

The Impact of Education on Social Equality Beliefs in East Africa*

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Abstract

This paper attempts to exploit the timing of free primary education policies in East Africa to estimate the effect of education on intolerance and beliefs in gender inequality. Although I find some evidence of education decreasing attitudes of intolerance and gender inequality, I am unable to use the described IV design to validate these results as eligibility for free primary education based on age is not an accurate predictor of take-up.

1 Introduction

As a fundamental investment that can shape or obscure future opportunities to improve one's socioeconomic status, education is highly prioritized by policymakers around the world. However, education does not only provide marketable knowledge and skills that translate into later job opportunities, but can also shape the way we think and expand our perspectives, hence influencing our core values and beliefs. There is some evidence to support a positive relationship between education and greater social equality beliefs, also known as the "education as enlightenment" view, but most evidence is based on correlation and hence unable to provide reliable casual estimates. This paper will attempt to expand current research by using an IV design to estimate the casual impact of education on social equality beliefs in a developing setting.

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In the 1990s and early 2000s, free primary education policies were adopted by governments across Africa in an attempt to achieve universal primary education. These policies led to sharp increases in primary school enrollment. For example, the World Bank estimates that free primary education in Malawi increased gross enrollment rates by as much as 48 percentage points between 1994 and 1995. The introduction of these fee waivers provides an opportunity to study the casual impact of education on tolerance and social inequality. By comparing two different age groups (students of primary school age and students who were too old to be eligible), we can exploit the exogenous timing of this policy implementation to create an instrument for education.

The rest of the paper is organized as follows: Section 2 reviews the existing literature on education and attitudes towards social equality, Section 3 details the data and econometric strategy to be used, Section 4 presents results, and Section 5 concludes.

2 Literature Review

By investigating the impact of education on beliefs of social equality in East Africa, this paper will fit into the broader literature that examines the relationship between education and values. This relationship has been of great interest to social scientists for many decades, with some pivotal works having been published as early as the 1950s and 60s, for example Stouffer (1955) and Lipset (1960). Despite the extensive research produced on this topic to date, there is still no consensus with regard to exactly how education affects beliefs.

Within the literature, there are three main competing arguments, namely education as enlightenment, the ideological refinement model, and the socialization view. Education as enlightenment refers to the traditional view that education leads to greater tolerance towards out-groups (Stouffer, 1955), stronger beliefs in social, economic, and political equality (Hyman and Wright, 1979), decreased prejudice (Borhek, 1965), and more democratic values (Lipset, 1960). In contrast, the ideological refinement view explains that while education may lead to an increased awareness of social inequality, it also places greater value on individualism and meritocracy which can be used to justify such inequality,

instead of challenging it (Jackman and Muha, 1984). The third argument of “socialization”, proposed by Selznick and Steinberg (1969), claims that formal educational institutions transmit attitudes and beliefs which align with the “official culture”, hence education engenders more liberal attitudes only in societies which are already liberal.

There is some empirical evidence to support each of these three views. For example, Gang et. al (2002) uses Eurobarometer data from 1988 and 1997 to show that more education is negatively related to anti-immigrant attitudes in the European Union, supporting the education as enlightenment hypothesis. Kane (1995), on the other hand, categorizes beliefs about gender inequality into distinct domains which when applied to US public opinion survey data shows that education leads to greater awareness of gender inequality but not increased support for group-based solutions to such inequality, hence corroborating the ideological refinement view. Furthermore, Phelan, Link, Stueve, and Moore (1995) find evidence to support the socialization view, using US survey data to reveal that education is correlated with “greater tolerance for homeless people, but less support for economic aid to the homeless”, which the authors claim aligns with America’s “values of equal opportunity and equal respect — but not equal outcomes.”

In light of the socialization view, it is crucial to consider cross-national differences. Although a large proportion of existing research is based on Western data, there are more recent papers that explore the relationship between education and beliefs in developing settings. These include Scott et. al (2014) which collects survey data from South Sudan to show that people who reported no formal education were more likely to accept gender inequitable practices than those who reported some education and an Afrobarometer publication which associates education with beliefs of gender equality in Mozambique (Bhoojehur and Isbell, 2019).

Beyond cross-national differences, it is also important to acknowledge that the effect of education on beliefs of social equality may differ between demographic groups. For example, Kane (1995) finds that education has a larger effect on women’s beliefs of gender equality than on men’s and Wodtke (2012) finds evidence of some differential effects based on race.

Most of the existing literature uses survey data to study the correlation between education and beliefs of social equality, but is unable to present causal estimates as there are a number of omitted variables which could be driving both education and values, most notably socioeconomic status. This paper will attempt to add to the literature by exploiting the timing of free primary education (FPE) policies in East Africa as an exogenous measure of education, hence deriving casual estimates for the impact of education on beliefs of social equality and tolerance. There are other papers which employ this technique, notably Omoeva and Moussa (2018) which use the implementation of FPE policies in Ethiopia, Malawi, and Uganda to measure the effects of education on adolescent behavior and labour force participation and Chicoine (2017) which uses the variation in timing and regional rollout of Ethiopia’s FPE policy to estimate the impact of education on fertility, but this is the first paper to our knowledge that will use this technique to study the effects of education on social equality attitudes.

