	(1.802)	(-1.712)	(-0.930)
Mother's Education*T	-0.008	-0.131*	0.069	0.071
	(-0.474)	(-1.772)	(1.431)	(1.454)
Eastern Region	-0.020	0.085	0.128	-0.012
	(-0.730)	(0.954)	(1.507)	(-0.134)
Eastern*T	0.006	0.035	-0.010	0.178
	(0.172)	(0.347)	(-0.102)	(1.385)
Northern Region	-0.026	0.130*	-0.143	-0.046
	(-0.727)	(1.786)	(-1.223)	(-0.424)
Northern*T	0.058	-0.294	0.266*	0.396**
	(1.157)	(-1.418)	(1.747)	(2.503)
Western	-0.077	-0.034	0.047	0.128
	(-0.980)	(-0.365)	(0.461)	(1.390)
Western Region	0.046	0.120	0.011	0.086
	(0.533)	(1.021)	(0.0914)	(0.678)
Urban	-0.055	-0.063	-0.104	-0.074
	(-0.978)	(-1.265)	(-1.560)	(-0.864)
Urban*T	0.053	0.056	-0.013	0.014
	(0.918)	(0.652)	(-0.120)	(0.132)
Constant	1.075***	-0.143	-0.670	-0.872
	(8.926)	(-0.215)	(-1.306)	(-1.302)
Observations	99	216	386	496
R-squared	0.132	0.127	0.130	0.167

Robust t statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Coefficients for repair dummy variables not shown

Is there any significant association between the implementation of UPE and the likelihood of enrolling in secondary school after completing P7? To try to answer this question, we apply model (3.1) to the data at hand. The results are presented in table 4.10 for different age groups from 13 to 16. It is clear from these results that there was no

significant change in the likelihood of enrolment in secondary school between 1992 and 2005. Furthermore, household income may have constrained enrolment only for the 15 and 16 year old and the policy shift did not change this situation (the coefficient of the interaction term is not significantly different from zero). These findings contribute to the emerging conclusion that UPE, by and large, has no significant spillover into secondary education.

What then is the likely impact of the new initiative (i.e. USE)? The available data set for 2005 offer a baseline for such an evaluation just as 1992 offered a base for the UPE evaluation. Unfortunately, we cannot apply the same econometric strategy as in the case of UPE since we do not yet have a post USE dataset. We will have to speculate about the likely impact of the base of simple simulations constructed on the basis of a probability model fitted to the data at hand.

We frame our simulation within the logic of *standard incidence analysis* to answer the following basic question: Who is likely to captures the benefits (in terms of enrolment) associated with public spending induced by the USE policy? The expansion of the stock of schooling in the population is a result of an interaction between supply and demand factors. It is not enough to build additional schools and hire additional teachers and other inputs if there is no increase in demand. The policy impact on enrolment can be addressed using discrete choice methods. In this context, it is usually assumed that parents with school-age children derive utility from the human capital of their children and from the consumption of other goods and services (Glick and Sahn 2006).

The first stab we take at this issue is to say that families with primary school leaving children face two basic alternatives: no secondary schooling or secondary education (of any type for now). Within the context of the random utility framework, the underlying uncertainty implies that we can only make probabilistic statements about the decision maker's choice. The representative utility is generally modeled as a function of school's attributes, individual and household characteristics including income and cost of schooling. Assuming that the random part of the utility function follows an extreme value distribution, we can use the common logit model to estimate the probability of enrolling (assuming a normal distribution leads to a probit model).

