GENDER DIFFERENCES IN UGANDA:

THE CASE FOR ACCESS TO EDUCATION AND HEALTH SERVICES

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Abstract

Using the nationally representative Gender Productivity Survey (GPS) of 2007/08 conducted by the Uganda Bureau of Statistics (UBoS), the paper examines gender biases in school attainment, returns to education, expenditure on health and education, access to health services. While Uganda has recorded progress on MDG 3: promote gender equality and empower women, the paper reveals that significant gender biases still exist with a regional dimension. These biases are more pronounced in Northern Uganda, which is the poorest region. In other words, interventions in this part of the country should be able to address these biases if the region is to catch up with the rest of the country.

These findings further suggest that free education both at primary and secondary level; and abolition of user fees in public health facilities is not sufficient for elimination of gender bias. Policies should be based on a better understanding of the household's decision making process.

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1.   INTRODUCTION

Among policymakers, reducing gender disparities is considered a prerequisite for economic development and poverty reduction. This is based on the realisation that the historical discrimination of women in various spheres of livelihood has led to less than optimal allocation of household resources (Udry, 1996; World Bank, 2007). Indeed, the third MDG is focussing on promoting gender equality and empowering women. Despite the consensus that gender discrimination halts economic development, there is a shortage of reliable evidence on the mechanisms by which gender bias is manifested. A major obstacle to measuring gender bias is lack of detailed individual information on access and use of social services. Furthermore, past investigations—especially focusing on female-male differences in access to social services, show mixed results.

In this paper, focus is made on the gender discrimination in access to education and health services in Uganda. The country provides an interesting setting to study gender discrimination for a number of reasons. First, officially, education and health services in public schools and health facilities respectively are "free". However, households have to meet a number of complementary costs of using public facilities. For example, for schooling, parents are supposed to provide meals, school uniforms, and exercise books—items that are not catered for in the public subsidy for education. For health services, individuals have to meet transportation costs to the health facilities as well as drugs expenses—in cases where prescriptions cannot be supplied by public facilities. Furthermore, even with the abolition of user fees in public health facilities, more than 50 percent of Ugandans still use private facilities when ill (Ssewanyana et al., 2004; EPRC, 2009). As such, expenditures on education and health in Uganda remain huge even as public facilities continue to supply such services freely.

Second, evidence from other developing countries suggests that parents may favour children of a particular sex in the allocation of social expenditures (Alderman and King, 1998). This is most prevalent when household incomes change, as is the case in many developing countries that rely on seasonal agriculture. Consequently, it is important to establish whether household investments in education and health in Uganda are gender neutral or as is the case in many developing countries, disproportionately favour males over females. Also, despite recent improvements in household welfare status, qualitative evidence suggests that women are still considered of inferior status—especially in the rural areas (UPPAP, 2003). As such, men undertake most of the decisions within households. It is important to establish whether perceived male dominance in resource allocation drives female-male differences in outcomes—especially as they relate to the use of social services.

The recently available data from the GPS of 2007/08 are used to examine gender discrimination in: school attainment, expenditure on schooling, returns to education, access to health services, and expenditures on health care. The fact that the survey captured individual schooling and health expenditures helps to isolate the potential

gender bias in household resource allocation. Due to lack of comprehensive data other aspects of gender discrimination are not examined. For example, the survey does not capture information on individual land ownership—which would have provided the opportunity to examine gender bias in access and use of land across the country. Also, Glick et al. (2004), using data from the Uganda Integrated Household Survey (UIHS) of 1992/93, shows that water collection accounts for a disproportionate share of women and girls' time. However, in this paper, the time burden of water collection is not examined as individual information relating to water was not collected. Even for education, whether gender disparities in schooling exist among disabled children is not examined—due again to data constraints.[1] Related, because the GPS does not collect anthropometric information possible parental preference for the nutrition of boys over girls is not investigated. However, a study by Ssewanyana (2001) reveals such parental preference. Furthermore, some other aspects of gender gaps—especially relating to labour outcomes were analysed in an earlier study (EPRC, 2009). Nonetheless, in the literature review, the types and impacts of the various forms of gender discrimination in other developing countries are detailed.

This paper contributes to the understanding of the impacts of gender disparities in Uganda in two central ways. First it examines whether parents favour boys over girls in education and health expenditures. Second, using survival profiles, this paper empirically examines whether girls fall behind boys in school progression. Previous studies have relied more on analysis of comparisons of female-male net enrolment rates (NERs) and school transitions—at the end of primary and secondary schools. However, given the pervasive late entry into school, focusing on net enrolments to examine gender bias is likely to miss a substantial proportion of the Ugandan school going age population. By extension, the paper also examines whether there are gender differences in the returns to education.

The rest of the paper is organised as follows: The next section describes the gender and utilisation of social services in Uganda. This is followed by Section 3 that discusses the various forms of gender bias based on literature from the developing world. A brief description of the data and methods used are presented in Section 4. The discussion of empirical results is presented in Section 5 while the conclusions are presented in Section 6.

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[1] Evidence from other developing countries shows that children living with disabilities face severe schooling constraints and that schooling disparities between children with and without disabilities sometimes outweigh gender disparities (Filmer, 2008; Ssewanyana, 2008).

2.   UGANDAN CONTEXT

This section briefly describes the Ugandan context with regard to female-male utilisation of education and health services. First, the large-scale education programs targeting gender inequalities are described. This is followed by a profile of gender differences in use of health services.

Uganda has implemented a number of programs to address gender disparities as well as overall inequalities to access to social services. In education, it was the Universal Primary Education (UPE) policy initiated in 1997 while in health it was the abolition of cost sharing in public health facilities since 2001. The UPE policy is by far the most widely available program targeting all children. The program started first with four children per household and thereafter every child of school going age. Consensus is that the UPE policy eliminated gender disparities—at least with regard to primary school enrolment. According to Deininger (2003), prior to UPE, NERs for girls was 60 percent to 64 percent for boys. After the implementation of the program, NERs for girls were at par with those of boys at 85 percent (MoGLSD, 2007). However, not all aspects of education have attained gender equality. The girls are still more likely to drop out and leave primary school; and also, girls are less likely to transit to secondary school (MoES, 2007). Indeed, Table 1—which shows the actual student population—from pre-primary to secondary school, indicates that the girl-child disadvantage starts in secondary school. At the regional level, Northern Uganda performed the worst with girls making up only 35 percent of the 109,538 students enrolled in secondary schools in 2006.

