

Does Education Empower Women? Evidence from Zimbabwe

A Senior Capstone

Presented to

The Faculty of the Department of Economics

Bates College

By

Zahio Alexia Marissa Sahue

April 8th, 2019

Abstract

I exploit a change in the education system in Zimbabwe in 1980 to estimate the causal effects of an increase in education on labor market outcomes, welfare, domestic violence, freedom and political participation. By adopting a regression discontinuity design, I find that for women born post-1965, the reform increased their schooling by 0.9 years and their probability to complete secondary education by 9.1 percentage points. I also find evidence that the reform improved their probability to begin secondary education, literacy and self-employment. The increase in education among women born post-1965 unfortunately increases incidents of domestic violence from their husbands. However, their exposure to the reform boosts their freedom to vote, freedom of speech and propensity to join organizations. I report no statistical increase in their wealth and find that although they are more prone to speak up, their interest in politics decreases.

Acknowledgments

Foremost, I would like to express my sincere thanks to my advisor Pr. Luke Chicoine for providing me with all the support and assistance I needed while working on this capstone. Thanks for the patience, motivation, enthusiasm, long conversations and expertise. I could not have imagined having a better advisor for this study.

I am also grateful for Emily Lyons for motivating me every step of the way, for being my Econ buddy and for always being willing to grow and learn with me since sophomore year. There is a lot I would not have been able to accomplish as an Econ major without you.

I also take this opportunity to thank my parents, host family and the gospelaires for believing in me and encouraging me. I am truly grateful for their unceasing support and attention.

To all my closest friends (Afia, Emily, Esme, Anastasia, Yesul, and the list goes on) thank you all for allowing me to say “Yes yes yes” in the midst of sadness and negativity.

To Chenemi, thank you for accepting to bind my capstone. You embody all the values that a young woman needs to thrive. I cannot wait to see all the amazing work you will do in the near future.

Last but not the least, I would like to thank God for the strength, assurance, support and love He gave me throughout this journey.

1. Introduction

The relationship between education level and education system reforms in Sub-Saharan Africa has received a lot of attention from economists. In the 1970s, a number of African countries implemented educational reforms and expansion programs to increase education outcomes for both men and women. Kenya and Nigeria were the first to implement programs abolishing tuition and non-tuition fees, followed by Zimbabwe, Tanzania, Ethiopia, Malawi and Uganda, to name a few. Unlike other countries who were mainly dealing with an educational disparity between men and women, Zimbabwe's main challenge was the impact of an apartheid-like regime that prevailed in Rhodesia. Before 1980, about a quarter of black-school age children failed to enter primary school due to the fact that whites were given priority for enrollment at the detriment of black Zimbabweans (Riddell, 1980). In response, in April 1980, the newly elected government of Zimbabwe reformed the education system to improve the country's education outcomes, and to address the low educational attainment of blacks. The 1980 reform had 4 main components: (1) the introduction of free and compulsory primary schooling for all, (2) the elimination of age restrictions to allow all age groups to enter school, (3) a stronger support for education, and (4) a smoother transition from primary to secondary school (Nhundu, 1992). Following this reform, between 1979 and 1985, total enrollment rose by 205% and gross enrollment in secondary school grew by 628% (Nhundu, 1992).

An extensive literature found evidence that financial barriers to enrolling in school disproportionately falls on women. In the cases of Malawi and Uganda for example, educational reforms were implemented with the intended goal to increase educational attainment for women, decrease their fertility, boost their labor productivity and increase their bargaining power. For these reasons, this paper solely focuses on the story of women following the educational expansion in Zimbabwe. This paper attempts to answer the following question: to what extent has the 1980 reform in Zimbabwe empowered women through their increase in educational attainment? The channels that I consider in this paper to measure women's level of empowerment are labor market participation, domestic violence, welfare, freedom measures and interest in politics. I find that not only women experienced an increase in their educational attainment, but their bargaining power also increased through their self-employment, and freedom of expression politically and socially.

To answer this question, I opt for a regression discontinuity strategy given the fact that the apartheid-like education system created a discontinuity that disproportionately impacted Zimbabweans aged 14 or less in 1980 relative to children aged 15 or more. I rely on the Household Survey and Individual Women Survey parts of the Zimbabwe Demographic and Health Surveys (ZDHS), and also include measures of women's public attitudes on economic, political, and social matters in Zimbabwe, contained in the Afrobarometer Surveys.

