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Impact of Universal Primary Education Policy on Out of School Children in Uganda

Kamal Lamichhane[*] and Takahiro Tsujimoto[†]

Abstract

Despite the recognition of the importance of providing quality education to all children in several international declarations, still majority of children with disabilities are likely to face barriers to quality education particularly in developing countries. Numerous existing studies examine the education of female as out of school children, yet only few studies exists on children with disabilities. To bridge the knowledge gap in the existing studies, using the nationally representative demographic and health survey dataset, we estimate the effect of Universal Primary Education (UPE) policy on educational attainments of out of school children in Uganda. Following the identification strategies in previous literatures, we compare two cohorts (pre- and post- UPE) for those with and without disabilities. While UPE was found effective to bridge the gender gap, we observe no significant improvements between children with and without disabilities in poor households. This finding suggests the difficulty of parents with financial constraints to invest in education regardless of whether their children are disabled or not. Additionally, for the samples with disabilities only, we observe positive effect of UPE on years of schooling for full and female samples but not for poor households. These findings suggest that simply waiving of tuition fee as UPE policy does is not sufficient to increase the school enrollment and years of schooling of persons with disabilities, especially in poor households.

Keywords: Universal primary education policy; persons with disabilities; Gender; out of school children; Uganda

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1. Introduction

Education is one of the effective strategies to diminish poverty, increase economic empowerment, and achieve social inclusion. Therefore, the importance of providing quality education to all children regardless of any differences is recognized in several international declarations including the Millennium Development Goals (MDGs) 2000-2015. Likewise, goal 4 in general and 4.5 of the recent post-2015 Sustainable Development Goals (SDGs) in particular have clearly included a focus on vulnerable children in education including those with disabilities (UN 2015). While the year 2015 marked the end of both MDGs and Education for All (EFA), the EFA Global Monitoring Report 2013/14 indicated which countries were expected to achieve each goal and which were not (UNESCO 2015). While other goals were either reached or nearly achieved by the majority of countries, the goal of providing quality education to people with disabilities (PwDs) is yet to be achieved, especially in low and middle income countries.

Therefore, in this paper, we examine the effect of universal primary education policy (UPE) on the educational attainment on PwDs as compared to people without disabilities (non-PwDs) in a developing country namely Uganda. The country was chosen because it was one of the first Sub-Saharan African (SSA) countries to adopt the UPE policy in 1997, and is considered to be moving toward achieving EFA goals, though still far from achieving UPE and disability parity in primary education. Using the large and nationally representative demographic and health survey (DHS) dataset of 2011, we aim to partially fill the existing knowledge gap by examining the effect of UPE on PwDs and non-PwDs. We evaluate the effect of UPE on these groups by comparing the pre- and post-UPE cohorts, as existing studies on the impact of UPE have done. This enables us to see which groups are more vulnerable to quality education and which groups require more targeted strategies to improve their educational attainment. In particular, we focus on the following research questions: What is the

difference in the educational attainment between males and females, and PwDs and non-PwDs? What factors are associated with the educational attainment of PwDs? Are there any differences in educational attainment within the group of disability, e.g. any gender differences within the population of PwDs?

Through this study, we intend to help the government of Uganda, and bilateral and multilateral agencies to design policies to mitigate the gap in education between PwDs and non-PwDs. The originality of this research lies in the utilization of the nationally representative DHS dataset that includes a short set of questions on disability recommended by a Washington group on disability statistics. The collated data has been analyzed using the econometric techniques that help to identify the effect of UPE focusing more on gender and severity of disability. To the best of our knowledge, the kind of empirical study carried out in this paper is not available in the current literature, particularly for developing countries due to the lack of data. This paper also serves as a timely contribution toward the implementation of goal four of the SDGs. To make development inclusive, building the human capital of PwDs should be as important as other central development goals (Lamichhane and Okubo 2014). The structure of this paper is as follows: section 2 discusses the related literature and Uganda as a study context; in section 3, the dataset and empirical strategy are described; section 4 presents results and findings; and section 5 presents concluding remarks.

2. Related Literature and Study Context

Educational attainment in SSA countries has been stagnant for long time. The gross enrollment ratio (GER) in primary education was 76.1% in 1985 and, surprisingly, decreased over the following decade, reaching 73.9% in 1995 (UNESCO 1998). Since around 2000, there has been significant progress because of the introduction of UPE policy in some SSA countries. This policy abolished school fees for public primary education. However, despite Uganda

adopting UPE policy in 1997, earlier than other SSA countries, UNESCO (2015) shows that Uganda's GER diminished by 18 percentage points between 1999 and 2012.