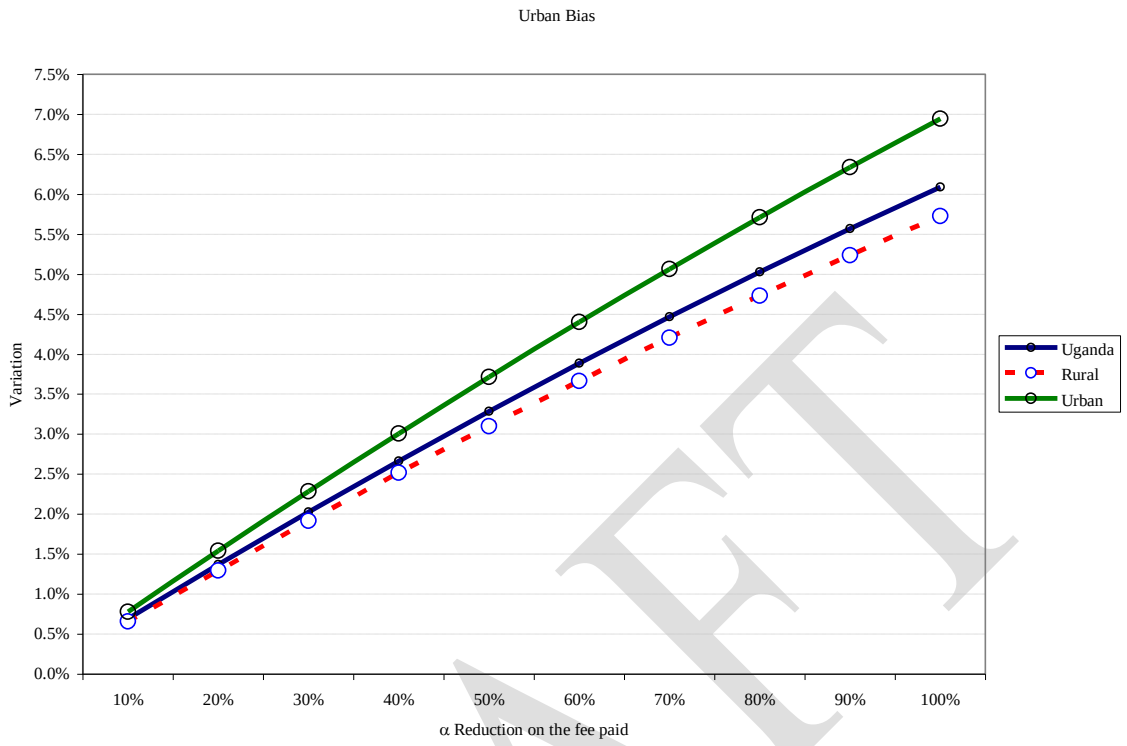
The estimated propensities to enroll can be interpreted as demand functions for secondary education or expected enrollment and provide the basic inputs for distributional analysis. The progressivity of the policy is judged on the basis of induced change in the distribution of expected enrollment across policy relevant socioeconomic groups (defined on the basis of income, gender or area of residence). We expect this first level of analysis to give coarse results as it ignores the heterogeneity associated with different types of institutions (public, community or private schools).

Table 4.11: A Probit Model of Secondary Enrolment

Variables	Coefficients	z	P>z
T	2.461	1.64	0.102
Household Income	0.511	4.54	0.000
Income*T	-0.204	-1.36	0.172
Age	-0.220	-6.95	0.000
Male	0.306	2.44	0.015
Male*T	-0.115	-0.68	0.498
Father's Education	0.253	3.66	0.000
Father's Education*T	-074	-0.82	0.410
Mother's Education	0.101	1.34	0.182
Mother's Education*T	0.012	0.12	0.906
Eastern Region	0.326	1.91	0.057
Eastern*T	0.079	0.36	0.721
Northern Region	0.516	2.49	0.013
Northern*T	-0.430	-1.50	0.133
Western Region	0.003	0.02	0.988
Western*T	0.186	0.83	0.405
Urban	-0.075	-0.53	0.593
Urban*T	-0.358	-1.88	0.060
Peers_Public	-0.081	-0.37	0.712
Cost_Sec_Peers_Public	0.001	-0.07	0.946
Costsec	0.023	2.52	0.012
_cons	-1.810	-1.47	0.143

Our simulation results are based on the probit model reported in table 4.11. The basic idea is to see how the probability of enrolment would vary when the cost of secondary education is gradually driven down to zero from its 2005 level. All our results show that a fee reduction in the order of 10 percent will not have a perceptible impact on enrolments. Figure 4.1 reveals that, for the whole country, enrolment could increase by at most 6 percent if the current fees were completely eliminated. These gains in enrolment become substantial only after the fees are cut in half.