Table 1: School enrolment in 2006

	All	Central	Eastern	Northern	Western
Absolute numbers					
Pre-primary education	69,340	25,206	14,988	9,540	19,666
Primary education	7,362,938	1,654,987	2,125,839	1,669,806	1,919,206
Secondary education	814,087	288,984	212,477	109,538	203,088
Percent girls' share of enrolment					
Pre-primary education	50.2	50.3	49.6	49.5	50.9
Primary education	49.9	51.3	50.7	46.6	50.3
Secondary education	45.5	50.6	43.7	34.6	46.2

Source: MoES (2007)

Although the regular household surveys show that there are minimal gender differences in reporting and seeking health services, most qualitative analysis point to the fact that more females than males utilise overall public health services. For example, the report by EPRC (2009) based on GPS dataset shows that with the exceptions of females aged 50 years and older, for all other age categories, females have similar rates of reporting illness as males. In particular, based on the Uganda National Household Survey (UNHS III) of 2005/06, at least 41 percent of females and 37 percent of males reported ill health in the past 30 days prior to the survey. By 2007/08 based on GPS data, the corresponding rates for females and males were 46

percent and 42 percent respectively. For individuals aged 50 years and older, for both survey rounds, the female rates of reporting ill health were higher by about 15 percentage points. On the other hand, most qualitative studies report that for all age groups, women are by far more likely to use health services than men. For example, Nabyonga et al. (2005) shows that both before and after the abolition of cost sharing in public health services in Uganda, women used more health services than men. By focusing on persons reporting ill health, the regular UNHS surveys exclude individuals using preventive health services—normally used by women and children[2].

Another important issue in the Ugandan context regards which individual within the household decides when to use social services—even when such services are provided free of charge. For primary education, some local governments have ordinances that compel parents to enrol children into school (Ssewanyana et al., 2008), so decisions with respect to primary schooling may be based on external factors. Even then, parents may enrol children into school late (beyond the recommended age of 6 years) or may withdraw children from school—due to unsatisfactory progress in school (Pillay and Kasirye, 2006). Unlike the case for education, the use of health facilities is not mandatory even when seriously ill. Indeed, past studies on Uganda show that a substantial proportion of sick individuals choose to self medication or do nothing when ill (Ssewanyana et al., 2004). More so for use of health services by children, an adult has to decide when to use particular facilities.[3] For Uganda, the recent study by EPRC (2009) showed that among couples, household decisions regarding child health and education are equitably shared. In particular, about 41 percent of married couples reported that decisions regarding child health are made jointly compared to 30 percent for education and 20 percent for household expenses.

Overall, the above background suggests that females may not be explicitly denied access to the use of education and health services in Uganda. In the next section, based on evidence from other developing countries, some of the ways in which women and girls are disfavoured in the consumption and use of most social services are described.

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[2] Indeed, the use of health services for family planning, antenatal services and the treatment of infertility is excluded from the regular UNHS surveys.
[3] Studies from other developing countries show that who makes the decisions is important as parents may have different preferences for boys & girls in the use of social services (Quisumbing and Maluccio, 2003; Thomas, 1991). As such, the decision making process may determine the type of facilities used as well as the overall expenditures on the use of social services—in cases where positive expenditures are made.

3.   LITERATURE REVIEW ON GENDER BIAS

A large body of literature—both academic and policy oriented, continues to examine the causes and effects of gender discrimination; Croson and Gneezy (2009) provide a recent review of this literature[4]. Nonetheless, most of the literature focuses on South East Asia—especially India where household discrimination based on sex is pervasive. In Asia, a number of authors find that girls receive low investments e.g. health and as such are more likely to die in childhood (Sen 1992; Klassen 1994) and this has given rise to the so-called issue of "missing women" —i.e. the higher than normal male to female population ratios in countries such as China and India, and this lies at the heart of the gender discrimination in Asia. According to Oster (2009), gender differences in vaccinations and malnutrition explain more than half of the observed sex imbalance in India[5].

Discrimination against female is not prevalent only in childhood but may also continue into adulthood. Indeed, research has long established that women are discriminated in the labour market. Studies show that even without institution rules actively promoting gender discrimination and despite the significant increase in the proportion of women in the labour force, women are more likely to receive a lower wage for similar work than men and women are also less likely to be promoted to higher position within an organisation (Oaxaca, 1973; Blinder, 1973; Gunderson, 1989). Due to such evidence, there has been a renewed call among policy makers for stricter enforcement of equal pay legislation. Indeed, the evidence from some developing countries shows that income in female hands has favourable impacts on child nutrition and schooling (Duflo, 2003).[6] A study by Rosenzweig and Schultz (1983) based on Indian data show that female infant mortality is higher among states with low female labour force participation rates.

In developing countries, cultural norms are highlighted as one of the main drivers of gender labour gaps. According to Blackden and Morris-Hughes (1993), cultural norms (i.e. what is and what is not allowed to be done by women and men) not only limit women's time available for productive activities, but also limit the type of economic activities that women can undertake. Apart from cultural norms, barriers to entry in certain industries/sectors are also highlighted as perpetuating gender gaps. For example, Pagan and Sanchez (2000) investigate the reasons behind gender differences in labour force participation as well as differences in self-employment in Latin America. The authors find that due to discriminations in the formal wage sector, women are over represented in the self-employment sector due to lower barriers of

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[4] The various domains considered include: consumption or nutrition, investments in human capital as well as labour market outcomes.

[5] In other instances, unpopular population control programs have accelerated female child mortality. For instance, the Chinese one child policy is widely documented as having precipitated high female infant mortality after it was introduced in the 1970s (Zeng, *et al*. 1993).

[6] A host of factors explain gender gaps in the labour market; in some instances, women are forced to take on lower paying jobs only because they are compatible with women's reproductive responsibilities (Buvinic and Gupta, 1997). Related, the household composition may dictate the extent of labour force participation for women. For example, Ilhali (2000) shows that the presence of young children in the household may act as a stumbling block for women pursuing income earning opportunities.

entry. Furthermore, decompositions of wages reveal that structural factors explain more of the male-female differences in wages than individual factors.

However, a number of studies find no evidence of gender discrimination in access to resources within households (Deaton, 1989; 1997; Case and Deaton, 2003). For example, Deaton (1989) examines household purchases to establish whether household expenditures favour boys over girls. Using household surveys undertaken in the early 1980s from Cote d'Ivoire and Thailand, the author finds no significant effect of gender of children on household allocations. He attributes his results to the paucity of household survey data and its inability to accurately reflect individual household allocation.

In patrilineal societies, parents may outrightly favour boys over girls and this is most evident with regard to schooling decisions. For example Kingdon (2005) shows that in some Indian states, girls do not only have a lower enrolment rate than boys but also parents are significantly less likely to spend on female schooling once enrolled. Such an environment persists despite widespread evidence of higher returns to female education. For example, Psacharopoulos and Patrino (2004) show that in both developing and developed countries, returns to education in the labour market are higher for females relative to their male counterparts.[7] Nonetheless, there are studies that find that female education does not confer any significant benefits. For example, Song et al. (2006) find that in rural China, returns to girls schooling are lower than boys due to the higher opportunity cost of female time in rural areas.

