Impacts of Universal Secondary Education Policy on Secondary School Enrollments in Uganda

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While Sub-Saharan countries have improved primary school education significantly, secondary education is still far behind the rest of the world. Ugandan government introduced universal secondary education (USE) policy to improve secondary education in 2007.In this study we evaluate the impacts of USE policy on secondary school enrollments using household panel data. We find that USE policy has considerably increased public secondary school enrollments especially for girls from poor households. Still, Uganda may need further improvement in terms of quality of secondary school education.

Field of Research: Development Economics, Economics of Education

1. Introduction

Sub-Saharan Africa had been one of the lowest archiving regions in terms of education. But after Education for All (EFA) by 2015 movement initiated by UNESCO in 2000, Sub-Saharan Africa region has made a significant progress. Primary school enrollment rates have increased in most of the countries and drop out ratios of school have dropped considerably. According to UNESCO (2010), Between 1999 to 2007, the average net enrollment rate to primary school has been increased from 56% to 73%.Also out-of-school population has reduced by nearly 13 million from 1999 to 2007.But 25% of Sub-Saharan region's primary age school children are still out of school which is accounted for nearly 45% of the global out-of-school population. But these numbers could be biased since household surveys of Sub-Saharan African countries suggest that high level of data underestimation.

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Although primary school enrollment rates have made significant progress, secondary school enrollment rates are far behind the rest of the world.UNESCO (2010) reports that secondary school enrollment rate was the worlds lowest at 34% in 2007.It varies highly from country to country. Secondary enrollment ratio was less than 11% in Niger and 97% in Seychelles and South Africa. A high level of gender bias can also be seen in this region. The number of girls who enrolls for the secondary schools is way behind of their counterpart. Delayed enrollment to secondary schools is another concern in Sub-Saharan Africa. It is reported that around 39% of lower secondary school age adolescents are still attending primary schools.

Uganda is one of the countries in Sub-Saharan Africa where try to improve not only primary school education but also secondary school education. Uganda started their free universal primary education (UPE) policy in 1997.Since then primary school tuition has been free in government schools. In 2007, Uganda government started the free universal secondary education (USE) policy which was the first in all Sub-Saharan nations.

According to our knowledge so far no empirical study has been done evaluating the impacts of USE policy on secondary school enrollments or other educational attainments. Therefore this paper evaluates the impacts of the USE policy in Uganda on student's secondary school enrollments. Fortunately we have unusually rich household data sets collected two years before the USE policy in 2005 and two years after the USE policy in 2009.This paper is organized as follows. Section 2 reviews the related literature. Section 3 presents the data and methodology. Section 4 discusses the estimation results. Section 5 summarizes the paper and discusses related policy implications.

2. Literature Review

Ugandan education system is mainly based on British education system. Uganda was under British colonial rule from 1894 to 1962.Under the British rulers, some Christian missionaries started first missionary schools in Uganda in early 1890s.But education was very limited and only urban elites benefited from it. Moreover, access to education was very problematic under the colonial rule since most of the African students were denied to enroll schools just because they are Africans. After getting independence from Britain in 1962, government immediately realized the importance of expanding the education to meet the national interests and needs. Government recognized illiteracy and ignorance as the main problems to tackle through education (Moses and Caine, 2007).Therefore improving primary education was the foremost interest since access to secondary schools required, one must attend primary school first. Ugandan government introduced several policies which helped to improve education access rapidly.

First education policy was the abolition of the racial school system which had been existed under the colonial rule and introduction of one national education

system. But it did not improve the school enrollment rates significantly since financial burden remained very high for majority students. Uganda introduced 7 year primary school system in 1967 by merging 6 year primary and 2 year junior secondary school. This policy had helped to improve the access to some form of secondary education (Bogonko, 1992).Still in reality very few students can go beyond the primary education level due to financial burden of education even though primary school enrollment rates increased to 166% between 1964 and1982.This is relatively low increase compare with the other east African countries like Kenya and Tanzania. During the same period Kenya and Tanzania had increased primary enrollment rates by 327% and 523% respectively (Moses and Caine, 2007). This relative low increase was due to the political and economic instability under the Idi Amin's military regime between 1971 and 1979.