Figure 4.1. Likely Impact of USE by Area of Residence



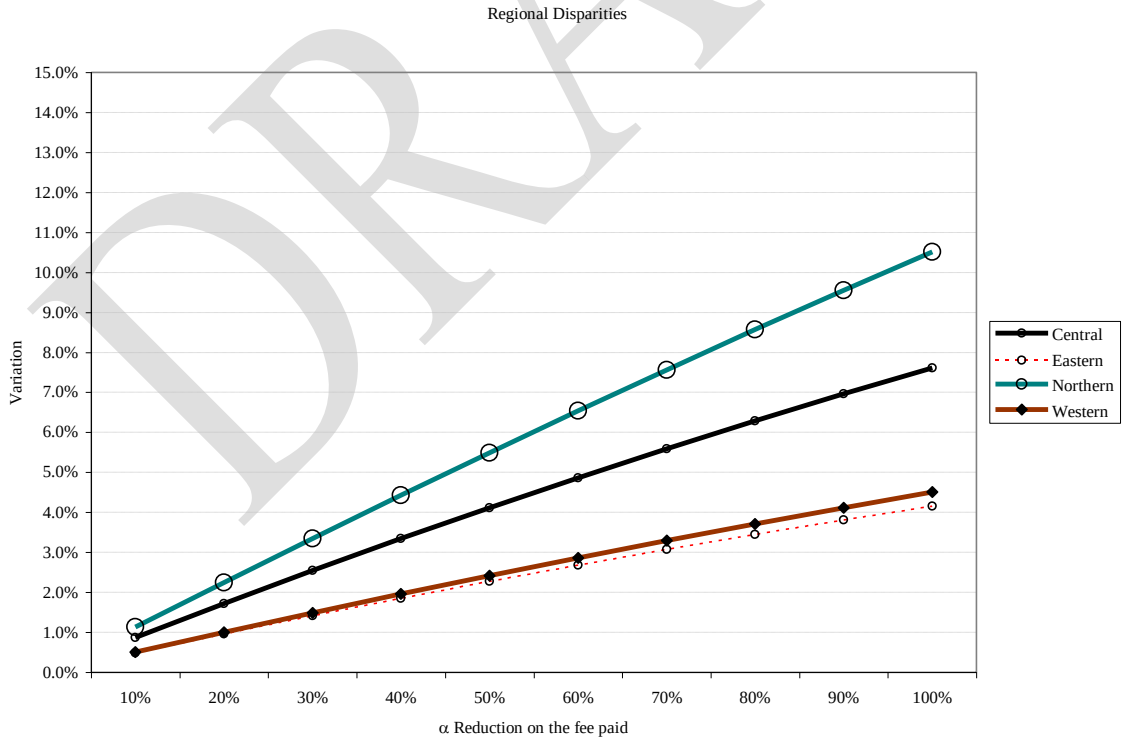