Another area of gender discrimination is with regard to unequal control of household resources and decision-making. Indeed, there is wide ranging evidence to show that male dominance of household decision making affects child health as well as productivity potential of a household (Quisumbing and Maluccio, 2003). Studies in West Africa show that household under invest on land owned by women and this leads to inefficiency in production (Udry, 1996). In a latter study Duflo & Udry (2004) find that when a household is faced by shocks e.g. due to limited rains, household expenditures controlled by women suffer while those by men (e.g. alcohol and tobacco) are unaffected. Furthermore, lower female representation in local institutions also affects agricultural production. Goldstein and Udry (2008) in Ghana show that because women do not hold positions of responsibilities in the community and the fact that the community is the *de facto* owner of agricultural land, women's rights are less secure and consequently women are significantly less likely to invest in long term land improvement such as fallowing.[8]

Apart from equal opportunity legislations, a number of initiatives have been recently introduced in a bid to reduce gender disparities. Microfinance programs and conditional cash transfers are among the recent innovations to reduce gender gaps.

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[7] There are other areas in which female education has been documented to have larger than average impacts including reduced child mortality and fertility as well as the reduced risk of contracting HIV/AIDS (De Walque, 2007).

[8] There are other areas in which women may face an unfavourable treatment. For instance, women in developing countries—especially in SSA are more likely than not to be discriminated against when a community faces a shock. Miguel (2005) shows that in South Western Tanzania, during periods of extreme rainfalls—which lead to large drops in household income, the killing of elderly women or witches significantly increases.

The Grameen Bank and BRAC[9]—both in Bangladesh are perhaps the most widely evaluated microfinance institutions (MFIs) in the developing world and a number of authors finds indirect effects of such programs especially relating to: women's: literacy, mobility, political awareness, activism and child health (Pitt et al. 2006). Apart from MFIs programs, conditional cash transfers—usually provided to women on condition that they enrol children to school or use particular health facilities, have indeed changed the status of women in developing world. Based on data on PROGESSA—one of the largest conditional transfer programs in Latin America, Skoufias and de Mara (2008) find that the grants significantly improve the nutritional status of children in addition to reducing the likelihood of illness. By extension, Duflo (2003) shows that the provision of pension to grandmothers in South Africa greatly improved the health and education status of orphan notably that of girls. Consequently, directly targeting programmes to women has large actual and potential payoffs.

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[9] Bangladesh Rural Advancement Committee (BRAC).

4. DATA AND METHODS

4.1 Data sources

The 2007/08 GPS dataset collected by the UBoS is used. This is a multi-purpose survey whose key objective was to measure gender specific indicators for gender violence, education and health expenditures as well as gauge female participation in the labour force. The survey was nationally representative covering 78 of the 80 districts in Uganda in 2007. Furthermore, the survey is based on a two-stage simple random sampling design. In the first stage, the Enumeration Area (EA) is the principal sampling unit and about 350 EAs were selected for the survey. At the second stage, 10-15 households were randomly selected from each EA. In terms of coverage, 4,291 households were surveyed and these contained 21,151 individuals. The socio-economic modules of the surveys capture information on household demographics, use of education and health services, housing conditions as well as labour force participation for all individuals aged 15 years and above. On the other hand, the community module captures availability and access to social services in the locality. Details about the data collected can be found in the earlier analytical report (EPRC, 2009).

In this paper, a number of indicators are used relating to the household use of education and health services.   Regarding education, the survey captures information on children's current schooling status as well as education attainment (highest grade attained). Consequently, the first indicator of schooling is current enrolment for all children. The survey also inquires whether parents make any payments for schooling and the nature of such payments i.e. school fees, transport costs, uniforms, books and other school supplies. As such, the total household expenditure on education as well as expenditures by nature of payments is also utilised. Finally, the survey inquires the ownership of schools attended by the children (i.e. public, private, or owned by NGOs) as well as whether the schools operate as day, boarding, or mixed day and boarding school. This information in the analysis of allocation of education expenses is also incorporated.

For health services, the survey inquires from every regular household member whether they experienced ill health in the past 30 days prior to the survey. For those that report illness, the survey inquires whether a health care provider was consulted and also whether any payment was made towards treatment. This particular information is used to examine whether households spend more resources on females than males and also whether conditional on other factors, females are discriminated against in health expenditures.

4.2 Estimation methods

The paper employs both descriptive and multivariate analysis to examine whether there are gender differences. To examine gender differences in education attainment is to look at female-male grade attainment and progression for individuals aged 10-19 years of age. This shows whether girls are more likely than boys to either repeat or drop out of school. In the literature, grade survival profiles—which show the proportion of children who join and continue in school, are widely

used to investigate gender disparities in education (Filmer, 2006). Consequently, for this paper, Kaplan survival probabilities for grade attainment by gender are estimated. Formally, these are estimated as expressed in equation (1):

(1) $$S(g_i) = \prod_{g_i \leq g} (1 - \frac{d_i}{n_i})$$

Where $S(g_i)$ is the estimated survival probability of a particular grade, n_i is the number of school children at risk of leaving school at the start of grade (g_i) and d_i is the number of children who do not proceed to next grade—due to school dropout of grade repetition. In order not to bias the results, grade survival probabilities are only calculated for children aged 10-19 years—i.e. taking account of the possibility of late enrolment.

In addition, the paper examines whether there are significant gender differences in returns to education for individuals aged 24-64 years of age.[10] In order to examine gender differences in returns to schooling, following Leigh (2008), the regression in equation (2) is estimated.

(2) $$\ln Y_i = \beta_0 + \beta_1 E_i + \beta X_i + \varepsilon_i$$

Where $\ln Y_i$ is the log of individual earnings, E_i is the indicator for education attainment, X_i are individual level characteristics including sex and working experience, and ε_i represent unobserved factors that influence earnings. The GPS survey inquires from every individual in paid employment the wages received and this forms the basis for the returns to education estimation. Job experience is measured as post schooling experience[11] since the survey did not collect information on this. Two types of regressions (1) where the log of monthly wage is the dependent variables and (2) a dummy variable of whether an individual works for wage[12] are estimated.

On health, specifically, for various categories of women and men on condition of self-reporting illness in the past 30 days prior to the survey: the determinants for the propensity to seek health care; whether any curative or transportation costs were incurred; and the determinants of value of total health care expenditures are investigated. Reduced form OLS regressions are used and include for women and men the following dummy variables for household demographics: aged 0-4 years, aged 5-14 years; aged 15-21, aged 22-49 years, 50 years and above. Other variables included are the household size and dependency ratio—to capture the relative demand for health and other resources within the household. In addition, the education attainment of the household head and the location of the household (i.e. rural/urban and regions) are included.