In the first set of regressions, I estimate the effect of the education reform on women's education outcomes, including their years of schooling, secondary education completion, partial completion of secondary school and literacy. In comparison to women born pre-1965, I find that for women born after 1965, the reform increases their schooling, probability to complete secondary education and probability to begin secondary education by 0.9 years, 9.1 percentage points and 21.2 percentage points respectively. I also find that their probability of being literate increases by 6.7 percentage points. In addition, I study the impact of an increase in education on mechanisms affecting their empowerment. This includes labor market productivity, domestic violence, wealth, freedom and interest in politics. My findings suggest that while women experience an increase in their self-employment, their current employment and employment in the last 12 months do not significantly change. The increase in education among women born post-1965 unfortunately increases incidents of domestic violence from their husbands. However, their exposure to the reform boosts their freedom to vote, freedom of speech and propensity to join organizations. I report no statistical increase in their wealth and find that although they are more prone to speak up, their interest in politics decreases.

While many recent papers have examined the impact of the 1980 reform on education, child mortality and intergenerational transmission, these papers do not tackle the question of whether the educated possess more bargaining power, are strongly opinionated and more confident in claiming their rights. This research contributes to the broader economic literature on education and women empowerment by examining important channels behind the relationship. Most importantly, these channels could potentially present an opportunity to strongly support education programs and policies that target women in order to boost gender equality and allow them to openly share their opinion about their countries.

2. Literature Review

Prior empirical research has documented evidence consistent with the possibility that educational expansions and reforms have a positive effect on educational outcomes in Sub-Saharan Africa. Cochrane (1979) and Ainsworth et al. (1996) explored mechanisms through which educational attainment influences fertility and fertility related outcomes, particularly, labor market, contraceptive use and age at first marriage. Osili and Long (2008) studied the effect of the introduction of universal primary education in Nigeria on schooling investments. Gebre (2018), Chicoine (2018) and Keats (2018) also documented a strong positive correlation between education and educational reforms in Malawi, Ethiopia and Uganda respectively. Although the papers above mainly focused on the impact of an increase in educational attainment on fertility and fertility related outcomes, they nevertheless found evidence that supports the earlier literature about a positive relationship between education expansions and women's educational level.

Concerning labor market outcomes, contraceptive use and bargaining power¹, there are mixed results observed. Keats found that increased contraceptive use and labor market participation explain the reduction in fertility in the Uganda context. However, he did not find evidence to support an increase in women's bargaining power. Chicoine's findings were similar to Keats' in regard to the effects on labor market participation and bargaining power, but he failed to find any support for increased contraceptive use. Gebre's results contrast both Keats and Chicoine insofar as she did not find evidence to support the role of labor market productivity. She did find evidence in support of contraceptive use which is similar to Keats' results, and but did not find significance for bargaining power similarly to both Keats and Chicoine.

Godefroy and Lewis (2018) conducted a similar research as the papers above but opted for men instead of women. The authors believed that the impact of male education on fertility had been overlooked by the previous literature. Their paper studied how school access affects men's fertility decisions. In their research, they adopted a regression discontinuity model that explored a sharp cross-cohort differences in school access following a series of educational reforms in Mali in 1992. They found evidence that greater school access for males in Mali led to a significant decrease in their fertility, delayed entry into marriage and increased urbanization. They did not find any effects on men's labor market outcomes.

The literature evolved over time and shifted from solely focusing on the impact of increased education on fertility and on a narrow range of fertility related outcomes, to studying an extensive array of outcome of interests. Other studies explored various channels impacted by an increase in education opportunities, ranging from child health to gender equality. Handa (1999) explained that educated mothers tend to have higher bargaining power over household's decision and can therefore positively impact their children's health. Maiga (1995) demonstrated that mothers' education has a positive impact on child health in Burkina Faso for kids who are 59 months and younger. Using a change in education policy in primary school as an instrument, her results showed that mother's education has a significant effect on child weight-for-height (WHZ). She however did not find any effect of mother's education on child's height-for-age (HAZ). In the study, she took a look at four pathways through which mother's education can affect a child's health: income, health knowledge, bargaining power, and community services availability. Per capita household expenditures and mother's bargaining power are the pathways through which mother's education affects children's HAZ. All four pathways explained a positive impact of a mother's education on child's WHZ.

Regarding the topic of women empowerment through their increase in education, scholars have long speculated about education's social, economic and political impacts. Logan and Bratton (2006) found evidence that educated women in Bangladesh were more likely to participate in political meetings and had a higher freedom of speech. Friedman (2011) assessed the political and social impacts of increased education through the experimental Girls Scholarship Program (GSP) in Kenyan primary schools. He found

¹ Labor market outcomes and bargaining power are channels that will be analyzed in this study.

that exposure to the program reduced young women's acceptance of the right of men to beat their wives and children. He also reported a reduction in the likelihood that parents would be involved in choosing their daughters' spouses. Additionally, the program increased objective political knowledge and reduced acceptance of political authority, but no significance was found for women's likelihood to participate in their community or vote.