Though ample literature has examined the cost of education both for developed and developing countries, studies particularly focusing on the impact of UPE in developing countries are rare. There are some important studies examining the impact of UPE in Uganda on school attendance and educational attainment (Deininger 2003; Nishimura et al. 2008; Grogan 2009; Masuda 2016). Deininger 2003 and Grogan 2009 found that UPE contributed to a dramatic increase in primary school attendance and decrease in gender, income, and region inequalities in attendance. However, Deininger 2003 also found that school fees paid by parents decreased at the primary level but not the secondary. Additionally, by using data from 940 rural households, Nishimura et al. 2008 estimated the effect of UPE policy in Uganda on primary education attainments and found that it decreased delayed enrolments and increased grade completion rates up to the fifth grade (Nishimura et al. 2008). The same study also found strong a association between UPE and girls' enrollment in school, particularly in poor households.

While these studies examined the effects of UPE on children in general or female students, there are few studies that focus on PwDs. This paper contributes to literature on the effects of UPE on educational attainment (years of schooling and enrollment rates) of PwDs, and compares the effects between PwDs and females. Several of these studies similarly used a comparison between pre- and post-UPE cohorts as the main empirical strategy. In order to consider the endogeneity, recent econometric papers supply a propensity score matching (PSM) method. However, since the validity of PSM has been discussed (King and Nielsen 2016), and because of several limitations of the dataset used in this study, we simply compare pre- and post-UPE cohorts regarding the types of out of school children.

While these studies indicate the effectiveness of UPE policy on improving access to primary education for children of poor families by removing tuition for public primary

education, none of the studies above examined if there exist any gaps between those with UPE experience and those who were enrolled before the UPE policy, in particular for poor and non-poor households. Likewise, it is yet unclear whether the UPE is equally effective in improving access to quality education for children with disabilities who may suffer from financial constraints, as well as institutional and environmental barriers. In addition, as stated earlier, to the best of our knowledge, we are not aware of any empirical studies comparing the effect of UPE on school attendance and educational attainment between PwDs and non-PwDs. Mizunoya et al. 2016, however, stated that in countries that have made good progress towards universalizing education, a high proportion of the remaining out-of-school children are those with disabilities.

In the case of Uganda too, despite the efforts of the government to provide quality basic education to marginalized populations, PwDs are likely to be left behind. One possible explanation for this is the government's 1997 policy to meet the costs of schooling for only four children per family, a legal provision that might have encouraged families with more than four children to put less priority on any children with disabilities. This provision was, however, amended to benefit all children in 2003. Another explanation for parents not sending their kids with disabilities to school might be the UPE requirement that parents themselves had meet the costs of school uniforms, meals, and exercise books (Mehrotra and Delamonica 1998; Black et al. 2005). Any parents who could not meet these obligations may not be able to send their kids in school, but the likelihood that parents of disabled children would face these difficulties is higher because they are more likely to fall into the poverty trap, and are less likely to see the benefit of education for their children with disabilities. As the UPE policy normally subsidizes tuition fees only, leaving other direct and indirect costs to be borne by parents and families, the equity of education remains a concern under the UPE policy (Nishimura et al. 2008).

Contrary to what parents may believe, the education of PwDs has been shown to have far-reaching benefits. Looking at Nepal, Lamichhane and Sawada 2013 found the returns on

the investment in education for PwDs to be 19.2-25.6%, which is two or three times higher than those without disabilities, as reported by Psacharopolous and Patrinos (2004). Despite these higher returns, yet studies show that nearly 50% of PwDs are out-of-school and among them 85% never enroll in schools (Mizunoya et al. 2016a). Even when countries make good progress towards access to education, a high proportion of the remaining out-of-school children are likely to be PwDs.

In Uganda, according to the 2002 Population and Housing Census, nearly 16% of the total population have some form of disability. This rate is consistent with the 2011 DHS of nearly 20%. Using this percentage we can estimate that among the total population of 35 million (Uganda Bureau of Statistics 2016), approximately 7 million people live with some form of disabilities. There are some laws and policies pertaining to PwDs' rights. Article 21 of the constitution of Uganda (1995) prohibits discrimination against them. Additionally, The PwDs Act of 2006 provides for equal opportunities with the elimination of all forms of discrimination against PwDs, while the Business, Technical, Vocational Education and Training (BTVET) Act, No. 12, of 2008, promotes equitable access to education and training for all disadvantaged groups including PwDs. Moreover, Uganda ratified the Convention on the Rights of People with Disabilities (CRPD) and its optional Protocol on September, 2008. Despite such progress in legal ground, there are few schools (Millward et al. 2005; Nyende 2012), as well as few teachers for PwDs within each school (Kristensen et al. 2006). In Uganda, though the inclusive education system started in 1997, it has not been effective since teachers lack experience supporting children with severe disabilities (Kristensen et al. 2006).

3. Dataset and Estimation Models

3.1 Dataset

The datasets used in this study are adopted from the Ugandan Demographic and Health Survey (UDHS) conducted in 2006 and 2011, a nationally representative household survey. The UDHS comprises information on women aged 15-49 years and men aged 15-54. The survey included questions on individual and household level characteristics such as education, employment, household socio-economic characteristics, health, etc. We have used these datasets as they include questions to identify people's disability status based on the short set of questions recommended by the Washington Group on Disability Statistics. These questions allow for the categorization of six types of disabilities: seeing, hearing, walking, remembering, self-care and communicating. Additionally, these questions provide information regarding not only the existence of disability, but also about its severity.