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[10] This is important—especially in developing countries where women are discriminated in particular occupations & where parents favour boy over girl education (Aslam & Kingdon, 2008).
[11] This is calculated as the difference between an individual's age & the number of years in school.
[12] The authors would like to thank Andrew Leigh for access to the Stata code used in estimating the returns to education regressions through his website: http://econrsss.anu.edu.au/~aleigh/

5.   RESULTS

5.1   Gender differences in school enrolment

For education, the first issue to be investigated is with regard to gender differences in NERs. Table 2 shows the gender gaps in enrolments for two age groups—6-12 year olds (recommended primary school age) and 13-18 year olds (secondary school age) by spatial location.[13] For the primary school going age, the results reveal that compared to boys, girls have a significantly lower NER in rural Central, urban Eastern, and rural Northern sub-regions. On the other hand, girls are significantly more likely to be enrolled than boys in the rural Western sub-region.

A similarly mixed picture emerges when NERs for secondary schooling are considered. Whereas female net secondary school enrolments are significantly higher in the rural areas of the Central and Western regions, there are significantly lower in the urban areas of the Eastern, Northern and Western regions. These patterns in gender gaps in NERs may be partly explained by geographical differences in school entry as well as the timing of school dropout. In areas of the country where girls are more likely to face severe late enrolment into school, gender gaps in net enrolments are bound to be large—even in the presence of UPE.

Table 2: Current NER by age group and gender

Location	Ages 6-12 years				Ages 13-18 years			
	Girls	Boys		Gap		Girls	Boys		Gap
National, average									
Urban Central	86.6	87.6		-1.0		56.9	45.9		**11.0**
Rural Central	79.9	82.7		-2.8		25.6	19.3		**6.3**
Urban Eastern	79.2	83.4		**-4.2**		19.8	25.8		**-6.0**
Rural Eastern	80.0	80.2		-0.2		15.9	13.9		2.0
Urban Northern	83.6	82.1		1.5		22.2	25.3		**-3.1**
Rural Northern	70.0	73.6		**-3.6**		6.1	10.9		**-4.8**
Urban Western	84.6	86.6		-2.0		27.7	31.5		**-3.8**
Rural Western	78.8	73.4		**5.4**		18.1	11.8		**6.3**

Source: Author's calculations based on GPS, 2007/08.
Note: Figures in bold imply that the gender gap is statistically significant at 5 percent level.

The survival probabilities results based on equation (1) are depicted in Figure 1 and Figure 2 for children aged 10-19 years for rural and urban Uganda respectively. The graphs indicated a 100 percent grade attainment for grade 1—at least all enrol into school. For both boys and girls, grade survival reduces with increased years of schooling. For example, only about 85 percent of all children aged 10-19 years have completed grade 5 (this should not be confused with the NER which considers

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[13] Although the definition of children are those aged below 18 years. In this case, even children aged 18 years are included due to the pervasive late enrolment into school in Uganda (Kasirye and Hisali, 2009).

children aged 6-12 years). The implied dropout rate is relatively small in the early grades but accelerates at an increasing rate after grade 5.

Figure 1: School survival for individuals aged 10-19 years in rural areas
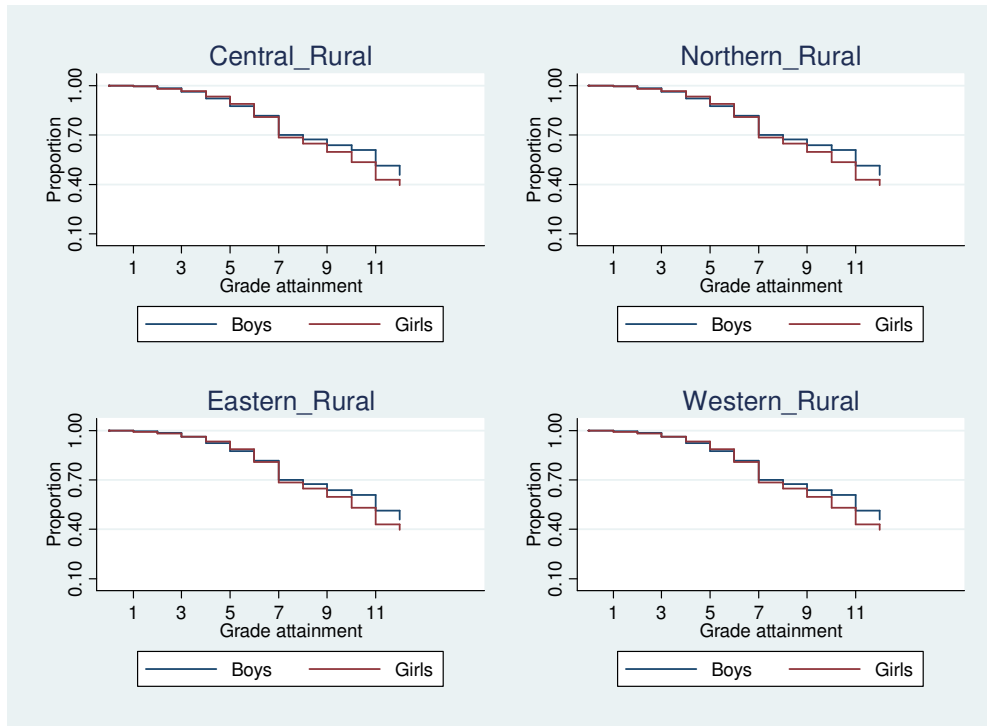
Source: Author's calculation based on GPS 2007/08

However, gender disparities in school dropout do not occur until after grade 7. For example in rural Central considering children aged 10-19 years, whereas 70 percent of boys had completed grade 7, only 66 percent of girls have completed the same grade. Indeed, after grade 7, the gender gaps continuously widens with only 60 percent of boys having completed grade 11 compared to 50 percent for girls. This suggests that gender gaps set in during the transition to secondary school. Overall, the graphs show a similar pattern across geographical regions and rural-urban locations.