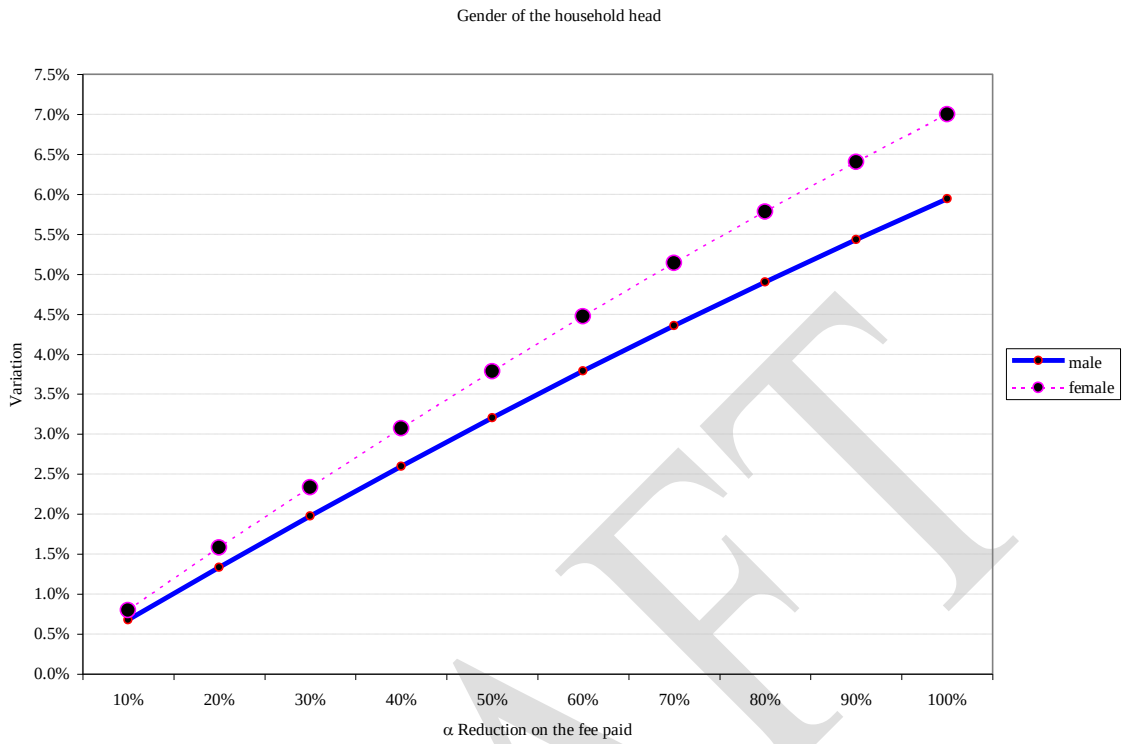
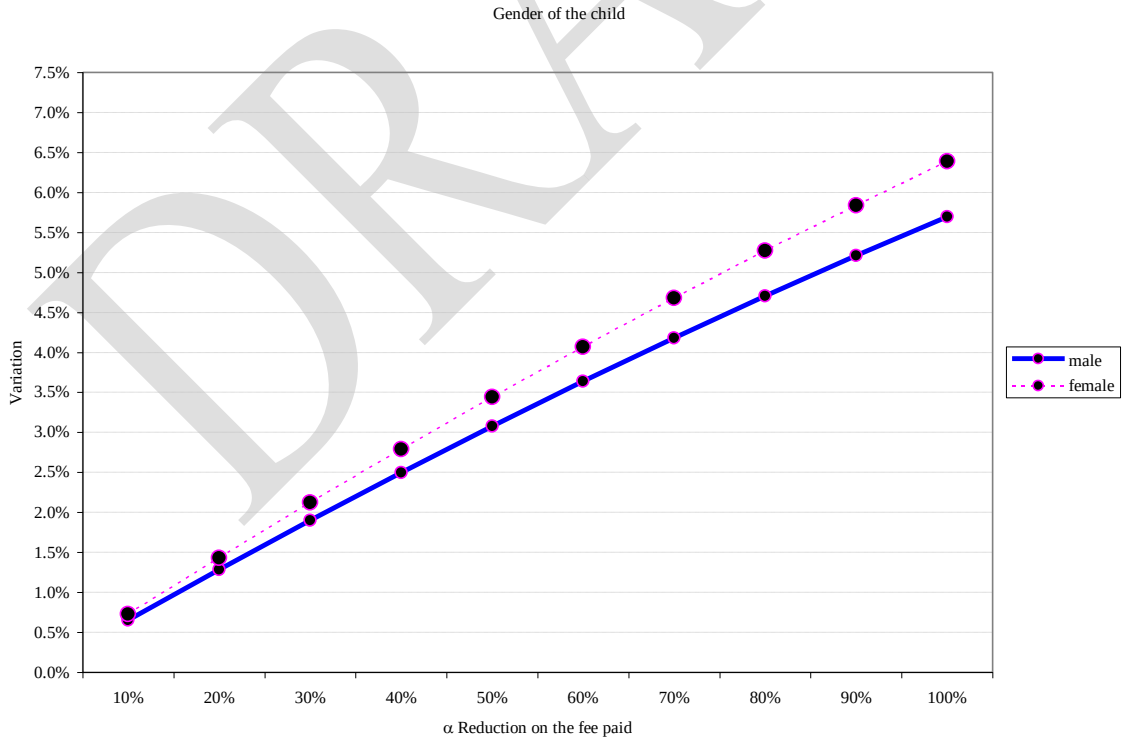