By presenting casual estimates for five East African countries (Kenya, Malawi, Tanzania, Uganda, and Zambia), we will construct important case studies that may provide more evidence for the socialization view or for the universal education as enlightenment view. Because it is clear from existing literature that education can affect the attitudes of different populations differently, we will examine the impact for subgroups divided by gender, socioeconomic status, and living in a rural or urban setting. Although we may only present conclusions for the populations in our sample, this paper will hopefully supplement the existing literature by providing additional empirical evidence for East African countries.

3 Data and Econometric Strategy

3.1 Afrobarometer Data

I use data from the Afrobarometer, a public attitudes survey instrument that collects information on democracy, governance, economic conditions, tolerance, and discrimination in more than 35 countries across Africa. Based on national probability samples, Afrobarometer data is designed to provide a representative cross-section of all adult citizens in a given country. I use data from Round 7 (collected between 2016-2017), as this is the most recent data that is publicly available.

3.2 Treatment Construction

In order to construct causal estimates of the impact of education, I will use eligibility for free primary education as an instrument for schooling. Eligibility is based on being of primary school age during the policy implementation (typically 6-13, but there are some differences between countries - see Table 1 for more detail). I then compare this treatment group to an older cohort, who would have just missed the opportunity to enroll for free, as the control group. Table 1 presents the year free primary education was introduced in each country, the year that the Round 7 Afrobarometer survey took place, and the ages that would constitute eligibility for free primary school.¹

Table 1: Summary Statistics

	Kenya	Malawi	Tanzania	Uganda	Zambia
Year FPE was Introduced	2003	1994	2002	1997	2002
Year R7 Survey Data Collected	2016	2016/17	2017	2016/17	2017
Eligible Ages at Time of Policy	6-13	6-13	7-15	6-12	7-13
Ineligible Ages at Time of Policy	14-21	14-21	16-24	13-19	14-20
Eligible Ages at Time of Survey	19-26	28-35	22-30	25-31	22-28
Ineligible Ages at Time of Survey	27-34	36-43	31-39	32-38	29-35
Observations	827	466	1208	492	532

Checking that this is a valid instrument by regressing an indicator for completed primary school on treatment, I find that free primary education eligibility increases primary completion rates by only 3.88%, when defined by these age buckets.² Although this is a statistically significant relationship (at the 5%

¹Sources for the policy dates are: Mulinya and Orodho (2015), Omoeva and Moussa (2018), Lindsjo (2018), and Sibanda (2016). It should be noted that although Tanzania launched the primary education development plan (PEDP) in 2001, school fees and other mandatory contributions were only abolished starting in January 2002.

²These estimates are found by an OLS regression of the initial treatment indicator on completed primary school and controlling for gender, urban, income, and country indicators.

level), free primary school eligibility is a much weaker instrument for education than the large enrollment increases in census data would suggest.

This is likely due to very low compliance, with many older children enrolling in primary school. The policy placed no restrictions on age and so although older children should have a higher opportunity cost for attending school (as older children are more able to help their families through household chores or outside work), there is anecdotal evidence that many older children and even adults enrolled in primary school following the policy.³ Additionally, the rates of primary school completion were moderately high in East Africa prior to the policy intervention (around 67% in our pooled sample) and so the upper bound on the treatment effect is already limited to only 33%, further reduced by non-compliance in the control group.

In an attempt to strengthen the correlation between treatment and completed primary school, I alter the age windows so that less emphasis is placed on respondents at the boundaries (typically ages 13-14).⁴ Modifying the treatment indicator in this way does slightly improve the correlation between education and treatment. We can see this in Table 2 on the next page, with around 7.5% more people in the treatment group having completed primary school. Note that rates of attending primary school are very high in this sample of East African countries and so when measuring education I will focus my analysis on the intensive (completed primary school) rather than extensive margin (attended primary school). Comparing summary statistics for treatment and control, we see that the treatment group has a slightly larger proportion of female respondents.

³For example, Kimani Maruge was 84 years old when he enrolled in a Kenyan primary school following the removal of fees in 2003. He is currently the Guinness World Record holder for oldest person to enroll in primary school. See Mwiti (2015).

⁴The modified treatment indicator compares 6-11 and 16-21 year old children (at the time of the policy) in Kenya, Malawi, and Uganda. In Tanzania, the treatment indicator compares 7-12 and 18-23 year olds and in Zambia, I compare 7-12 year olds with 16-22 year olds.