Figure 2: School survival for individuals aged 10-19 years for urban areas
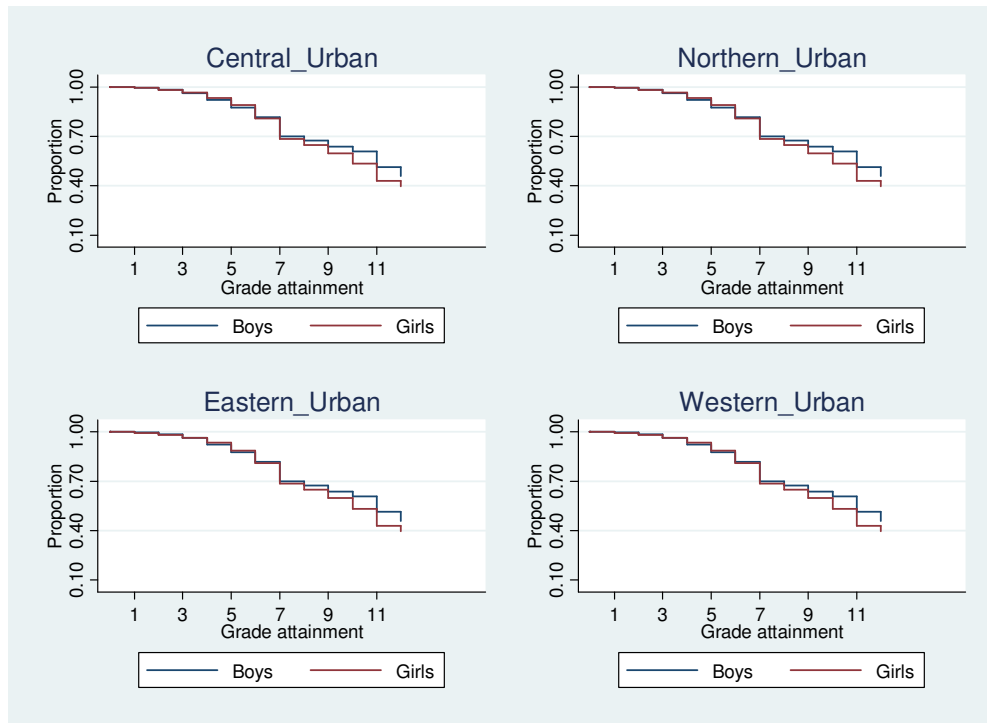
Source: Author's calculation based GPS 2007/08

5.2   Returns to Education

The returns to education estimations based on equation (2) are presented in Table 3, where the reference population is individuals who did not complete primary schooling.[14] This demarcation addresses the policy concern in Uganda of high primary school dropouts and consequent failure to complete primary school. Furthermore, the table only shows the education variables that are of interest to the present investigation.

The upper panel shows the estimated coefficients while the bottom two panels show the estimated percentage changes in returns to education.[15] In the estimation of return to education, it is important to account for the possibility of ability bias—the fact that individuals with higher innate ability find it easy to continue and complete schooling. Consequently, following Leigh (2008), account is made for ability bias by estimating separate regressions assuming a 10 percent upward ability bias and the results appear in panel 3.

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[14] These are individuals earning a wage with only 6 or less years of school attainment.
[15] The percentages in bold indicate that the respective schooling grade is significant.

Table 3: Returns to education by gender for individual aged 25-64 years

Panel 1 Regression Results

Variables	Log of monthly wage			Working for a wage		
	All	Female	Male	All	Female	Male
	[A]	[B]	[C]	[D]	[E]	[F]
Primary 7	0.113	-0.014	0.154	-0.008	0.017	-0.028
	[0.74]	[0.05]	[0.93]	[0.44]	[0.56]	[1.08]
Senior1	0.456	0.543	0.492	0.083	0.132	0.055
	[1.64]	[1.21]	[1.60]	[1.65]	[2.11]*	[0.75]
Senior 2	0.613	1.209	0.466	0.041	0.034	0.048
	[3.73]**	[3.15]**	[2.41]*	[0.93]	[0.69]	[0.76]
Senior 3	0.897	1.32	0.791	0.154	0.102	0.188
	[4.72]**	[3.34]**	[4.51]**	[2.59]**	[1.14]	[3.79]**
Senior 4	0.771	1.361	0.637	0.092	0.122	0.084
	[3.71]**	[2.83]**	[3.71]**	[2.81]**	[2.26]*	[1.83]
Senior 5	0.588	1.742	0.164	0.028	0.107	-0.023
	[1.38]	[4.78]**	[0.35]	[0.26]	[0.60]	[0.17]
Senior 6	0.887	1.742	0.756	0.212	0.513	0.168
	[3.10]**	[4.98]**	[3.17]**	[3.41]**	[4.06]**	[1.71]
Post secondary+	1.956	2.338	1.867	0.386	0.491	0.346
	[8.48]**	[7.23]**	[9.15]**	[8.35]**	[5.11]**	[7.61]**
Observations	921	239	682	921	239	682
R-squared or Pseudo R2	0.41	0.51	0.36	0.132	0.156	0.087

Panel 2: Percentage effects-assuming no ability bias

Primary 7	12	-1	17	-1	2	-3
Senior1	58	72	64	8	**13**	6
Senior 2	**85**	**235**	**59**	4	3	5
Senior 3	**145**	**274**	**121**	15	10	**19**
Senior 4	**116**	**290**	**89**	**9**	**12**	8
Senior 5	80	471	18	3	11	-2
Senior 6	**89**	**210**	**78**	**21**	**51**	**17**
Post secondary	**607**	**936**	**547**	**39**	**49**	**35**

Panel 3: Percentage effects-assuming 10 % upward ability bias

Primary 7	11	-1	15	-1	2	-3
Senior1	52	65	57	7	12	5
Senior 2	**76**	**212**	**53**	4	3	4
Senior 3	**131**	**247**	**109**	14	9	17
Senior 4	**105**	**261**	**80**	**8**	**11**	8
Senior 5	72	424	16	3	10	-2
Senior 6	**80**	**189**	**71**	19	46	15
Post secondary	**546**	**842**	**492**	**35**	**44**	**31**

Source: Author's calculations based on GPS, 2007/08
Note: i) All estimates are relative to those who have not completed primary education;
ii) Robust standard errors, clustered at the district level, in brackets. ***, ** and * denote statistical significance at the 1 percent, 5 percent and 10 percent levels respectively;
iii) Specifications for log of monthly wage are restricted to those with monthly wages and specifications in positive earnings are restricted to those with positive monthly earnings;
iv) Regressions in columns A to C are estimated using OLS, and estimates in columns D to F are marginal effects from a probit model;
v) All regressions include indicator variables for each single year of experience, interacted with the respondent's sex, plus district fixed;
vi) For columns A to C, results in Panels 2 and 3 are calculated as exp(β)-1 and 0.9*(exp(β)-1), respectively; and
v) For columns D to F, results in Panels 2 and 3are identical to the marginal effects shown.