Cannonier and Mocan (2018) on the other hand found that an increase in schooling followed by the implementation of an education program for primary-school age children in Sierra Leone, had an impact on women's attitudes regarding violence against women. Furthermore, they reported an increase in women's propensity to use modern contraception and get tested for HIV but did not find any impact on men's attitudes toward women's well-being, women's propensity to get married, their age at first marriage or age at first birth. Based on the current literature and also my research, there is a general consensus about the positive impact of educational reforms on women's education level. However, there are diverging results for the social and political impacts of education as illustrated above. Educated women tend to speak up and reject violence, but in the majority of cases they do not express an interest in politics or community participation. My research will be supporting the earlier literature with regards to the strong impact of education reforms on women educational attainment in Zimbabwe. However, it will bring a fresh perspective regarding women empowerment after the abolition of the apartheid-system given the fact that there is not an extensive literature on this topic in Zimbabwe.

3. Post-Independence Schooling Reform

Before independence, Zimbabwe's educational system denied educational opportunities to its black population. This educational system based on a racial bias disproportionately affected blacks and provided universal primary enrollment to whites. For example, in 1976, for every 1,000 black school-aged children, 250 never attended school, 337 completed primary school but only 60 transitioned into secondary school (Riddell, 1980). Racial disparity was also affecting black Zimbabweans in secondary school. In 1975, 3,000 white students were enrolled in secondary classes that prepared them for university entrance, compared to only 790 black students (Chidzero, 1977).

After independence, the prime minister Robert Mugabe along with the ZANU party were motivated by the desire to abolish the disparities between whites and blacks and meet the aspirations of blacks who were denied access to education during colonial rule. The Zimbabwe government had several intended goals including "(1) the introduction of free and compulsory primary education; (2) the removal of age restrictions to allow over-age children to enter school; (3) building community support for education and; (4) automatic promotion from primary to secondary school, i.e. from grade 7 to Form I" (Agüero & Ramachandran, 2017). This paper will mainly focus on the last feature of the reform, but I will also analyze

the impact of the reform on other education measures. Education in Zimbabwe follows a 7+4+2 system: seven grades of primary school, four forms of secondary school and two years of high school.² The majority of children enter primary school at age 7. It is however important to note that the entry age was then lowered to 6 years in 1989 (Agüero & Ramachandran, 2018). The first cohort of students who would have benefited from the reform were black Zimbabweans entering secondary school in 1980. These students would have been fourteen to fifteen years old and would have taken full advantage of the new educational system, relative to older birth cohorts. However, I instead consider students who were fifteen and sixteen at the time the reform was implemented given the fact that this inferred point of discontinuity in black schooling is observed in my datasets.

4. Data

The data used in this analysis comes from the 2005/2006, 2010/11 and 2015 rounds of the Household Survey and Individual Women Survey part of the Zimbabwe Demographic and Health Surveys (ZDHS). The DHS data sets contain information on demographic characteristics for both female and male respondents, where the main unit of analysis comprises women between age 15 and 49. The respondents answer questions about their sex, birth history, level of education, region, type of residence, socioeconomic and marital status, among other characteristics. The Individual Women Survey includes detailed data for some variables not included in the Household Survey, which will be necessary when examining the impact of increased education for black Zimbabweans on the outcomes that could measure their level of autonomy. The main outcome variables from the DHS data include years of schooling, secondary school completion, beginning secondary school³, literacy, current employment, employment in the last 12 months, experienced any severe violence, experienced sexual violence and ever had bruises because of their husband's act.

For a further study of the impact of education on women empowerment, my analysis is based on measures of women's public attitudes on economic, political, and social matters in Zimbabwe, contained in the 2015-2016, 2011-2013 and 2008-2009 rounds of the Afrobarometer Survey. The outcome variables include freedom of speech, freedom to vote, political participation, interest in public affairs, and welfare measures. In my analysis, I exclude females who were born in 1965 and 1964. I restrict my attention to women aged 8 to 22 in 1980, which gives a sample of around 3,744 women for the DHS data and 440 women for the Afrobarometer survey. The summary statistics of the DHS and Afrobarometer data sets used

² Secondary schooling is divided into 2 phases based on the Cambridge 2-tier model. After 4 years, a pass is required in a minimum of 5 subjects to obtain O-Level. Afterwards, students in post-secondary education take several exams to obtain an 'A' level. *See* <https://www.scholaro.com/pro/Countries/Zimbabwe/Education-System>.