We could estimate the effect using only UDHS2011, but have adopted two datasets. If we used a single dataset to estimate, we would have had to compare populations in two different age groups: 22-26 and 27-31. This would be problematic as rates of both having and reporting disability increases with age. We try to reduce the measurement error using two datasets, which allows us to compare people in the same age group: 22-26. The questionnaire about education, disability and variables used in this study are the same in these datasets.

3.2 Empirical strategy

Lots of previous studies estimating the effects of education adopted a regression discontinuity design (RDD) as a common technique. Duflo 2001 is a widely known study that used educational policy as a dummy variable based on the RDD and instrumental variable (IV) approach. Her study estimated the effects of schooling on labor market using the educational policy change as the IV that the education policy affects individual's educational outcomes in

Indonesia. The first stage estimation in her paper evaluates the coefficients of dummy variables treating the policy change, and the results were functioned in the second stage.[1] The purpose of our paper is to evaluate the impacts of UPE, and thus is equivalent to the first stage in Duflo 2001. Similarly, existing literature estimated the impacts of educational policy change using dummy variables as the key variable that is based on RD, and guided by a natural experimental situation. For example, Dinçer et al. 2014 estimated the impacts of educational policy changes in Turkey using a dummy variable. Likewise, in the case of UPE in Uganda, Deininger 2003, Nishimura et al. 2008 and Grogan 2009 treated the policy change as the natural experiments, and identified the effect of policy change using dummy variables.

We use data for household members who were born between 1980-1989 following these previous studies. Since UPE started in 1997, household members born between 1985-1989 benefited from the policy when they were in primary school or before enrollment. Thus we define the people who were born between 1985-89 as the post-UPE cohort (treatment group), and those born between 1980-84 as the pre-UPE cohort (control group).

Our definition of the treatment group follows that of Dinçer et al. 2014. Nishimura et al. 2008 and Grogan 2009 define the UPE-affected cohort as children who are younger than the exact age of enrollment in 1997, whereas, Dinçer et al. 2014 defined the treatment group as those who were already primary students in 1997. Normally we would want to consider a person's educational circumstance (dropout or delayed), however, DHS does not include this educational information about adults. Since there are many delayed-enrollment in Uganda (Mizunoya et al. 2016a), and DHS cannot allow us to identify the treatment group using adults' educational tracking information (especially delayed enrollment), we defined the treatment group as the people born between 1985-89 following Dinçer et al. 2014. It is one of the limitations of the dataset, and leads to the possibility that our results may be underestimated.

[1] This design is adopted as a common technique since the identification can separate the effects of treatment group from some endogeneity. Many studies focused on the educational policy change as a natural experiment (Arendt 2005; Chou et al. 2010).

In order to identify the effects of UPE policy on out of school children, we construct three variables: UPE_i, which takes a one if a household member experienced UPE policy as a primary student and a zero otherwise; $Female_i$, which takes a one if a household member is female; and $Disability_i$, which takes a one if a household member reported one or more disabilities and a zero otherwise.[2]

We analyze the effect of UPE policy on educational outcomes using ordinary least squares (OLS) and logistic estimations as follows:

$$(1)\ y_i = \alpha + \beta_1 UPE_i \times Disability_i + \beta_2 UPE_i \times Female_i + \gamma X_i + \delta_j + \theta_t + \varepsilon_i$$

where subscripts i, j and t indicate respondent, region, and birth year respectively. y_i is educational outcome (years of schooling, primary enrollment and primary completion). X_i is a vector for the characteristics of a respondent ($Disability_i, Female_i, UPE_i$, type of residence, and wealth index) and household head (female, age, and years of schooling). δ_j and θ_t are region and birth year fixed effects, respectively. β_1 and $\beta_2$are parameters to be estimated. ε_i is an error term. The parameter of the interaction term between UPE and Disability (β_1) indicates the effects of UPE policy on PwDs, and the interaction term between UPE and Female (β_2) indicates the effects on female. These parameters allow us to test whether the UPE policy reduced the educational attainment gap or not. Table 1 presents descriptive statistics for all samples.

Panel A of the Table shows the respondents' characteristics for the pre- and post-UPE cohorts. The share of females is about 56%, and the share of PwDs is 11-13%. Respondents are about 24 years old on average and 20-26% of respondents live in urban areas. Only 20% of household heads are female. Household heads have an average of 6.6 years of schooling. The difference of mean characteristics in the pre- and post-UPE cohorts (Column 4) indicates that on average, respondents in the post-UPE cohort tend to report any disabilities, live in urban

[2] The questionnaire is provided in the Appendix. The dataset does not include the information about the onset of disability, and so we have to assume that the individual has had the disability since birth, which may not always be true. It is a serious limitation of most of the available datasets.

areas, and have household heads who are more likely to be educated than their pre-UPE counterparts.