Uganda government implemented universal primary education (UPE) policy in 1997.Government provided free primary education for children in government schools. Also government started to provide school instructional materials, basic physical facilities and teacher's salaries and training. Ugandan government education budget had to increase considerably with implementing of UPE policy. Moreover, international and multinational agencies provided the fund to implement UPE policy. Although many improvements still have to be done in terms of quality of education, according to various surveys and researches, the impact of UPE policy on primary school enrollments was mainly positive (e.g.: Deininger, 2003; Betegeka, 2005; Nishimura et al, 2008).It has also helped to close the gender gap which is one of the main educational problem in sub-Saharan countries.

With the success of UPE policy, Uganda government introduced free universal secondary education policy (USE) in 2007. Uganda was the first country in sub-Saharan Africa to adopt such kind of policy. Government began to offer free secondary education to all students who passed the primary leaving examination in 2006. Selection of USE policy secondary schools has been done by Uganda government. Although most of the selected schools are public schools, there are some private secondary schools also enlisted to this policy. According to the ministry of education in Uganda, parents are free to send their students to any secondary school around the country. Also parents may send their children to other secondary schools that do not take part USE policy if they can afford to pay the fees. Although students are free of paying tuition fees in USE schools, they still have to pay boarding fees, scholastic materials, medical care etc. Since this USE policy is relatively new policy, not many surveys or researches have been done evaluating the impacts of the policy. According to ministry of education in Uganda, there are more than half a million secondary school children who are studying under the USE policy in some 1471 schools. This is a vast improvement in terms of access to secondary schools. However, the quality of education provided to Ugandan students still a questionable even as government tries to offer new subsidies to cover the education related costs.

Even School head teachers who are one of the important factor to succeed this policy are still confused of their ability and knowledge to implement their role (Chapman et al, 2009).

3. Data and Methodology

3.1 Data

In this section, we describe the data that we used in this paper and the methodology that we use to evaluate the impacts of universal secondary education policy on school enrollments. We used household longitudinal survey data comes from 940 households in Uganda. The first survey was done in 2003 and followed by 2005 and 2009 respectively. The survey was jointly conducted by Makerere University in Uganda and the Foundation for Advanced Studies on International Development (FASID) as a part of the GRIPS Research on Poverty, Environment, and Agricultural Technology (REPEAT) project.

The survey covers all the regions in Uganda except northern part where security issues exist. It covers 94 Local Council 1s (LC1) which is the lowest administrative level in Uganda. From each LC1, 10 households are selected randomly resulting total number of 940 households. These households were interviewed in 2003 for the first time. Out of 940 households, 891 households (94.79%) were able to be re-interviewed in 2005 and 817 households (86.91%) were re-interviewed in 2009.Attrition rates of this survey were relatively low compared with other similar surveys in developing countries. It was around 5% to 30% in other similar surveys in developing countries (Alderman et al., 2001; Thomas et al., 2001).In this paper we only consider 2005 and 2009 survey data to analyze impacts of USE policy on student's secondary schools enrollments.

3.2 Methodology

In this subsection we describe the methodology that use to estimate the impacts of universal secondary education policy.