Table 2: Summary Statistics

	Ineligible	Eligible	Total
Female	0.519 (0.500)	0.549 (0.498)	0.536 (0.499)
Urban	0.337 (0.473)	0.358 (0.479)	0.348 (0.477)
Attended Primary School	0.878 (0.328)	0.929 (0.257)	0.906 (0.292)
Completed Primary School	0.666 (0.472)	0.741 (0.438)	0.707 (0.455)
Unemployed Indicator	0.441 (0.497)	0.565 (0.496)	0.509 (0.500)
Roof material is thatch, grass, or plastic sheets	0.255 (0.436)	0.267 (0.443)	0.262 (0.440)
Indicator for having ever gone without food	0.536 (0.499)	0.479 (0.500)	0.505 (0.500)
Indicator for having ever gone without water	0.519 (0.500)	0.445 (0.497)	0.479 (0.500)
Indicator for having ever gone without medical care	0.582 (0.493)	0.511 (0.500)	0.543 (0.498)
Indicator for having ever gone without cooking fuel	0.341 (0.474)	0.338 (0.473)	0.340 (0.474)
Indicator for having ever gone without cash income	0.841 (0.366)	0.859 (0.348)	0.851 (0.357)
Observations	2629		

Mean coefficients, standard deviation in parenthesis.

Having more women in the treatment sample is to be expected as the fee waivers would have affected female students more: poorer families who cannot afford to send all of their children to school tend to favor their sons and so the introduction of free primary school would have favored girls more than boys. Following the same logic, free primary education should have had a larger impact on enrollment for poorer children. Although there are some differences, we do not find convincing evidence that the treatment group is significantly poorer than the control group. The eligible group is 12% more likely to be unemployed (although this is largely a function of their age and the issue of youth unemployment in Africa) and slightly more likely to live under a sub-par roof and have gone without cash income, but the control group looks worse off with regard to the other socioeconomic proxy measures presented in the table. Because these characteristics are based on follow up data, we would not necessarily expect the treatment group to still be poorer than the control as respondents who were eligible for free primary school would have been more likely to attend school and move into higher paying jobs. We also see that there are more urban respondents in the eligible sample than in the control group, although this 2.1% difference is not significant.

3.3 Outcomes Construction

The outcomes that will be of interest can be classified into two key categories: intolerance and beliefs in gender inequality. To measure intolerance, respondents are asked, “For each of the following types of people, please tell me whether you would like having people from this group as neighbours, dislike it, or not care.” This question is asked for people of a different religion, people from a different ethnicity, homosexuals, and immigrants or foreign workers. These are questions 87A/B/C/D in Round 7. This is a standard question in the literature, having been employed for several years not only in the Afrobarometer Surveys but also in the World Values Survey among others.

Based on these four intolerance questions, I will construct four intolerance indicators, set to 1 if a respondent replied that he or she would strongly dislike, somewhat dislike, or would not care with regard to having a certain group as neighbours. I include those who answered “would not care” in the intolerance indicator in order to account for bias that arises from respondents feeling so-

cial pressure to answer positively in a non-anonymous interview setting. For the same reason, we include those who answered “do not know” and those who refused to answer as intolerant towards a certain group. I will additionally construct a summary index to measure general intolerance. This index will be the equally weighted average of z-scores of the four intolerance questions. Note that here I am referring to the raw survey questions based on a Likert scale and not the intolerance indicators explained above. I calculate z-scores by subtracting the mean of the control group and dividing by the control group’s standard deviation. This approach follows that used by Kling et al. (2007), giving us an outcome with more statistical power. The intolerance summary index is constructed with each of the components oriented so that a higher score represents greater intolerance.

To quantify beliefs about gender inequality, we will rely on another set of four questions. These are questions 16 and 38E/D/F in Round 7. For question 16, respondents are asked which of the following statements is closest to his or her view: “men make better political leaders than women and should be elected rather than women” or “women should have the same chance of being elected to political office as men”. Questions 38E/D/F ask respondents whether they agree or disagree with the following statements: “when jobs are scarce, men should have more right to a job than women”, “women should have the same rights as men to own and inherit land”, and “in general, it is better for a family if a woman has the main responsibility for taking care of the home and children rather than a man”. The responses to these last three questions are then coded on a Likert scale.

Similarly to the intolerance outcomes, I construct separate indicators for gender inequality beliefs based on each question, as well as a general summary index. Each of the four questions are oriented so that a higher score represents greater beliefs in gender inequality and then I take the mean of the the z-scores to form the summary index.

3.4 Models

I begin by testing the relationship between education and intolerance and gender inequality beliefs with a simple OLS regression. The general framework is described in equation 1:

$$Y_i = \alpha + \beta_1 \cdot C_i + \gamma \cdot \mathbf{X}_i + \epsilon \quad (1)$$

Y_i is one of ten outcomes: the four intolerance indicators for each out group (religion, ethnicity, homosexuals, and immigrants), the intolerance summary index, the four gender inequality indicators (political leaders, job rights, land rights, and gender norms), and the gender inequality summary index. C_i is an indicator for having completed primary school, which I will use as a proxy measure for education throughout the analysis. \mathbf{X}_i is a vector of controls which include age, gender, living in an urban area, a wealth proxy, employment status, and country indicators. (Although Afrobarometer does not collect direct data on income or wealth, I construct an income or wealth proxy based on the roof material of a respondent's home.) Finally, the subscript i represents each individual in the sample. This regression model will allow us to determine whether there is a relationship between education and social equality beliefs, and even the direction of this relationship, but the β coefficients I estimate do not necessarily represent the casual effect of education on intolerance or gender inequality due to omitted variable concerns.