The first 3 columns show that the returns to education are high in Uganda and returns to female education far outweigh that of males. For example, as indicated in panel 2, females completing senior 4 (Ordinary level – O-level) earn about three-fold more than those who do not complete primary education. The corresponding rates for males are only 89 percent. The returns also increase with increasing education attainment. For example, females with post secondary education earn about 9 times more than those who do not complete primary schooling. Panel 3 also shows that even when you account for innate ability, the returns to both male and female education remain considerably higher.

The last three columns of Table 3 show the impact of higher education attainment on the probability that an individual will earn a wage (i.e. will have a positive wage). In this case, most of the independent schooling variables are not significant with the exception of the higher education attainment. For example, the probability of females working for a wage increases by as much as 49 percent if they acquire post secondary education; the corresponding rate for males is 35 percent. Overall, Table 3 shows that the returns to education for female in Uganda are higher than those for males.

This finding is consistent with Psacharopoulos and Patrino (2004). This may be explained by the relatively fewer women in paid employment and for those in paid employment, their concentration in relatively high value occupations—notably in the education and health sector. Nonetheless, apart from the possibility of higher wages, female education has other benefits as well. For example, studies show that higher female education attainment is associated with: reduced fertility, better child nutrition, and the reduced risk of contracting diseases such as HIV/AIDS (De Walque, 2007).

5.3   Private expenditures on education by gender

The gender distribution of education expenditures is examined. This is important as gender specific education expenditures show the level of investments in children. However, caution should be exercised when interpreting the statistics in Table 4 as expenditures are conditional on school enrolment; to the extent that females or any other group do not enrol in particular education levels, their proportional total expenditures will be below. Table 4 shows the estimated total private expenditures on schooling (columns A_1 to G_1) as well as the corresponding female share of total expenditures on education (columns A_2 to G_2). It is indicated that females account for 47 percent of the estimated Ushs1,218 billion private expenditures on education.

This figure represents 5 percent of Uganda's GDP of Ushs24,709 billion in 2007/08 (MoFPED, 2009). Nonetheless there are wide regional differences with female accounting for only 33 percent of education expenditures in Northern Uganda and 42 percent in Eastern Uganda. Table 4 further shows that urban expenditures are most equitable—with females account for 48 percent of the total expenditures. To the extent that the total spending on education in urban areas (Ushs 552.3 billion) is over 45 percent of total national spending, the results suggest that it is the higher spending on females in urban areas that helps make overall spending look equitable.

As expected, most of the spending on education in Uganda is on school fees (68 percent of total private spending on education). Nationally, females account for 47 percent of the school fees expenditures. Worth noting is the fact that females account for only 29 percent of the school fees in Northern Uganda. The above result may suggest that females are less likely to enrol into school in Northern Uganda or if they do, parents spend a disproportionately lower amount on their school fees. This issue is examined later by looking at the type of schools girls attend in Northern Uganda.

Overall, in the other regions, girls account for a fair share of school fees. The most glaring gender differences are observed for expenditures on transport to school. In this case, females account for about one third of the transport expenses—even among urban households, they account for only 40 percent for transport expenses. Other expenditures—in particular on school uniforms and supplies are more equitable across all regions.

Next, expenditures by status of major school enrolment i.e. nursery, primary, ordinary level (O-level), advanced level (A-level) and post secondary school are investigated. Table 4 shows that an estimated Ushs29 billion is spent on nursery education in Uganda and girls account for 58 percent of the nursery expenditures. It is only in Eastern Uganda where the female share drastically reduces to only 25 percent. It is worth noting that nursery education is not mandatory in Uganda while A-level secondary schooling is not currently subsidised by government.

Nevertheless, the largest school expenses are for primary and O-level schooling—about 31 percent of the total expenses respectively. Expenditures on primary schooling are by far the most equitable with the least share of 45 percent registered in Eastern Uganda. With the exception of Northern Uganda, expenditures on lower secondary schooling are also nearly equitable between boys and girls. In Northern Uganda, girls account for only 31 percent of expenditures at O-level. This suggests that relatively fewer girls transit from primary into secondary school in Northern Uganda.

The lower female enrolment into secondary school may also be seen from the expenditures at A-level. Although, females account for a reasonable 40 percent of A-level expenditures, this varies widely depending on location. In rural areas, the corresponding rates are only 31 percent while in Eastern and Northern Uganda; the female share of A-level expenditures is about 15 percent. Western Uganda also fairs much worse with females only receiving 33 percent of the A-level expenditures in the region. The former result shows a dramatic decline in the female share of expenses for Eastern Uganda.

This suggests that although in Northern Uganda girls start falling behind boys in lower secondary schooling, in Eastern Uganda and to a limited extent in Western Uganda, expenditures on girls only start falling behind boys at A-level. When post secondary education is considered—which includes universities and other specialised colleges, girls in Northern Uganda account for only 8 percent of total expenditures in this category.