3.2.1 School Enrollment Model

To examine the determinants of secondary school enrollments, we consider secondary school aged adolescents who are between age 13 and 18.Although adolescents who are between the age of 13 and 18 should be enrolled in secondary schools, according to the schooling schedule of Uganda many of them are still enrolled in Primary schools or not attended any primary or secondary school. Therefore we have 4 categories of adolescents who are age between 13 and 18; not enroll in schools, enrolled in primary school, enrolled in public secondary school, enrolled in private secondary schools. Following

Deininger (2003), Glewwe (2002) we pooled the household panel data for both year 2005 and 2009, then estimate multinomial logit (MNL) model in equation (1).

$$\Pr(a_{ijt} = c) = \alpha + \beta C_{ijt} + \delta H_{jt} + \phi X_{jt} + \varphi T_{2009} + \gamma X_{jt} T_{2009} + e_{ijt} \quad (1)$$

Where,
c=1, 2, 3, 4,
a_{ijt}=1 if student *i* from household *j* is not enrolling in any school in year *t* (i.e. *t*=2005, 2009),
a_{ijt}=2 if student *i* from household *j* is enrolling in primary school in year *t,*
a_{ijt}=3 if student *i* from household *j* is enrolling in public secondary school in year *t,*
a_{ijt}=4 if student *i* from household *j* is enrolling in private secondary school in year *t.*

C_{ijt} is a set of adolescent *i* characteristics of household *j* in year *t*, H_{jt} is a set of Household head characteristics of household *j* in year *t,* X_{jt} is a set of Household characteristics in year *t,*T_{2009} is a year dummy variable which is 1 if observation is from 2009 and 0 if it is from 2005, e_{ijt} is an independently and identically distributed error term. Here in this MNL model, we consider a_{ijt}=1(students who are not enrolled in any school) as a base group. Then φ will give an estimate for the impact of time trend in 2009.In other words, it gives the impact of year 2009 dummy on log of the ratio of three probabilities Pr (a_{ijt}=2)/Pr (a_{ijt}=1) ,Pr (a_{ijt}=3)/Pr (a_{ijt}=1) and Pr (a_{ijt}=4)/Pr (a_{ijt}=1). Also, γ gives us an estimate for the impact of household characteristics in 2009 on log of the ratio of above three probabilities. Finally, we can get estimates for the impacts of particular adolescent characteristics, household head characteristics and household characteristics from β , δ and ϕ respectively. We estimate the model separately for both boys and girls to check any gender bias.

3.2.2 Variables

In our estimation framework, we have used dependant variable (a_{ijt}), one set of adolescent characteristics (C_{ijt}), one set of household characteristics (X_{jt}), one set of household head characteristics (H_{jt}) and dummy variable for year 2009(T_{2009}).We have already defined the dependant variable. Adolescent characteristics (C_{ijt}) consists of age of the adolescent *i* from house hold *j* in year *t* and its squared value. The household head characteristics (H_{jt}) include several dummy variables for age of household head such as household head aged between 20 and 30 years, between 30 and 40 years, between 40 and 50 years, between 50 and 60 years and over 60 years, highest completed education of household head, religion dummies for household head is Muslim or Catholic and gender dummies for household is female or male. Finally, Household characteristics(X_{jt}) consists of several socio-economic status including house hold total assets values in Ugandan shillings in logs and total size of house hold

land holdings in acres in logs.

4. Discussion of Results

4.1 Regression Results of School Enrollment Model

We present the regression results for determinants of school enrollment model in equation (1).We set the non-enrollment for any school as base outcome for Multinomial Logit Model. Table 1 presents the regression results of multinomial logit estimates on secondary school enrollment for boys and girls separately. Since our objective of this paper is to evaluate the impacts of universal secondary education policy, we focus only on secondary school results.

4.1.1 Public Secondary School Enrollments

According to table 1, the year 2009 dummy has positive significant impact on public secondary school enrollments only for girls. That's why we cannot see a statistically significant coefficient estimate for year 2009 dummy for boys. When we look at the girl's results, it has large positive statistically significant impact of public secondary school enrollments. So we can say that after introducing USE policy in 2007, Girls may have benefited much more from that policy. This reflects from our large positive statistically significant coefficient of year 2009 dummy variable for girls.