Likewise, panel B in the table shows the main outcome variables (years of schooling, primary enrollment ratio, and primary completion ratio) for the pre- and post-UPE cohorts as well as for those with and without disabilities. We test whether there exists any difference in mean educational outcomes of respondents with and without disabilities. In terms of all outcomes, regardless of UPE policy, PwDs are less likely to be educated than non-PwDs.[3] However, both PwDs and non-PwDs have better educational attainment among participants after UPE policy. In addition, Panel C in the table shows the same variables for the pre- and post-UPE cohorts as well as for gender. We can see that while educational outcomes for female increased significantly starting at the year of UPE implementation, they did not meet the same level as those for their male counterparts. For male respondents, there are no clear changes in all outcomes between the pre- and post-UPE cohorts.

4. Results and Findings

4.1 Main results

The results for the estimation model are shown in Table 2. This table shows the clear effect of UPE on females: the coefficients for female who benefitted from UPE are significantly positive in all outcomes. However, though UPE policy increased girls' years of schooling, school enrollment, and school completion respectively by 0.608, 6.9 and 7.6 percentage points, the educational gap between girls and boys still exists since the coefficients for the female dummy are negatively significant in all outcomes. For males, the coefficients for the post-UPE cohorts are not significant in Columns (2), (5) or (8), indicating that UPE policy did not change

[3] Panel A in Table 1 in our paper shows the enrollment rate of PwDs to be about 87%, which is higher than the results in Mizunoya et al. (2016b), since their study used a sample who were children when they were surveyed.

educational outcomes for boys. These results suggest that educational attainment for male students has been consistently as high as it was before UPE policy came into effect. However the extreme gender gap was improved by UPE policy, which is actually consistent given the fact that UPE was expected to bridge the gaps by increasing girls' participation in schooling (Nishimura et al. 2008).

In contrast, we could not observe the same effects of UPE on PwDs. In all Columns except for (3), the coefficients for PwDs benefitting from UPE are not significant. We also observe disparities between PwDs and non-PwDs regardless of UPE policy. The coefficients for disability are negatively significant for both years of schooling and primary school completion. These findings could lead us to understand that the UPE policy aiming at increasing access to education has actually not been effective in improving school enrollment for PwDs. Given the importance of parents' financial situation in educating their children, lower level of PwDs' education may be partly driven by parental investment strategies that may give priority to their non-disabled children over disabled one (Lamichhane 2015). On the other hand, institutional barriers such as the lack of sufficient facilities may make the situation even worse for PwDs as parents may be required to cover additional costs, since UPE in Uganda provides tuition fees but not other costs such as those required for uniforms and educational materials. Along with with these costs to be borne by their parents, PwDs may face other institutional barriers which might not have been covered by UPE policy.

4.2 Disability and poverty

It is plausible that people with poor economic status could face more difficulties than richer people, as studies show that there is a strong correlation between disability and economic status (Hoogeveen 2005; Filmer 2008; Mitra and Posarac 2013). Therefore, to address the issue of endogeneity, we have divided samples into poor and non-poor households and regress using each sample respectively.

Panel A in Table 3 shows the estimation results for poor household samples. As observed in Table 2, here too we find the effect of UPE policy to be positive on all outcomes for girls. Likewise, the coefficients for PwDs experiencing UPE are not significant. Regarding the completion rate, however, the coefficients for the post-UPE cohort dummy are negative in Columns (7) and (8) respectively for full samples and males, meaning that the school completion rate decreases regardless of disability status especially for poor male respondents. Additionally, we observe no gaps between PwDs and non-PwDs in poor households, as all coefficients for the disability dummy are not statistically significant. This finding is consistent with the casual observation that as UPE does not cover other educational expenses such as uniforms or educational materials, and parents facing financial constraints to cover these expenses may not be able to support their children's education regardless of disability status. In terms of coefficients for PwDs with UPE experience, we see no significant results confirming the effect of UPE for disability: it is found to have an effect only for girls in poor households. In this sense, we can say that though UPE is successful in increasing the access to education by girls from poor households, the same is not observed in the case of PwDs, who are one of the most vulnerable and marginalized groups when it comes to their human capital accumulation.

Additionally, results for the non-poor household samples are shown in panel B. We gain different results here compared to the results in previous tables. First, the coefficient for females with UPE experience is positively significant at the 10% level in Columns (1) and (7), however the coefficient is smaller than in the results using full samples and poor households, as shown in Tables 2 and 3. These findings indicate the impact of UPE policy on years of schooling and completion rates for girls from richer families. In terms of PwDs, we also see different results from non-poor households. In Columns (3) and (9), the coefficient for PwDs with UPE experience are positively significant at 10%, suggesting that UPE policy increases the years of schooling and school completion rates for girls with disabilities from non-poor households. In other words, this finding indicates that non-poor families are less likely to

discriminate against their disabled daughters' educational investment. This finding is consistent with our previous interpretation of Table 2 that financially sound families are less burdened by education-related costs that are not covered by UPE. Moreover, focusing on the female dummy, all coefficients are negatively significant at the 1% level but are lower than coefficients in previous tables. Also the coefficient for the disability dummy is negatively significant in Columns (1), (3), (4), (7), and (9). Thus, in terms of years of schooling and school completion, there are gender gaps, but those are weaker than those in poor households. Again, UPE was found not effective to reduce the existing gender gaps in enrollment rates. Similarly, though there exists disability gaps in non-poor households, UPE policy had a positive impact only for girls with disabilities.