To address these issues, I will attempt to use free primary education eligibility as an instrument for having completed primary school. The first stage is outlined in equation 2:

$$C_i = \alpha + \beta_2 \cdot T_i + \gamma \cdot \mathbf{X}'_i + \epsilon \quad (2)$$

I regress an indicator for having completed primary school on treatment (or eligibility for free primary education) in order to check the validity of the instrument. C_i is the indicator for having completed primary school, T_i is an indicator for free primary education eligibility, and the vector of controls \mathbf{X}'_i is the same as \mathbf{X}_i , but excluding age as this variable is highly correlated with treatment and so will not be a control in any of the regressions related to the IV estimation. I present first stage results for the entire pooled sample, as well as for each country individually. I will then present results for the reduced form regression, which is described in equation 3:

$$Y_i = \alpha + \beta_3 \cdot T_i + \gamma \cdot \mathbf{X}'_i + \epsilon \quad (3)$$

I will conduct ten reduced form regressions, one for each outcome Y_i . Regressing these outcomes on T_i will allow us to uncover estimates of the policy intervention on intolerance and gender inequality beliefs. Because I hypothesize that free primary education policies affect attitudes only through the channel of education, I will combine the results from equations 2 and 3 to find the IV estimates. The general framework for the IV regression is:

$$Y_i = \alpha + \beta_4 \cdot \hat{C}_i + \gamma \cdot \mathbf{X}'_i + \epsilon \quad (4)$$

Here, \hat{C}_i is the predicted value for completing primary school based on the first stage, and so if our assumptions about the exogeneity of free primary education policies are correct, then β_4 should give us the true casual estimate of the impact of education on intolerance and gender inequality beliefs.

4 Results

I begin by testing whether there is a relationship between education and intolerance or gender inequality beliefs. Conducting the ordinary least squares regressions outlined in equation 1, I present results for the intolerance outcomes in Table 3 and for gender inequality outcomes in Table 4. In Table 3, although education has no detectable effect on any of the intolerance indicators, education does appear to be inversely related to the intolerance summary index. This suggests that education doesn't shift "wouldn't mind", "dislike", or "strongly dislike" responses to "like" or "strongly like", but there is movement in other places on the Likert scale, perhaps moving people from "strongly dislike" to "dislike" or from "dislike" to "wouldn't mind".⁵ This supports the education as enlightenment view, in which education is thought to decrease intolerance.

⁵Recall that the intolerance questions are based on how a respondent would feel about having a certain out group as neighbours, and so "strongly dislike" represents the most intolerant response while "strongly like" represents the most tolerance response

Table 3: OLS - Completed Primary on Intolerance

	(1) Intolerance	(2) Religion	(3) Ethnicity	(4) Homosexuals	(5) Immigrants
Completed Primary	-0.037* (0.018)	0.001 (0.012)	-0.016 (0.011)	0.003 (0.005)	-0.006 (0.013)
Female	0.050** (0.016)	0.030** (0.010)	0.037*** (0.010)	-0.002 (0.005)	0.033** (0.012)
Urban	-0.000 (0.016)	0.015 (0.012)	0.031** (0.011)	0.005 (0.005)	0.007 (0.013)
Age	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000** (0.000)
Wealth	0.009 (0.021)	0.021 (0.013)	0.033** (0.013)	0.013* (0.006)	0.018 (0.014)
Unemployed	-0.001 (0.017)	-0.017 (0.011)	-0.006 (0.011)	0.008 (0.005)	-0.018 (0.013)
Constant	0.133*** (0.033)	0.334*** (0.021)	0.272*** (0.020)	0.958*** (0.009)	0.526*** (0.023)
Observations	7549	7552	7552	7552	7549

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

These regression results relate to equation 1 in the data and econometric strategy section, presenting the relationship between education and intolerance with a simple OLS regression. The outcome in column 1 (intolerance) is the summary index constructed as the mean of z-scores of each of the four intolerance questions. Columns 2-5 are the intolerance indicators for each corresponding out group. In addition to the controls whose coefficients are listed here, this specification controlled for country.

Interestingly, women tend to have higher intolerance, at an average of 0.05 standard deviations above men. We also notice that average intolerance towards homosexuals is particularly high, with a constant of 95.8%. Age doesn't appear to be playing any significant role. Although the coefficients and standard errors are not identically zero, they are so small that rounding to the third decimal point rounds them to 0. When I perform the reduced form and IV regressions, it will then be reasonable to assume that age is not a driving factor in differences between treatment and control. I now present the OLS results (equation 1) for the gender inequality outcomes in Table 4.