Moreover, among girls we can see a negative significant coefficient estimate for log of assets values in year 2009 and positive log of household assets value estimate. This means that after introducing USE policy in 2007, girls from poor households which reflect the low assets holding values tend to enroll more in public secondary schools and girls from richer households tend to enroll less in public secondary schools. These results are as expected. Before introducing USE policy, parents have to pay all the tuition fees in public secondary schools. Therefore we can assume that only richer households could afford to send their daughters to public secondary schools. Also poor household parents might tend to focus more on boys secondary education because young girls usually marry earlier than boys and separate from their parents after marriage. Thus, Parents might have believed that marginal benefits from educational investment are higher for sons than that of daughters. So, poor households may prefer to invest more on their son's secondary education than that of their daughters. But after the USE policy the tuition fees became free in most public secondary schools, so parents send their daughters to public secondary schools that was limited earlier due to financial constraints.

Table 1: Determinants of Secondary School Enrollments

	Public Secondary School Enrollments		Private Secondary School Enrollments	
	Boys	**Girls**	**Boys**	**Girls**
Adolescent characteristics (C_{ijt})				
Age in years	3.049 *	2.025	3.803 *	4.039 **
	(0.062)	(0.188)	(0.059)	(0.019)
Age squared	-0.098 *	-0.067	-0.116 *	-0.131 **
	(0.053)	(0.163)	(0.063)	(0.015)
HH Head characteristics (H_{jt})				
Head aged 20–29 years	0.647	-12.766	1.684 *	-0.245
	(0.496)	(0.979)	(0.082)	(0.850)
Head aged 30–39 years	0.987	0.884	1.648 **	0.663
	(0.157)	(0.245)	(0.038)	(0.401)
Head aged 40–50 years	0.830	0.865	1.263	0.876
	(0.214)	(0.227)	(0.106)	(0.233)
Head aged 50-60 years	0.778	1.351 *	0.779	0.959
	(0.256)	(0.064)	(0.336)	(0.202)
Head aged over 60 years	0.756	1.339 *	1.064	1.202
	(0.273)	(0.071)	(0.191)	(0.115)
Head education	-0.002	-0.010 ***	0.002	-0.010 **
	(0.603)	(0.006)	(0.531)	(0.011)
Head gender(female)	-0.044	0.150	0.273	0.491 *
	(0.886)	(0.608)	(0.405)	(0.098)
Head religion(Muslim)	-0.036	-0.378	0.466	0.367
	(0.909)	(0.252)	(0.170)	(0.264)
Head religion(Catholic)	-0.704 ***	-0.627 **	0.460 *	0.333
	(0.004)	(0.010)	(0.063)	(0.172)
Household characteristics (X_{jt})				
ln (asset-value in Ugandan Shs)	0.153	0.417 ***	0.498 ***	0.551 ***
	(0.246)	(0.000)	(0.000)	(0.000)
ln (land in acres)	0.002	0.065	0.132	-0.093
	(0.988)	(0.589)	(0.309)	(0.438)
Year 2009 dummy (T_{2009})	3.132	7.601 ***	-0.166	4.378 **
	(0.169)	(0.000)	(0.947)	(0.047)
ln (asset-value in Ugandan Shs) × Year 2009 dummy	-0.265	-0.565 ***	-0.091	-0.388 **
	(0.150)	(0.001)	(0.639)	(0.024)
ln (land in acres) × Year 2009 dummy	0.120	-0.043	0.339	0.113
	(0.558)	(0.835)	(0.122)	(0.623)
Constant	-26.256 **	-21.582 *	-39.364 **	-39.168 ***
	(0.045)	(0.080)	(0.015)	(0.005)
Pseudo R-squared	0.1773	0.1850	0.1773	0.1850
Observations	1329	1273	1329	1273

Note: Multinomial logit estimates. Numbers in parentheses are p-values. *** indicates significant at 1 percent level, ** indicates 5 percent level and * indicates 10 percent level.

According to table 1, catholic students seem to enroll less in public secondary schools. Because we can see negative statistically significant coefficients estimate for catholic household heads. This phenomenon is same for both boys and girls. Also we can see that girls whose parents have higher educational attainments seem to enroll less in public secondary schools.