4.3 Issue of severe disability

As the findings on disability and UPE are mostly mixed for full samples, males and females, we are particularly interested to see its impacts based on the severity of disability. To do so, we further perform our analysis focusing only on disability samples. We construct a key variable "Severe Disability," which takes a one if the respondent reported a severe disability and zero otherwise. We estimate the effect of UPE on people with severe disabilities using respondents with disabilities only, comparing data for those with moderate and severe disabilities. Table 4 shows the positive effect of UPE on years of schooling for males with severe disabilities: the coefficient is 1.509 and is significant at the 10% level in Column (2). It is therefore possible that UPE increased the years of schooling for males with severe disabilities. However, it did not affect the other outcomes.

Furthermore, regardless of degree of disability, we see a positive effect of UPE for girls with disabilities. The same tendency is observed in the main results shown in Table 2, which could indicate that UPE has been crucial in improving educational attainment by reducing gender gaps among those with disability. At the same time, despite UPE policy being

crucial for improving the schooling of girls in general, we cannot ignore the results in Table 2 that show the gaps between PwDs and non-PwDs remain the same as before UPE came into effect.

5. Conclusions

Utilizing large and nationally representative 2006 and 2011 DHS datasets from Uganda, this paper examines the effect of UPE policy on years of schooling, school enrollment, and school completion rates on out of school children. Results show the effectiveness of UPE in reducing gender but not necessarily disability gaps in education. However, UPE has positively significant results for girls with disabilities at the 10% level, suggesting non-poor families are less likely to discriminate against their daughters with disability. This finding is consistent given the fact that financially sound families are less burdened by educational costs that are not covered by UPE. Additionally, results from non-poor households suggest that income stability is an important component to improve the education of children in general.

Nevertheless, we observe that PwDs still lag behind in terms of benefitting from UPE, and the findings above emphasizes that UPE policy, which does not include proper support provisions to accommodate individual needs depending on the severity of disability, may not increase enrollment, years of schooling, and completion rates for PwDs in general and girls with multiple disabilities in particular. Therefore, policy interventions with reasonable accommodation provisions as stated in Article 2 of Convention on the Rights of PwDs is required. Additionally, though UPE eliminates school fees, other costs such as uniforms and educational materials including textbooks have to be managed by families themselves, and thus negative income shocks are likely to discourage their children's school participation and the continuation of their education.

Likewise, a lack of support provisions and accessible schools impede the education of PwDs. Furthermore, they face difficulties when efforts fail to accommodate their individual needs by removing disabling barriers. Our findings emphasize that together with awareness-raising programs for parents and communities on disability, complementary policies such as targeted subsidies to poor families to encourage PwDs' school participation are needed. One such policy recommendation would be to relax the credit constraints that households face, perhaps through a scholarship program or a social protection scheme such as a conditional cash transfer for PwDs. Besides providing scholarships, increasing the number of schools with appropriate disability-specific facilities including accessible educational materials is required. Policies like these would ensure that the country's human capital stock will not diminish and that future generations will not be impoverished.

Finally, despite some interesting findings in our study, we further acknowledge the need for new data explicitly capturing information on types of disability as well as onset in order to allow for more in-depth analysis on disability and schooling. This information will facilitate future research on issues such as supply-side barriers including the adequacy of school supplies and educational materials, and teachers' awareness of the individual needs of students with disabilities. Such research will help countries develop policies to provide quality education for people with disabilities.

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Appendix: Questionnaire about disabilities in DHS

Questionnaire in DHS follows the recommendation by the Washington Group on Disability Statistics. There are six questions depending on types of disabilities and uniform answers.

Questions

1. Because of a physical, mental or, emotional health condition. . . . Does (NAME) have difficulty seeing even if he/she is wearing glasses?
2. Because of a physical, mental or, emotional health condition. . . . Does (NAME) have difficulty hearing even if he/she is using a hearing aid?
3. Because of a physical, mental or, emotional health condition. . . . Does (NAME) have difficulty walking or climbing steps?
4. Because of a physical, mental or, emotional health condition. . . . Does (NAME) have difficulty remembering or concentrating?
5. Because of a physical, mental or, emotional health condition. . . . Does (NAME) have difficulty with self care such as washing all over, dressing, feeding, toileting?
6. Because of a physical, mental or, emotional health condition. . . . Does (NAME) have difficulty communicating, for example understanding others or being understood by others?