Table 4: OLS - Completed Primary on Gender Inequality Beliefs

	(1) Gender Ineq	(2) Pol Leaders	(3) Job Rights	(4) Land Rights	(5) Gender Norms
Completed Primary	-0.171*** (0.015)	-0.075*** (0.012)	-0.115*** (0.013)	-0.022* (0.011)	-0.098*** (0.013)
Female	-0.208*** (0.013)	-0.120*** (0.010)	-0.133*** (0.011)	-0.114*** (0.010)	0.047*** (0.012)
Urban	0.025 (0.015)	0.021 (0.012)	0.010 (0.013)	0.006 (0.011)	0.020 (0.013)
Age	0.000 (0.000)	-0.000 (0.000)	0.000 (0.000)	0.000 (0.000)	0.000 (0.000)
Wealth	-0.100*** (0.017)	-0.070*** (0.013)	-0.043** (0.014)	-0.047*** (0.012)	-0.053*** (0.015)
Unemployed	0.023 (0.015)	0.003 (0.011)	0.027* (0.012)	-0.003 (0.010)	0.026* (0.013)
Constant	0.334*** (0.025)	0.455*** (0.021)	0.549*** (0.022)	0.270*** (0.019)	0.637*** (0.023)
Observations	7553	7553	7553	7553	7553

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

This table presents results related to equation 1, the simple OLS model regressing gender inequality outcomes on education directly. In column 1, the outcome is the summary index for gender inequality, constructed by taking the mean of z-scores of each of the gender inequality questions. This index is oriented so that a larger value represents the negative outcomes, i.e. greater beliefs in gender inequality. Columns 2-5 are the gender inequality indicators constructed for each question. See Section 3 for more detail on these questions. Specification also controls for country.

There appears to be a much stronger relationship between education and gender inequality beliefs than between education and intolerance. Looking at the gender inequality indicators in columns 2-5, we see that people who have completed primary school are 7.5% less likely to believe that men are better political leaders, 11.5% less likely to believe that men should have priority when jobs are scarce, 2.2% less likely to believe that women should not have equal land rights, and 9.8% less likely to agree with gender norms, particularly that women are better homemakers. We also see that education causes a significant decrease in the gender inequality summary index. Gender and wealth are also driving factors in this analysis with wealthier women tending to have less gender inequality beliefs. Being unemployed only seems to affect the job rights and gender norms indicators (columns 3 and 5), which is unsurprising if this difference is driven by out-of-work men who, partly in frustration, believe that men should have greater rights to a job and that women should be homemakers.

From Tables 3 and 4, it is clear that there is a negative relationship between education and social inequality beliefs. To validate that this is indeed the impact of education on intolerance and gender inequality beliefs, I will now present the IV results. Table 5 presents the first stage, described in equation 2 of the Data and Econometric Strategy section. Despite altering the age ranges to create the largest treatment effect possible, there is still only a 9.4% difference in rates of primary school completion between treatment and control.

Table 5: First Stage - Treatment on Completed Primary School

	(1) Pooled	(2) Kenya	(3) Malawi	(4) Tanzania	(5) Uganda	(6) Zambia
FPE Eligible	0.094*** (0.017)	0.104** (0.033)	0.167** (0.051)	0.055* (0.026)	0.097* (0.046)	0.086* (0.043)
Constant	0.575*** (0.031)	0.502*** (0.064)	0.291*** (0.071)	0.637*** (0.045)	0.538*** (0.061)	0.578*** (0.059)
Observations	2610	551	343	798	457	461

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

This table presents the specification in equation 2, regressing education (completed primary school) on eligibility for free primary education (FPE). Controls are gender, urban, wealth, unemployed, and (for the pooled specification only) country.

I now present the results for the reduced form regressions (relating to equation

3 in the Data section) for the five intolerance outcomes in Table 6.

Table 6: Reduced Form - Free Primary Education on Intolerance

	(1)	(2)	(3)	(4)	(5)
	Intolerance	Religion	Ethnicity	Homosexuals	Immigrants
FPE Eligible	-0.033 (0.026)	-0.004 (0.017)	-0.009 (0.017)	-0.012 (0.008)	-0.035 (0.019)
Female	0.065* (0.026)	0.028 (0.017)	0.044** (0.017)	0.002 (0.008)	0.058** (0.020)
Urban	0.027 (0.027)	0.040* (0.020)	0.057** (0.019)	0.010 (0.008)	0.018 (0.022)
Wealth	-0.000 (0.035)	0.010 (0.021)	0.022 (0.021)	0.008 (0.010)	0.039 (0.024)
Unemployed	-0.011 (0.028)	-0.004 (0.019)	0.000 (0.019)	-0.005 (0.009)	-0.006 (0.021)
Constant	0.122** (0.045)	0.322*** (0.032)	0.261*** (0.031)	0.969*** (0.012)	0.519*** (0.035)
Observations	2618	2618	2618	2618	2618

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

This table presents the reduced form regression outlined in equation 3 for each of the intolerance outcomes. The outcome in column 1 is the intolerance summary index and the outcomes in columns 2-5 are the intolerance indicators. I regress treatment (eligibility for free primary education) on each intolerance outcome, controlling for country indicators as well as the controls shown above.