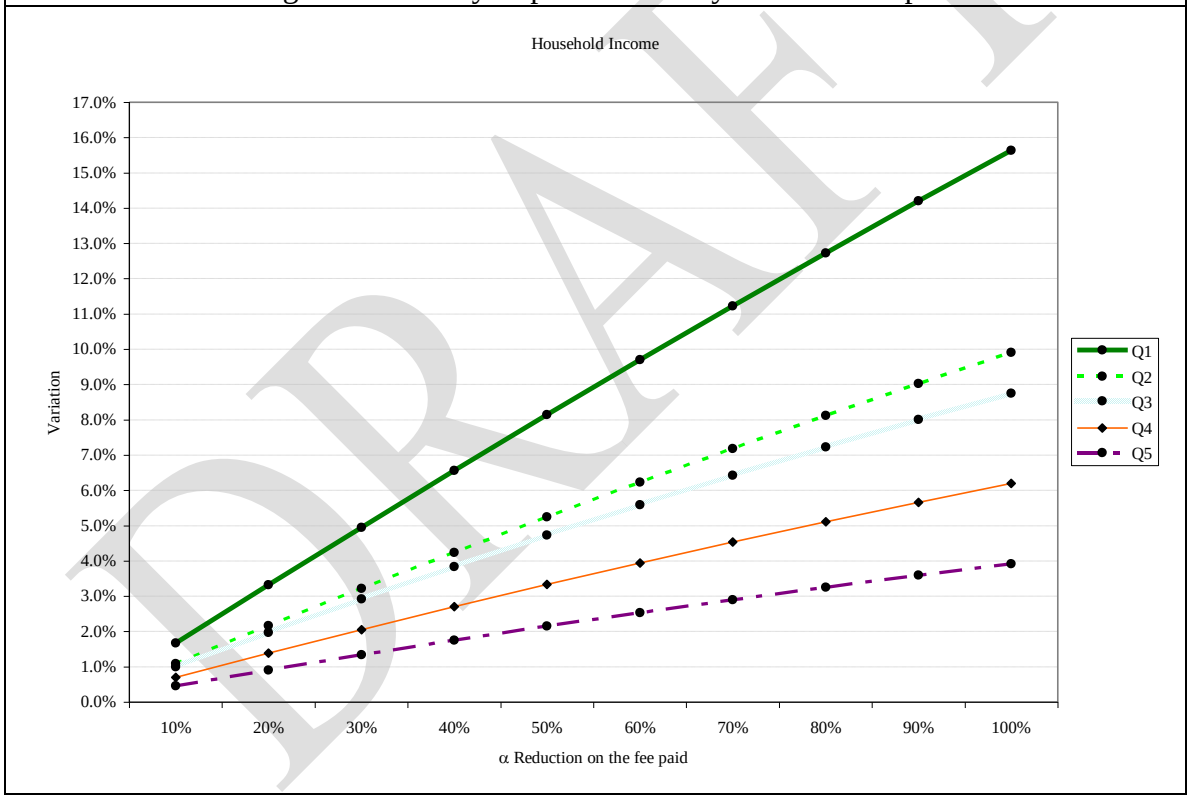
Figure 4.2. Likely Impact of USE on Gender Disparities