Answers

1 = NO - NO DIFFICULTY

2 = YES – SOME DIFFICULTY

3 = YES – A LOT OF DIFFICULTY

4 = CANNOT DO AT ALL

8 = DON’T KNOW

Table 1: Descriptive Table

Variable	Full Sample (1)	Pre-UPE cohort (2)	Post-UPE cohort (3)	Difference (4)=(3)-(2)
N	6373	3103	3270	
Panel A: Respondent characteristics				
Respondent is female; 1=female, 0=male	0.555	0.562	0.548	-0.015
	(0.007)	(0.010)	(0.009)	(0.013)
Respondent has disabilities; 1=yes, 0=no	0.122	0.112	0.132	0.020*
	(0.005)	(0.007)	(0.008)	(0.011)
Age of respondent	23.996	23.969	24.023	0.055
	(0.020)	(0.028)	(0.028)	(0.040)
Type of residence; 1=Urban, 0=rural	0.229	0.198	0.260	0.062*
	(0.011)	(0.019)	(0.021)	(0.034)
Household head is female; 1=female, 0=male	0.196	0.198	0.195	-0.003
	(0.007)	(0.010)	(0.009)	(0.014)
Age of household head	35.215	35.340	35.090	-0.250
	(0.292)	(0.419)	(0.411)	(0.591)
Years of schooling of household head	6.643	6.387	6.900	0.513***
	(0.089)	(0.131)	(0.131)	(0.193)
Wealth index	0.121	0.164	0.077	-0.087
	(0.026)	(0.045)	(0.040)	(0.069)
Panel B: Educational outcomes compared between with/without disability				
Years of schooling				
Full sample	6.832	6.245	7.420	1.175***
	(0.087)	(0.132)	(0.123)	(0.192)
With Disability (a)	6.026	5.415	6.544	1.129***
	(0.168)	(0.243)	(0.240)	(0.347)
Without Disability (b)	6.944	6.350	7.554	1.204***
	(0.091)	(0.134)	(0.131)	(0.199)
Diff. in mean (a) - (b)	-0.918***	-0.935***	-1.009***	-0.075
	(0.178)	(0.238)	(0.258)	(0.351)
Primary enrollment rate				
Full sample	0.905	0.875	0.935	0.060***
	(0.006)	(0.009)	(0.006)	(0.011)
With Disability (a)	0.869	0.830	0.903	0.073***
	(0.014)	(0.022)	(0.016)	(0.027)
Without Disability (b)	0.910	0.881	0.940	0.060
	(0.006)	(0.009)	(0.006)	(0.011)
Diff. in mean (a) - (b)	-0.041***	-0.050**	-0.037**	-0.009
	(0.013)	(0.021)	(0.016)	(0.192)
Primary completion ratio				
Full sample	0.500	0.453	0.546	0.093***
	(0.010)	(0.015)	(0.015)	(0.023)
With Disability (a)	0.407	0.362	0.444	0.082**
	(0.020)	(0.028)	(0.030)	(0.042)
Without Disability (b)	0.513	0.465	0.562	0.097***
	(0.011)	(0.016)	(0.016)	(0.024)
Diff. in mean (a) - (b)	-0.106***	-0.103***	-0.118***	-0.012
	(0.022)	(0.029)	(0.032)	(0.044)
Panel C: Educational outcomes compared between gender				
Years of schooling				
Full sample	6.832	6.245	7.420	1.175***

	(0.087)	(0.132)	(0.123)	(0.192)
Female (a)	6.196	5.482	6.932	1.450***
	(0.101)	(0.155)	(0.143)	(0.224)
Male (b)	7.625	7.226	8.012	0.786
	(0.108)	(0.157)	(0.151)	(0.223)
Diff. in mean (a) - (b)	-1.429***	-1.744***	-1.080***	0.664***
	(0.122)	(0.178)	(0.162)	(0.243)
Primary enrollment rate				
Full sample	0.905	0.875	0.935	0.060***
	(0.006)	(0.009)	(0.006)	(0.011)
Female (a)	0.875	0.830	0.922	0.092***
	(0.008)	(0.014)	(0.008)	(0.017)
Male (b)	0.942	0.933	0.952	0.019*
	(0.005)	(0.008)	(0.007)	(0.011)
Diff. in mean (a) - (b)	-0.067***	-0.102***	-0.030***	0.053*
	(0.009)	(0.015)	(0.009)	(0.028)
Primary completion ratio				
Full sample	0.500	0.453	0.546	0.093***
	(0.010)	(0.015)	(0.015)	(0.023)
Female (a)	0.444	0.381	0.509	0.129***
	(0.012)	(0.017)	(0.019)	(0.027)
Male (b)	0.569	0.547	0.591	0.045
	(0.013)	(0.019)	(0.019)	(0.027)
Diff. in mean (a) - (b)	-0.125***	-0.166***	-0.082***	-0.084***
	(0.015)	(0.021)	(0.023)	(0.031)