Although the coefficients are all in the direction we would expect (treatment is correlated with less intolerant attitudes), none of these estimates are statistically significant. If treatment affects intolerance only through the channel of education, as assumed, then the coefficients I would be estimating here are relatively small as free primary education eligibility increases rates of primary school completion by only 9%. Moreover, the OLS regressions presented in Table 3 show that although education does appear to have some effect on the summary index for intolerance, this effect is not particularly large. Approximating such small coefficients with this IV design is therefore not feasible due to contamination between treatment and control groups. If we interpret these reduced form results as the policy impact of free primary education, it could be argued that the policy itself does not seem to impact intolerance. However,

using eligibility based on age to identify who benefited from the policy is again not the best test due to older children enrolling in primary school following the fee waivers, and so the best we could hope to do with this strategy is to provide a lower bound estimate for the impact of free primary education.

Table 7: IV - Effect of Education on Intolerance

	(1)	(2)	(3)	(4)	(5)
	Intolerance	Religion	Ethnicity	Homosexuals	Immigrants
Comp. Primary	-0.358 (0.277)	-0.048 (0.182)	-0.114 (0.180)	-0.136 (0.084)	-0.388 (0.216)
Female	0.030 (0.039)	0.025 (0.025)	0.034 (0.025)	-0.012 (0.012)	0.019 (0.030)
Urban	0.072 (0.046)	0.046 (0.031)	0.073* (0.031)	0.027 (0.014)	0.067 (0.037)
Wealth	0.060 (0.057)	0.019 (0.036)	0.041 (0.036)	0.031 (0.017)	0.103* (0.044)
Unemployed	-0.027 (0.029)	-0.008 (0.020)	-0.007 (0.019)	-0.012 (0.009)	-0.024 (0.023)
Constant	0.327 (0.177)	0.348** (0.117)	0.326** (0.116)	1.048*** (0.053)	0.742*** (0.138)
Observations	2610	2610	2610	2610	2610

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

This table presents intolerance results for the second stage regression outlined in equation 4. These are obtained by regressing each intolerance outcomes on the predicted values of education from the first stage regression (presented in Table 5). Column 1 presents the intolerance summary index (mean of z-scores of each intolerance question) and Columns 2-5 present the intolerance indicators. Country was controlled for in this specification.

I present the 2 stage least squares results for intolerance in the Table 7 and we see that the previous intuition is correct: using the timing of free primary education as an instrument does not yield precise enough standard errors to be insightful. Each of the coefficients on predicted values of completed primary school is negative, implying that education lessens intolerance, but, based on these results alone, we cannot reject that education has no effect or even a positive effect on intolerance, due to large standard errors in this model.

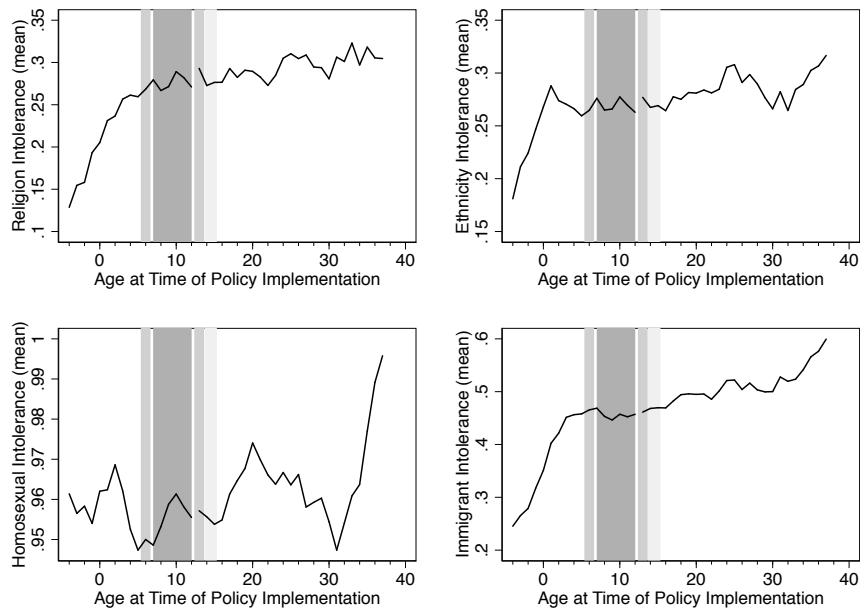
Figures 1 and 2 on the next page visually present the data for intolerance outcomes. The x-axis represents a respondent's age at the time of his or her country's adoption of free primary education, and so the shaded regions represent the first eligible cohorts of children. Because eligible ages differ slightly from country to country, I shade the regions according to the proportion across countries that would have been eligible at that age. For example, the shaded region between ages 7 and 12 is darkest because these were eligible ages for all five countries in the sample. The bars at ages 6 and 13 are slightly lighter as respondents of this age would only be eligible in three countries, and the region from 14-15 is lightest as only Tanzania's policy targeted children in this age range. I smooth the data using moving averages that take into account two past and two future entries, smoothing separately for ages less than or equal to 12 and ages greater than 12, in order to keep the potential regression discontinuity sharp (if there is an effect).