As far as the four regions are concerned, figure 4.1 also shows that a large reduction (i.e. way past 10 percent) would generate significant gains in secondary enrolment the Northern and Central regions. The expected increase in enrolment could reach respectively 10.5 percent for the former and 7.6 percent for the latter. These figures are much higher than the maximum expected increase for the whole nation. There is no significant difference the response from Eastern and Western regions and their gains are much limited compared to those of the other two regions. The maximum increase in enrolment does not go beyond 4.5 percent in these cases. It would be interesting to dig a little deeper and tie these disparities to regional characteristics.

Figure 4.3. Likely Impact of USE by Income Groups



Focusing on differences due to the area or of residence, we note that the response by rural households is very similar to the overall response while the increase in enrolment from urban households is faster and dominates both the increase in national and rural enrolments. There is a need to further investigate what other factors besides income do constraint the demand for secondary education in the rural areas. We also considered the

outcome by area and by region (results not shown) and found that the fee reduction would have a much larger positive impact in the rural sector of the Northern region than in any other rural area of the country. For urban areas the Central region would benefit more from the policy than the Northern region.

Figure 4.4. Likely Impact of USE by Age Groups

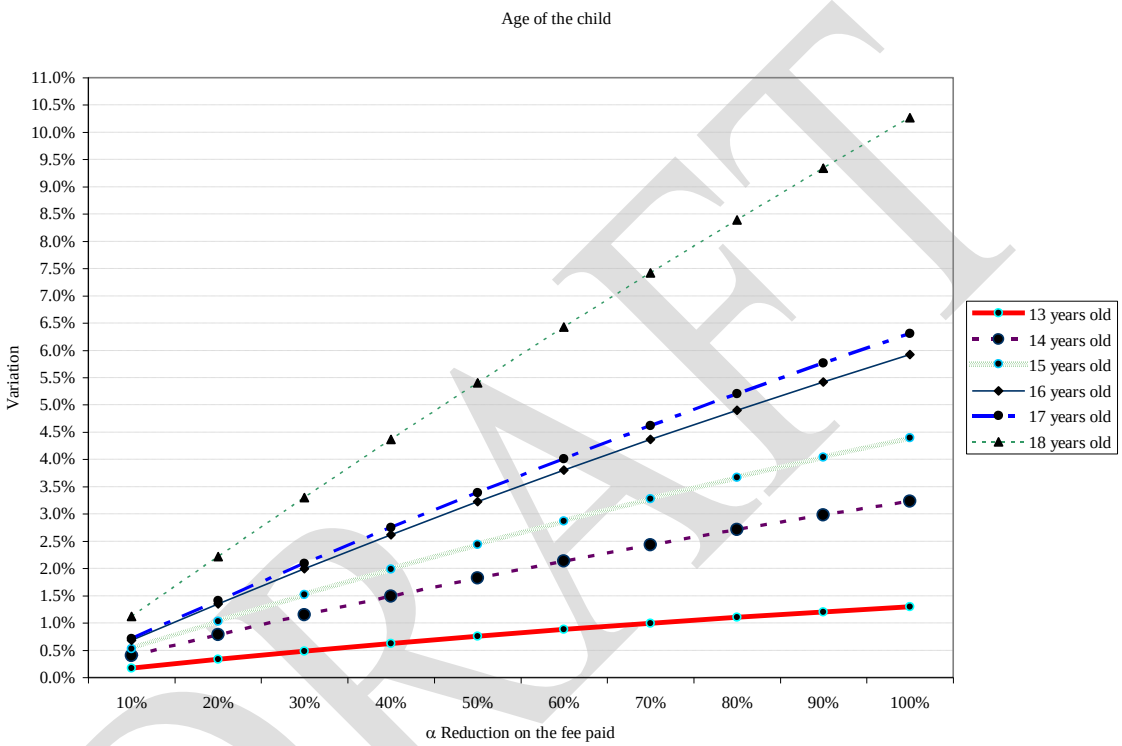


Figure 4.2 and figure 4.3 show the likely impact of USE along the gender dimension and by income groups respectively. The gender dimension is considered both for the head of household and for the children themselves. Our simulation results suggest that female-headed households and girls will fare better than male-headed households and boys. As far as income groups are concerned, USE is likely to have a similar impact as UPE in the sense that there seems to be an inverse relationship between income and expected increase in enrolment. If fees were completely eliminated, other things being equal, secondary enrolment could increase by more than 15 percent for the poorest quintile and by as much as 10 percent for the second poorest quintile.