4.1.2 Private Secondary School Enrollments

Improvement of private secondary school enrollment in 2009 is seems to be smaller than that of improvement of public secondary school enrollments. Because coefficient estimate of year 2009 dummy variable for private secondary school enrollment is smaller than that of public secondary school. Also it is only statistically significant at 5% and 10% level. Improvement of private secondary school enrollment in terms of household assets holdings in year 2009 is also smaller than that of improvement of public secondary school enrollments. Because the coefficient estimate of cross term of year 2009 dummy variable and log of assets value variable is smaller for public secondary school enrollments.

4.2 Marginal Effects of School Enrollment Model

To get more complete picture of impacts, we calculated the estimates of marginal impacts. Table 2 shows marginal effects of both public and private secondary school enrollments. These marginal effect estimates have been calculated using multinomial logit estimates.

4.2.1 Public Secondary School Enrollments

According to table 2 results, after introducing USE policy girls are about 49% more likely to be enrolled in public secondary schools. But boy's marginal effect on public secondary school enrollment in 2009 is not statistically significant. So it clearly indicates that only girls are enrolled more in secondary schools after USE policy. The value of household assets holding after the USE policy has negative impact on girl's public secondary school enrollments. Marginal effects results in 2009 suggest that girls who belong to richer households are about 3.6% less likely to be enrolled public secondary schools after introducing USE policy. Thus, this suggests that girls in poor households are more likely to be enrolled for the public secondary schools after introducing USE policy in 2007.We can say that this is a positive impact of Ugandan government USE policy.

4.2.2 Private Secondary School Enrollments

Contrast to public secondary school enrollments, we can not see any statistically significant marginal effect on private secondary school enrollments for both girls and boys in 2009. Also marginal effect results in terms of household assets values in 2009 suggest that no significant improvement of private secondary school enrollments. This result might prove the fact that after introducing USE policy most of the poor students entered public secondary schools but not private secondary schools. Because most of the USE policy adopted schools were public secondary schools.

Table 2: Marginal Effects of Secondary School Enrollments

	Public Secondary School Enrollments		Private Secondary School Enrollments	
	Boys	**Girls**	**Boys**	**Girls**
Adolescent characteristics ***(C_{ijt})***				
Age in years	0.244 *	0.117	0.242 *	0.299 **
	(0.069)	(0.371)	(0.076)	(0.022)
Age squared	-0.007	-0.003	-0.006	-0.009 **
	(0.110)	(0.521)	(0.126)	(0.036)
HH Head characteristics ***(H_{jt})***				
Head aged 20–29 years	0.076	-1.276	0.140 **	0.215
	(0.336)	(0.979)	(0.026)	(0.980)
Head aged 30–39 years	0.074	0.041	0.109 **	0.013
	(0.187)	(0.533)	(0.034)	(0.831)
Head aged 40–50 years	0.057	0.054	0.078	0.046
	(0.289)	(0.385)	(0.125)	(0.413)
Head aged 50-60 years	0.082	0.098	0.059	0.041
	(0.140)	(0.124)	(0.268)	(0.473)
Head aged over 60 years	0.079	0.092	0.082	0.063
	(0.158)	(0.150)	(0.125)	(0.283)
Head education	-0.0002	-0.0006 *	0.0002	-0.0005
	(0.436)	(0.078)	(0.456)	(0.116)
Head gender(female)	0.010	0.028	0.032	0.056 **
	(0.701)	(0.278)	(0.133)	(0.013)
Head religion(Muslim)	-0.013	-0.051 *	0.032	0.034
	(0.584)	(0.075)	(0.132)	(0.160)
Head religion(Catholic)	-0.060 ***	-0.060 ***	0.053 ***	0.047 ***
	(0.003)	(0.004)	(0.001)	(0.010)
Household characteristics ***(X_{jt})***				
ln (asset-value in Ugandan Shs)	0.002	0.028 ***	0.030 ***	0.037 ***
	(0.872)	(0.005)	(0.000)	(0.000)
ln (land in acres)	-0.006	0.001	0.007	-0.015 *
	(0.565)	(0.923)	(0.422)	(0.099)
Year 2009 dummy (T_{2009})	0.107	0.491 ***	-0.186	0.084
	(0.565)	(0.006)	(0.257)	(0.604)
ln (asset-value in Ugandan Shs) × Year 2009 dummy	-0.008	-0.036 **	0.008	-0.012
	(0.611)	(0.012)	(0.524)	(0.332)
ln (land in acres) × Year 2009 dummy	-0.002	-0.001	0.017	0.015
	(0.882)	(0.975)	(0.226)	(0.390)
Pseudo R-squared	0.1773	0.1850	0.1773	0.1850
Observations	1329	1273	1329	1273