Looking at Figure 1 for the summary intolerance index, there appears to be a small jump between treatment and control of about 0.25 to 0.3 of a standard deviation, which implies that there is some evidence for free primary education eligibility decreasing intolerance attitudes. We also observe small jumps for the religion intolerance, representing a 2 or 3% decrease in intolerance. The intolerance indicator for immigrants or foreign workers is almost perfectly smooth, suggesting no policy impact here. We do notice that there is a clear age trend in all of the intolerance outcomes: older people tend to have greater intolerance attitudes.

Figure 1: Intolerance Index, Pooled Across Countries



Figure 2: Intolerance Indicators, Pooled Across Countries



I now present results for the five gender inequality outcomes. Table 8 presents the reduced form regressions, outlined in equation 3, for these outcomes. We see from Columns 1 and 3-5, that education appears to negatively impact gender inequality. However, similarly to the reduced form results for the intolerance outcomes presented in Table 6, we have large standard errors on all of our treatment coefficients, and so cannot identify the true policy impact.

Table 8: Reduced Form - Free Primary Education on Gender Inequality Beliefs

	(1)	(2)	(3)	(4)	(5)
	Gender Ineq	Pol Leaders	Job Rights	Land Rights	Gender Norms
FPE Eligible	-0.009 (0.023)	0.008 (0.017)	-0.015 (0.019)	-0.004 (0.016)	-0.038 (0.020)
Female	-0.198*** (0.023)	-0.120*** (0.017)	-0.126*** (0.019)	-0.106*** (0.016)	0.046* (0.020)
Urban	0.008 (0.026)	0.014 (0.019)	0.010 (0.021)	0.001 (0.018)	0.030 (0.022)
Wealth	-0.147*** (0.028)	-0.079*** (0.022)	-0.035 (0.024)	-0.080*** (0.021)	-0.074** (0.025)
Unemployed	0.033 (0.024)	0.016 (0.018)	0.029 (0.020)	-0.009 (0.017)	0.047* (0.021)
Constant	0.265*** (0.039)	0.385*** (0.031)	0.470*** (0.034)	0.327*** (0.029)	0.605*** (0.035)
Observations	2618	2618	2618	2618	2618

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

This table presents the reduced form regression outlined in equation 3 for each of the gender inequality outcomes. The outcome in column 1 is the gender inequality summary index and the outcomes in columns 2-5 are the intolerance indicators. I regress treatment (eligibility for free primary education) on each intolerance outcome, controlling for country indicators as well as the controls shown above.

I present the second stage estimates for the gender inequality outcomes in Table 9, but again because eligibility based on age is a very weak instrument, the standard errors are too large to provide any conclusive information on the impact of education on gender inequality beliefs.

Table 9: IV - Effect of Education on Gender Inequality Beliefs

	(1) Gender Ineq	(2) Pol Leaders	(3) Job Rights	(4) Land Rights	(5) Gender Norms
Comp. Primary	-0.098 (0.240)	0.091 (0.184)	-0.159 (0.201)	-0.048 (0.173)	-0.410 (0.216)
Female	-0.209*** (0.032)	-0.110*** (0.025)	-0.143*** (0.027)	-0.111*** (0.023)	0.003 (0.030)
Urban	0.017 (0.041)	-0.001 (0.031)	0.026 (0.034)	0.007 (0.029)	0.082* (0.036)
Wealth	-0.132** (0.048)	-0.094* (0.038)	-0.009 (0.041)	-0.073* (0.035)	-0.007 (0.044)
Unemployed	0.029 (0.025)	0.019 (0.019)	0.023 (0.021)	-0.011 (0.018)	0.031 (0.023)
Constant	0.326* (0.153)	0.335** (0.116)	0.565*** (0.128)	0.356** (0.109)	0.843*** (0.137)
Observations	2610	2610	2610	2610	2610