Finally, figure 4.4 reports expected increase in enrolment by age groups. The strongest demand for secondary schooling would come from overage children, particularly those in the 16-18 age groups. Total elimination of school fees at the secondary level could induce an increase in enrolment of about 10 percent from 18 year olds. This estimate is about 6 percent for both 17 and 16 year-olds. The weakest response would come from the 14 and 13 year-olds. The maximum increase in enrolment for these two groups is expected to be only about 3 percent for the former and a mere 1 percent for the latter.

Our findings based on the simulations discussed above are consistent with our assessment of the impact of UPE on the cost of schooling. Indeed, we noted earlier that there was no spillover effect of UPE to secondary education in terms of cost reduction. In other words, even after UPE the cost of schooling remained a severe constraint for enrolment in secondary school. We can therefore expect that those who would have wanted to continue on to secondary school after completing primary school but could not on account of cost, would seize the opportunity once secondary schooling became affordable, other things being equal. It is therefore likely that there will be, as a result of the implementation of USE, a big surge in enrolment similar to the one that followed UPE. This is essentially what our simulations show particularly for disadvantaged socioeconomic groups. Obviously, the feasibility of these potential outcomes hinges critically, among other things, on the ability of the school system to invest in space and other important inputs at levels commensurate with the expected influx of students.

5. Conclusion

For the past two decades, education policy in Uganda has been shifting from elitism to inclusiveness, and the government has now placed education at the center of its Poverty Eradication Action Plan (PEAP). As far as the primary and secondary education sectors are concerned, the current policy seeks to increase in a sustainable manner equitable access to quality and relevant education. Thus, ten years after the abolition of school fees at the primary level in 1997 under the UPE program, the Government of

Uganda launched the Universal Secondary Education Policy (USE) designed to address inequity in the distribution of post primary education and training opportunities.

This paper presents an assessment of the poverty and distributional implications of these policy reforms focusing on their effects on enrolment, primary school completion and the cost of schooling. The retrospective evaluation of UPE is based on two cross-sectional datasets, the 1992 and 2005 household surveys. The impact of UPE is derived from the interactions of the moderator variable (represented by the indicator of the policy shift) with the correlates of the outcome of interest. The conclusions that emerge from this analysis are consistent with the results earlier evaluations found in the literature.

In particular, it is found that, in addition to increasing the overall access to primary education, UPE significantly reduced inequalities in access associated with income, gender, parental education and area or region of residence. The UPE policy also reduced significantly the cost of primary school, thus making that level of schooling more affordable for poor households. However there have been no effects spilling over to secondary education. Our analysis shows particularly that the cost of attending public secondary schools has gone up, relative to that of attending private schools. Furthermore, it is clear from our results that there was no significant change in the likelihood of enrolment in secondary school between 1992 and 2005.

The potential impact of USE is analyzed on the basis of a probability model fitted to the data at hand. The progressivity of the policy is evaluated in terms of induced change in the distribution of expected enrolment across policy relevant socioeconomic groups. Our simulations show that USE is likely to induce a big surge in secondary enrolment similar to the one associate with UPE at the primary level of education. In addition, this new policy has the potential of significantly improving the distribution of post primary education and training opportunities. In the end, the feasibility of these potential outcomes hinges critically, among other things, on the ability of the school system to invest in space and other complementary inputs at levels commensurate with the expected influx of students. The same investment would be needed for achieving quality education.

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