Note: Robust standard errors in parentheses. ***, **, * mean significant level at 1%, 5%, 10%

Table 2: Marginal Effects of UPE on Educational Attainments (Main Results)

	Years of Schooling			Enrollment Rate			Complete Rate		
	Full	Male	Female	Full	Male	Female	Full	Male	Female
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Post-UPE cohort × Disability	0.212	-0.373	0.548*	-0.008	-0.043	0.014	0.021	-0.055	0.066
	(0.251)	(0.384)	(0.332)	[0.024]	[0.029]	[0.029]	[0.032]	[0.053]	[0.042]
Post-UPE cohort × Female	0.608***			0.069**			0.076***		
	(0.191)			[0.028]			[0.024]		
Post-UPE cohort	0.986***	0.509	1.109***	-0.020	-0.019	0.054**	-0.047	-0.058	0.048
	(0.265)	(0.344)	(0.272)	[0.020]	[0.019]	[0.027]	[0.031]	[0.039]	[0.036]
With Disabilities	-0.514***	-0.442	-0.489**	-0.018	-0.016	-0.015	-0.064**	-0.035	-0.078**
	(0.176)	(0.282)	(0.220)	[0.013]	[0.018]	[0.018]	[0.025]	[0.037]	[0.033]
Female Dummy	-1.680***			-0.081***			-0.154***		
	(0.138)			[0.012]			[0.017]		
Urban dummy	0.579***	0.697**	0.483*	0.003	0.018	-0.008	0.053**	0.055*	0.055*
	(0.202)	(0.270)	(0.250)	[0.019]	[0.020]	[0.026]	[0.023]	[0.032]	[0.030]
HH head is female	1.028***	1.156***	0.873***	0.018**	0.012	0.018	0.083***	0.121***	0.047**
	(0.142)	(0.266)	(0.150)	[0.009]	[0.014]	[0.012]	[0.018]	[0.033]	[0.019]
Age of HH head	0.031***	0.037***	0.025***	0.001**	0.001*	0.001	0.003***	0.004***	0.002***
	(0.004)	(0.006)	(0.005)	[0.000]	[0.000]	[0.000]	[0.000]	[0.001]	[0.001]
Years of schooling of HHH	0.439***	0.581***	0.324***	0.020***	0.019***	0.020***	0.041***	0.061***	0.028***
	(0.017)	(0.025)	(0.019)	[0.002]	[0.003]	[0.002]	[0.002]	[0.003]	[0.002]
Wealth index	0.990***	0.535***	1.348***	0.042***	-0.001	0.077***	0.106***	0.052***	0.137***
	(0.099)	(0.128)	(0.130)	[0.010]	[0.012]	[0.015]	[0.014]	[0.018]	[0.016]
Region FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Birth Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
N	6373	2806	3567	6373	2806	3567	6373	2806	3567
R-squared	0.478	0.502	0.469						
Prob. .> F				0.024	0.009	0.095	0.002	0.001	0.042

Note: Robust standard errors in parentheses and Delta-method standard errors in brackets. In terms of interaction term (UPE cohort × Disability), we show the marginal effect when Disability = 1 and UPE cohort = 1. Marginal effect for another interaction term (UPE cohort × Female) is also when Female = 1 and UPE cohort = 1. ***, **, * mean significant level at 1%, 5%, 10%.

Table 3: Marginal Effects of UPE on Educational Attainments (Poor / Non-Poor Household Sample)

	Years of Schooling			Enrollment Rate			Complete Rate		
	Full	Male	Female	Full	Male	Female	Full	Male	Female
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel A: Poor Household Sample									
Post-UPE cohort × Disability	-0.078	-0.391	0.218	-0.043	-0.064	-0.027	0.021	0.001	0.029
	(0.367)	(0.535)	(0.450)	[0.039]	[0.044]	[0.044]	[0.043]	[0.071]	[0.056]
Post-UPE cohort × Female	0.906***			0.102**			0.070***		
	(0.260)			[0.050]			[0.022]		
Post-UPE cohort	0.266	-0.063	2.268***	-0.003	-0.015	0.121**	-0.127***	-0.141**	-0.004
	(0.335)	(0.441)	(0.353)	[0.044]	[0.032]	[0.053]	[0.045]	[0.065]	[0.053]
With Disabilities	-0.233	-0.305	-0.209	-0.002	-0.007	0.002	-0.075	-0.082	-0.080
	(0.268)	(0.398)	(0.312)	[0.026]	[0.031]	[0.035]	[0.047]	[0.063]	[0.065]
Female Dummy	-2.346***			-0.148***			-0.245***		
	(0.189)			[0.022]			[0.026]		
Control Variables	YES	YES	YES	YES	YES	YES	YES	YES	YES
Region FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Birth Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
N	2433	1040	1393	2433	1040	1393	2433	1040	1393
R-squared	0.412	0.510	0.316						
Prob. .> F				0.589	0.000	0.781	0.013	0.035	0.914
Panel B: Non-Poor Household Sample									
Post-UPE cohort × Disability	0.408	-0.285	0.865*	0.000	-0.039	0.041	0.024	-0.080	0.105*
	(0.348)	(0.530)	(0.476)	[0.030]	[0.037]	[0.039]	[0.044]	[0.067]	[0.061]
Post-UPE cohort × Female	0.422*			0.045			0.060*		
	(0.251)			[0.030]			[0.035]		
Post-UPE cohort	0.592*	0.681*	0.914**	0.000	0.002	0.047	0.011	-0.004	0.083*
	(0.327)	(0.401)	(0.388)	[0.022]	[0.026]	[0.032]	[0.041]	[0.052]	[0.048]
With Disabilities	-0.681***	-0.528	-0.716**	-0.022*	-0.027	-0.023	-0.055*	-0.015	-0.081**
	(0.234)	(0.372)	(0.312)	[0.013]	[0.024]	[0.018]	[0.030]	[0.047]	[0.038]
Female Dummy	-1.248***			-0.038***			-0.093***		
	(0.174)			[0.011]			[0.022]		
Control Variables	YES	YES	YES	YES	YES	YES	YES	YES	YES
Region FE	YES	YES	YES	YES	YES	YES	YES	YES	YES