Note: Marginal effects of Multinomial logit estimates. Numbers in parentheses are p-values. *** indicates significant at 1 percent level, ** indicates 5 percent level and * indicates 10 percent level.

5. Conclusion

Ugandan government has introduced universal secondary education (USE) policy to improve the secondary education level. We have used household panel

data set to examine the impacts of Uganda's free secondary education policy started in 2007.As discussed in previous sections we found that USE policy has increased the student enrollments of public secondary schools in Uganda. Girls seem to have benefited more from this new USE policy. Using an econometric estimation, we found significant increase of public secondary school enrollments of girls after introducing USE policy. According to our results, post USE girls are about 49% more likely to be enrolled in public secondary schools than that of pre USE girls. But we could not find statistically significant increase of boy's enrollment in to public secondary schools. Our estimation results suggest that girls from poor households are benefited significantly from USE policy. The enrollment rates of girls from poor households for public secondary schools have increased and have decreased for girls from richer households. This gives an evidence for positive impact from USE policy. Since Ugandan government selected most of the public secondary schools as their target schools to introduce USE policy, we can say that their policy has improved students' secondary school enrollments especially for girls from poor households. We can assume that poor parents may have sent their daughters more in to public secondary schools after tuition become free with the introduction of USE policy in 2007.

Our results indicate that after introducing USE policy private secondary school enrollments have not changed significantly. This result is as expected since Ugandan government did not impose any restriction on attending private secondary schools. Parents who can afford to pay tuition fees are still able to send their children to private secondary schools. So majority students from richer households might enroll in private secondary schools same as before the USE policy. Therefore the change in private secondary school enrollments after introducing USE policy is not statistically significant.

Even though USE policy has considerably improved the enrollment rates to public secondary schools from poor households, there are still lots more to be done to improve the quality of secondary education in Uganda. Still most rural secondary schools are lack of even basic school facilities such as desks, blackboards, chairs, drinking water, and toilet facilities etc.So Ugandan government next priority should be given to improve the school facilities. Donor countries and international organizations such as World Bank, Asian development bank can help with providing funds to Ugandan government. Secondly, the quality of teaching in secondary schools has to be improved. Although the number of secondary school students has increased highly, the number of teachers hasn't increased at all. So teacher per student ratio has been increased after introducing USE policy. Thus, government should appoint new teachers to secondary schools. Also teachers should be given more training to improve the quality of teaching. As Chapman et al. (2009) argued even school head teachers are still lack of confidence of their skills and knowledge of implementing the USE policy. Thirdly, although we did not investigate in this paper, some researchers proved that health status affect academic performance of students (Maughan, 2003; Klerman, 1996). Thus, Uganda government can

initiate new school health programs. For example health workers can visit schools to check the student's health and school health centers can be started with the help of local health workers.

In this paper we only considered the impacts of USE policy on students' secondary school enrollments. We did not check the impacts of USE on school quality outcomes. It is unclear that as to what level of quality in secondary school education has increased or decreased after introducing USE policy. So this might be a one possible area for future research. In summary, even though the USE policy seems to have positive impact on girls' secondary school enrollments further improvement might be needed in terms of quality of secondary school education.

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