Table 4: Estimated private expenditures on education by gender, 2007/08

	Estimated School fees paying population ('000)	Total annual Expenditures (Ushs, billions)							Female Share of total education expenditures						
		All	Location		Regions				All	Location		Regions			
			Rural	Urban	Central	Eastern	Northern	Western		Rural	Urban	Central	Eastern	Northern	Western
		A_1	B_1	C_1	D_1	E_1	F_1	G_1	A_2	B_2	C_2	D_2	E_2	F_2	G_2
I															
All Uganda	8,976	1217.9	665.6	552.3	661.2	178.2	71.9	306.5	0.47	0.47	0.48	0.50	0.42	0.33	0.48
By Category of school expenses															
School Fees	6,224	827.2	433.7	393.5	454.2	111.9	45.8	215.2	0.47	0.47	0.48	0.51	0.42	0.29	0.48
Transport Costs to School	939	54.5	23.0	31.5	31.6	7.5	3.2	12.2	0.32	0.22	0.40	0.42	0.44	0.33	0.50
Uniforms and Sports Kits	6,978	78.2	56.5	21.7	32.4	15.4	10.4	19.9	0.47	0.49	0.47	0.49	0.43	0.47	0.52
Books and School supplies	8,663	129.0	84.4	44.5	67.2	21.3	8.3	32.2	0.49	0.48	0.48	0.48	0.46	0.42	0.52
Other Expenses	4,696	128.8	67.6	61.2	72.7	22.2	4.2	29.7	0.48	0.49	0.48	0.51	0.45	0.33	0.49
II															
By Stage of Schooling															
Nursery	498	29.4	17.1	12.2	15.5	3.4	3.1	7.3	0.58	0.58	0.58	0.68	0.25	0.67	0.55
Primary	7,048	383.2	252.2	131.0	210.7	58.8	27.5	86.2	0.49	0.51	0.44	0.49	0.45	0.49	0.52
O-Level	930	377.9	240.3	137.6	180.6	68.4	24.0	104.9	0.49	0.50	0.46	0.50	0.52	0.31	0.51
A-Level	210	161.4	77.6	83.6	100.9	13.0	6.2	41.4	0.40	0.31	0.50	0.51	0.15	0.17	0.33
Post Secondary Schooling*	190	244.3	68.9	175.4	136.3	32.0	10.9	65.2	0.44	0.37	0.49	0.52	0.27	0.08	0.51
III															
By Type of School															
(A) Primary Schooling															
Public School	5,618	167.8	128.4	39.4	62.1	38.1	20.3	47.2	0.50	0.51	0.46	0.46	0.49	0.48	0.56
Private School	1,170	198.9	111.1	87.8	140.6	17.0	4.5	36.8	0.49	0.51	0.43	0.50	0.44	0.47	0.48
NGOs and other schools	243	16.2	12.5	3.8	7.9	3.5	2.7	2.1	0.54	0.53	0.50	0.56	0.15	0.85	0.65
(B) Secondary Schools															
Public School	607	279.5	179.9	99.6	117.9	49.9	26.8	87.8	0.43	0.41	0.47	0.45	0.46	0.25	0.44
Private School	554	272.0	149.4	122.6	159.9	40.8	7.9	63.7	0.49	0.51	0.46	0.51	0.56	0.12	0.45
NGOs and other schools	48	27.9	20.0	7.9	14.9	5.9	1.3	6.2	0.62	0.58	0.64	0.81	0.32	0.38	0.52
IV															
By Type of school abode															
Primary															
Day schools	6,280	210.8	148.3	62.5	102.3	38.5	22.3	47.7	0.48	0.48	0.48	0.48	0.50	0.48	0.47
Boarding schools only	119	43.1	24.6	18.6	24.4	7.0	2.8	8.9	0.50	0.55	0.44	0.22	0.22	0.40	0.57
Mixed boarding and day schools	639	129.1	79.1	50.0	83.9	13.2	2.4	29.6	0.52	0.58	0.39	0.48	0.47	0.67	0.58
Secondary															
Day schools	415	115.4	64.8	50.7	59.2	23.8	6.8	25.6	0.41	0.39	0.45	0.43	0.46	0.25	0.39
Boarding schools only	322	210.4	117.4	93.0	84.6	32.3	25.2	68.3	0.43	0.39	0.48	0.50	0.44	0.21	0.41
Mixed boarding and day schools	469	253.3	166.8	86.4	148.1	37.3	4.0	63.9	0.52	0.54	0.48	0.53	0.58	0.16	0.50

Source: Author's calculations from the 2007/08 GPS survey

Notes: *This level includes individuals either attending a university or speciliased post secondary schooling e.g National Teacher colleges

Overall, these results indicate that girls in Northern Uganda and to a limited extent in Eastern Uganda receive considerably lower investments in their schooling than their male counterparts. This could be explained by non-enrolment mentioned earlier or enrolment into low cost schools. In order to examine the latter factor, schooling expenditures in primary and secondary school is looked at by: (1) the ownership of the school i.e. public, private or NGO and (2) whether the school is day, boarding or mixed day schooling.

The panels III and IV show that in Northern Uganda—for secondary education, girls are not enrolled in either public or private schools on one hand or in day or boarding schools, on other. This confirms that what is driving lower than average female shares of education expenditures in Northern Uganda are non enrolments and not enrolment in particular low cost schools. Given that households in Northern Uganda are the poorest—i.e. with the highest incidence of income poverty, the results suggest that with increased demand for school resources as one move up the schooling ladder, parents spend less on girls as shown by Alderman and King (1998).

5.4   Gender differences in access to health care by gender

Following Gao and Yao (2006) who examine gender gaps in access to health care in rural China, whether females in Uganda are discriminated with respect to health care expenditures is examined. The health access module of the GPS (see section 4) is utilised for the analysis. The results based on equation (2) are presented in Table 5. For demographic variables, the excluded category is males aged 0-4 years. With regard to the propensity to seek formal health care (Column I), the results indicate that only girls aged 0-4 years and females aged 50 years and above are significant. In particular, these two categories of females are about 2.5 percent less likely to consult formal care. All other female and male categories are insignificant. Without information on the severity of illness, a comprehensive explanation is not offered on why female infants and older women are less likely to seek care.

However, one issue examined is whether differences in propensity to seek formal health care are driven by differences in health care expenditures. Column II-III shows the Probit estimates for having either a positive curative or transportation expense. In this case, females aged 0-4 years are about 3 percent less likely to register any positive curative or transport expenditures. For actual values of expenditures, column IV shows the values of health expenses increase with age. In particular, males aged 15-21 years on average spend about 19 percent more on health care expenses. This increases to about 35 percent for males aged 50 years and above. The only other category with significant health expenses are females aged 50 years and above—they spend on average 23 percent more than males aged 0-4 years.

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Table 5: Determinants of seeking care and health expenditures

Variable	Propensity to seek formal health care	Curative Expenditures [A]	Transportation Expenditures [B]	Value of total expenditures [C]
	I	II	III	IV
Age group (*ref:* Male 0-4 years)				
Males 5-14 years	-0.003	-0.003	-0.006	0.024
	[0.55]	[0.37]	[0.74]	[0.36]
Males 15-21 years	0.001	0.012	-0.001	0.195
	[0.11]	[1.13]	[0.08]	[2.46]*
Males 22-49 years	0.014	0.036	0.003	0.298
	[1.53]	[2.77]**	[0.29]	[2.99]**
Males aged 50 years +	-0.007	-0.003	0.024	0.353
	[0.62]	[0.19]	[1.84]*	[3.01]**
Females <5 years	-0.025	-0.026	-0.029	-0.097
	[3.95]**	[2.89]**	[3.57]**	[1.38]
Females 5-14 years	0.001	-0.006	-0.002	-0.072
	[0.22]	[0.75]	[0.29]	[1.13]
Females 15-21 years	0.011	-0.006	0.012	-0.029
	[1.35]	[0.51]	[1.18]	[0.33]
Females 22-49 years	0.009	0.017	0.024	0.142
	[0.98]	[1.29]	[2.19]*	[1.41]
Females aged 50 years +	-0.024	-0.015	0.035	0.235
	[2.41]*	[1.04]	[2.88]**	[2.15]*
Household size	0.001	0.002	0.002	-0.014
	[0.24]	[0.28]	[0.29]	[0.25]
Dependency ratio	0.011	0.01	0.002	0.028
	[2.24]*	[1.39]	[0.39]	[0.52]
Education attainment of household head (years)	0.004	0.006	0.006	0.054
	[4.16]**	[3.95]**	[4.83]**	[5.05]**
Urban	0.019	0.031	0.051	0.412
	[1.64]	[1.88]	[3.61]**	[3.36]**
Central	-0.018	0.109	0.158	1.86
	[1.54]	[7.12]**	[10.03]**	[15.51]**
Eastern	0.004	0.098	-0.01	0.657
	[0.36]	[6.60]**	[0.69]	[5.75]**
Western	-0.088	-0.077	0.238	0.906
	[6.98]**	[4.82]**	[14.52]**	[7.35]**
Observations	8,867	8,867	8,867	7,323
R2/pseudo R	0.16	0.15	0.15	0.18