Birth Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
N	3940	1766	2174	3940	1766	2174	3940	1766	2174
R-squared	0.403	0.446	0.378						
Prob. .> F				0.000	0.000	0.929	0.002	0.062	0.038

Note: Robust standard errors in parentheses and Delta-method standard errors in brackets. In terms of interaction term (UPE cohort × Disability), we show the marginal effect when Disability = 1 and UPE cohort = 1. Marginal effect for another interaction term (UPE cohort × Female) is also when Female = 1 and UPE cohort = 1. ***, **, * mean significant level at 1%, 5%, 10%.

Table 4: Marginal Effects of UPE on Educational Attainments of People with Severe Disabilities

	Years of Schooling			Enrollment Rate			Complete Rate		
	Full	Male	Female	Full	Male	Female	Full	Male	Female
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Post-UPE cohort	0.596	1.509*	-0.263	0.041	0.110	-0.007	0.064	0.100	-0.050
× Severe Disability	(0.704)	(0.876)	(1.008)	[0.086]	[0.101]	[0.090]	[0.068]	[0.079]	[0.123]
Post-UPE cohort × Female	1.414***			0.166*			0.150***		
	(0.482)			[0.086]			[0.044]		
Severe Disability	0.070	-0.952	3.171***	-0.071	-0.057	0.080	-0.138*	-0.109	0.070
	(0.637)	(0.801)	(0.866)	[0.072]	[0.062]	[0.079]	[0.081]	[0.102]	[0.085]
Post-UPE cohort	-0.622	-1.793***	0.334	-0.042	-0.060	-0.063	-0.064	-0.256***	0.116
	(0.502)	(0.652)	(0.671)	[0.051]	[0.050]	[0.069]	[0.066]	[0.081]	[0.084]
Female Dummy	-1.708***			-0.080**			-0.208***		
	(0.325)			[0.039]			[0.045]		
Control Variables	YES	YES	YES	YES	YES	YES	YES	YES	YES
Region FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
Birth Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES
N	732	306	426	673	282	391	732	306	426
R-sq	0.522	0.646	0.509						
Prob. .> F				0.000	0.000	0.000	0.747	0.000	0.010

Note: Robust standard errors in parentheses and Delta-method standard errors in brackets. In terms of interaction term (UPE cohort × Disability), we show the marginal effect when Disability = 1 and UPE cohort = 1. Marginal effect for another interaction term (UPE cohort × Female) is also when Female = 1 and UPE cohort = 1. All equations include control variables, region fixed effects and birth year fixed effects. ***, **, * mean significant level at 1%, 5%, 10%.

Abstract(In Japanese)

要約

本研究では、1997 年にウガンダで実施された初等教育無償化政策（UPE）が、不就学児の教育状況に与えた影響を分析している。データには Ugandan Demographic and Health Survey を使用した。識別戦略は既存文献に倣い、UPE 実施前後のコーホートを比較することで影響を推定している。先行研究では不就学児として女児に焦点を当てた研究が存在し、UPE 政策が女児の教育状況に正の影響を与えたことがすでに報告されている。しかしながら、女児にならんで代表的な不就学児である障害児への影響は未だ検証されていない。そこで本研究では不就学児として女児および障害児を定義し、UPE 政策の影響を評価した。分析した結果、先行研究と同様女児に対しての影響が確認されたが、障害児に対しては UPE 政策は効果的ではなかった。とくに貧困家計における教育格差は厳然として存在しており、これは財政制約によるものと示唆される。加えて、障害者のサンプルでも同様の結果がみられた。以上より、ウガンダで実施された UPE 政策は、その目標達成のためには未だ不十分である。