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

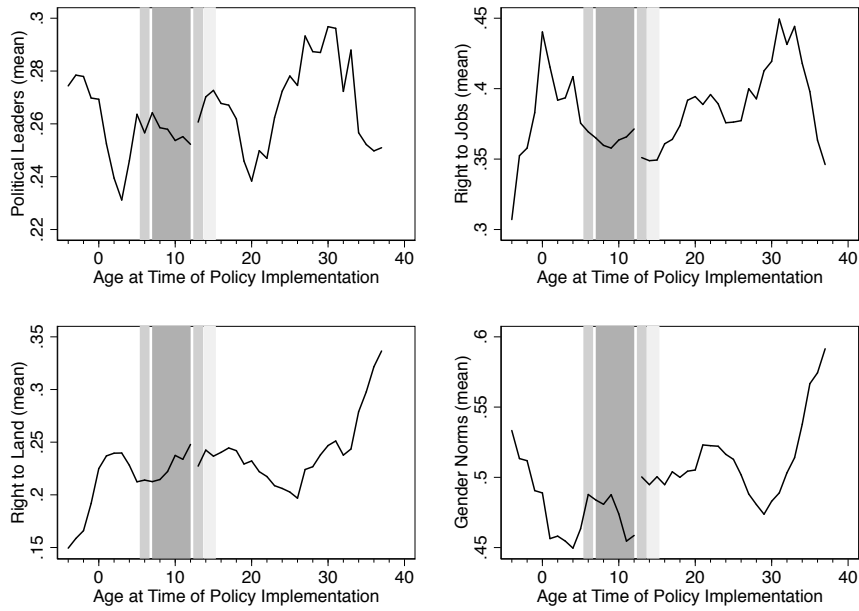
This table presents gender inequality results for the second stage regression outlined in equation 4. These are obtained by regressing each inequality outcomes on the predicted values of education from the first stage regression (presented in Table 5). Column 1 presents the gender inequality summary index (mean of z-scores of each question related to gender inequality, oriented so that a higher) score represents greater gender inequality beliefs. Omitted controls are country indicators.

The data is represented visually in Figures 3 and 4 on the next page. Overall, there appears to be a general trend with respect to age, i.e. that being older is associated with higher gender inequality beliefs, but this trend is less clear when we look at the inequality indicators for political leaders and rights to jobs. We observe a small increase in the gender inequality summary index at ages 12 and 13. More significantly, however, is the difference at the boundary for the gender norms indicator, suggesting that free primary education reduced beliefs in stereotypical gender roles. Counter to the education as enlightenment view, we see decreases in gender inequality beliefs for the right to jobs and right to land indicators, suggesting that education (or rather the free primary education policy as eligibility is not the best predictor of educational attainment) caused higher gender inequality attitudes. However, these differences are very small and, taking into account the noise in the data, not particularly significant.

Figure 3: Gender Inequality Index, Pooled Across Countries



Figure 4: Gender Inequality Indicators, Pooled Across Countries



5 Conclusion

Although the OLS regressions presented in Tables 3 and 4 provide some promising evidence that higher educational attainment is correlated with less intolerance and gender inequality beliefs, I am unable to confirm the causality of these results using eligibility for free primary education as an instrument. Fee waivers were implemented across the board and did not restrict older children from enrolling in school, hence, due to contamination between our constructed treatment and control groups, comparing eligible and ineligible age groups does not appear to be a viable way of measuring the policy impact.

Moreover, there is qualitative evidence that suggests that free primary education policies were not very effective. The "big bang" approach of eliminating fees for all primary school grades led to sharp increases in enrollment that in most cases were not met with an appropriate increase in infrastructure investment, hiring of teachers, and supply of learning materials. Classrooms became overcrowded and so despite gains in net enrollment, there may have been a negative impact because the quality of education diminished. This means that even if we were able to construct a treatment indicator that perfectly captured those who enrolled in primary school as a direct consequence of the policy, our treatment indicator would not necessarily be correlated with true educational attainment. Treatment would indeed be correlated with primary school enrollment and perhaps even primary school completion, but the true educational gains from attending or completing primary school would be less than the gains obtained from attending or completing in the absence of the policy.

Quality of education is especially important when considering social equality outcomes. For education to be powerful enough to influence a person's core values and beliefs, then the curriculum needs to go beyond the memorization of basic facts and figures, providing students with the opportunity to think critically and be exposed to multiple viewpoints. With this in mind, it might be more appropriate for further research to estimate the impacts of secondary school or university on beliefs as higher education is likely to have a larger impact on tolerance and gender equality than primary school.

An additional caveat is that free primary education policies, even if perfectly measured, may not be a valid instrument as there exists another potential chan-

nel through which the policy could have affected social equality attitudes. It is reasonable to assume that free primary education policies would have had a greater impact on enrollment levels for poorer, female children living in rural areas. This would lead to a change in the demographic composition of classrooms and the greater diversity could then drive intolerance and gender inequality attitudes in addition to education. For gender inequality measures in particular, it is possible that having more female peers in a classroom leads to greater respect for women and a greater recognition of gender equality. There is some research that has been conducted on the effects of the demographic composition of classrooms on attitudes and behavior (for example, Rao (2019) shows that having poorer students in a classroom leads to richer students being more egalitarian and less likely to discriminate against them). However, more research needs to be done in order to identify whether this is a mechanism through which free primary education affected social equality beliefs in East Africa and, more generally, whether this can be an effect of free primary education policies in any setting.

Promoting tolerance and beliefs of social equality is not only morally imperative, but also an important policy goal because egalitarian societies are more harmonious, leading to a reduction in conflict that benefits all members of a society. In order to make progress towards this goal it is therefore crucial to understand the factors that drive tolerance and social equality. Education is presumably one such factor and although this paper is unable to present significant evidence on the impact of education on social equality beliefs, further research will hopefully come closer to estimating the impact of education and other key factors, so that governments can design policies that more effectively encourage egalitarian values, paving the way for more peaceful generations.

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