Source: Author's calculations based on GPS 2007/08

Note. (1)The results are for individuals who report being sick and seek professional medical attention. [A] The dependent variable is any positive medical expenditure =1, otherwise =0, and the standard probit model is estimated. [B] the dependent variable is any positive transportation expenditures and C the dependent variable is the value of all expenses.
(2) *Significant at the 10 percent level; **Significant at the 5 percent level; and ***Significant at the 1 percent level

Overall, the above results suggest that adult males are more likely to spend on health than either young men or females—confirming significant gender differences. The most plausible explanations include the fact that most of the household incomes are in hands of males. On other hand, analysis based on other household surveys in Uganda reveals males are more likely to seek health care in private health facilities relative to their female counterparts.

The exception for old women may be explained by the fact that they may be the breadwinners of households or may be in position to earn own income. However, caveat should be applied in interpreting the above results. Health care expenses may be partly explained by the disease burden. Previous studies such as Ssewanyana et al. (2004) show that infants in Uganda are more likely to suffer from common ailments like malaria compared to adults suffering from chronic diseases such as diabetes and hypertension.

5.5   *Private expenditures on health*

Similar to the case of education, private expenditures were examined on health and whether there are gender differences in total health expenditures. Table 6 shows the estimated expenses for medical consultation, treatment and drugs for individuals reporting illness in the past 30 days prior to survey[16]. Columns (A2 –G2) show the associated female share of health expenses. First, it is indicated that females account for a 51 percent share of Ushs920 billion spent on health care in 2007/2008. Also worth noting is the fact the female share is higher in rural than urban areas (51 percent versus 48 percent). Related, unlike the case for education, the Ushs176 billion spent by individuals in urban is only 19 percent of the total health expenses—as opposed to 45 percent for education. Finally, in regions of Northern and Western Uganda, the female shares of health expenses far outweigh that of males.

Health expenditures by type of health care provider are also considered. The table indicates that private clinics account for 50 percent of the total health expenses and this is also relatively evenly distributed between females and males. It is only for expenditures at public health units and hospitals that the female share falls to only 33 percent. This particular result should be interpreted in the context as use of public health facilities is supposed to be free since 2001.

Nonetheless, there is extensive evidence to show that households still have to make contributions to receive public health services—either as an inducement to receive faster services or as a supplementary expenditure e.g. to purchase drugs and sundries. Secondly, it is possible that the additional expenditures levied at public health facilities are lower for females than males—some form of price discrimination. However, without information on the severity of illness, and nature of services used (e.g. use of x-ray services is more expensive than a regular laboratory test) it is not possible to state that females receive a lower private investment in public health facilities.

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[16] The expenses were stated for the past one month, and were converted this to annual expenditures by multiplying by 12.

Table 6: Estimates private expenditure on health by gender, 2007/08

	Total annual Expenditures (Ushs, billions)							Female Share of total health expenditures (%)						
	All	Location		Regions				All	Location		Regions			
		Rural	Urban	Central	Eastern	Northern	Western		Rural	Urban	Central	Eastern	Northern	Western
	A_1	B_1	C_1	D_1	E_1	F_1	G_1	A_2	B_2	C_2	D_2	E_2	F_2	G_2
All Uganda	920.3	744.2	176.1	396.6	174.2	90	259.6	0.51	0.51	0.48	0.48	0.48	0.58	0.53
By Type of Health Care Provider														
Private Clinic	461.3	354.6	106.9	200.4	82.1	30.9	148.2	0.52	0.52	0.53	0.53	0.48	0.56	0.52
Public Health Unit	106.5	95.8	10.7	43	24.5	14.7	24.3	0.52	0.54	0.33	0.59	0.48	0.67	0.34
NGO Health Unit	35.1	24.6	10.4	16.8	6.8	4.2	7.3	0.46	0.48	0.43	0.45	0.53	0.38	0.48
Public Hospital	173.1	151.9	21.2	92	11.8	15.4	47.7	0.44	0.45	0.35	0.34	0.71	0.48	0.60
NGO Hospital	63.2	49.2	14.3	16.2	21.1	17	9.9	0.54	0.51	0.63	0.48	0.50	0.68	0.44
Pharmacy/Drug Shop	41.5	33.2	8.3	20	14	4.1	3.5	0.53	0.55	0.43	0.55	0.49	0.68	0.43
Traditional Healers	24.7	22.2	2.6	4.2	2.3	2	16.3	0.57	0.64	0.64	0.46	0.46	0.85	0.65
Other health care providers*	12.3	10.8	1.5	3.6	5.3	0.5	2.9	0.63	0.62	0.60	0.64	0.55	0.20	0.79

Source: Author's calculations from the 2007/08 GPS survey

Notes: *This includes community health workers such as HOMAPAK drug distributors and the use of ordinary shops to purchase medicine.

6. CONCLUSIONS

Using the comprehensive nationally representative GPS of 2007/08, this paper examines various dimensions of gender biases in access and utilization of education and health facilities; as well as gender differences in returns to education. The extent of gender differences in investment in girls' and boys' education and health proxied by private expenditure are also examined. Boys and girls were found to receive relatively equal treatment in primary schooling. However, for secondary schooling there is evidence of anti-girls' bias in private education expenditures—especially in Northern Uganda.

For higher secondary education, even well to do regions like Western Uganda also fall behind on the allocation of resources to girls. Returns to female education were found to far outweigh those of men and this may be partly explained by relatively fewer women being in paid employment and their concentration in education and health occupations. The results point to significant challenges for female education in Northern Uganda. Faced with rising costs of living coupled with relatively low welfare status, households in Northern Uganda may be choosing to educate boys at the cost of girls. The various government and development partner's interventions in the region should address the plight of girls.

The gender differences in the use of health services are not as clear-cut as the case for education services - although the overall private health expenditures suggest that females receive slightly a higher share of health resources. The regression analysis, which accounts for other household factors, shows that households on average spend more money on males than females. With the government having minimal influences on the costs of private clinics (where majority of private health expenditures are made), addressing this gender bias presents a dilemma. More so, with males still maintaining a firm control of household resources, increasing the average female health expenditures can only be a long-term goal.

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