³ This includes women who began secondary school but did not complete it.

in this paper are presented in Table 1. I divide the sample by separating women born before 1965 from those born after 1965.

The education measures reported in Table 1 present a sharp contrast between women's educational achievements across both samples. For example, 62.6 percent of women born after 1965 were able to begin secondary education, relative to only 24 percent of those born before 1965. The 1980 reform therefore allowed a larger sample of women to at least begin secondary school. The same sharp increase is observed for the secondary school completion variable. Before the reform, only 12.3 percent of women in the sample completed secondary school. After the implementation of the reform, 40.9 percent of those born after 1965 completed secondary education. Furthermore, women born after 1965 have on average 8.4 years of schooling relative to those born before 1965, which reflects the effectiveness of the reform at raising blacks' educational attainment. Concerning women's labor market measures, 53.2 percent of the post-1965 birth cohorts are currently employed, compared to 45.8 percent of the pre-1965 birth cohorts. Although this is a relatively small increase, it still represents a significant improvement in women's employment status. The freedom measures indicate an overall positive contribution of the reform to the post-1965 birth cohorts' freedom of expression and autonomy. For example, 80.1 percent of women born after 1965 are more likely to speak up in contrast with 76.6 percent born before 1965. Additionally, 94.7 percent of women born after 1965 are less careful of what they say about politics, compared to 97 percent of those born before 1965. Although some of the variables reported in Table 1 represent small increments, they nonetheless indicate that more women enjoyed the basic rights of education, employment, freedom and that a smaller portion of them were victims of domestic violence or silenced by their husbands and country's institutions.

Table 1: Summary Statistics

| | Pre-1965 | | Post-1965 | |
|---|----------|-------|-----------|-------|
| | N | Mean | N | Mean |
| <u>Education</u> | | | | |
| Began Secondary Education (DHS) Completed Secondary Education (DHS) | 1,088 | 0.240 | 2,651 | 0.626 |
| Years of Schooling | 1,083 | 5.424 | 2,640 | 8.400 |
| Literacy | 1,082 | 0.728 | 2,532 | 0.908 |
| <u>Labor Market</u> | | | | |
| Current Employment | 1,090 | 0.458 | 2,653 | 0.532 |
| Self-Employment | 1,090 | 0.327 | 2,650 | 0.375 |
| Worked in Last 12 Months | 1,056 | 0.488 | 2,582 | 0.584 |
| <u>Domestic Violence</u> | | | | |
| Experienced Any Severe Violence | 725 | 0.072 | 1,940 | 0.078 |
| Experienced Sexual Violence | 725 | 0.135 | 1,941 | 0.101 |
| Ever Had Bruises Because of Husband's Act | 725 | 0.091 | 1,939 | 0.087 |
| <u>Politics & Public Affairs</u> | | | | |
| Discuss Politics | 183 | 0.683 | 257 | 0.725 |
| Interest in Politics | 180 | 0.871 | 267 | 0.836 |
| <u>Freedom</u> | | | | |
| Freedom of Speech | 178 | 0.766 | 255 | 0.801 |
| Freedom to Vote | 179 | 0.820 | 252 | 0.845 |
| Contact Local Government | 183 | 0.446 | 257 | 0.485 |
| Government Bans Organization vs. Join Any | 173 | 0.753 | 244 | 0.727 |
| Careful of What They Say About Politics | 182 | 0.970 | 254 | 0.947 |
| <u>Welfare Measures</u> | | | | |
| Gone w/o Food | 183 | 0.694 | 257 | 0.693 |
| Gone w/o Water | 183 | 0.520 | 257 | 0.566 |
| Gone w/o Cash | 183 | 0.896 | 256 | 0.908 |

Note: The values reported in this table exclude women born in 1964 and 1965.

5. Identification Strategy

I estimate the impact of the 1980 reform on several outcomes of interest using the following linear regression discontinuity specification:

$$Y_{ic} = \alpha + \beta_0 Post_c + \beta_1 X_c + \beta_2 Post_c * X_c + age_i + \gamma Z_{ic} + \epsilon_{ic}$$

where Y_{ic} denotes the outcome of interest for individual i of birth cohort c . $Post_c$ is a dummy variable that takes the value of one for individuals born in 1965 or later, who reached secondary school age after the apartheid-style regime was abolished in 1980. X_c represents the distance from 1965, which means that an individual born in 1964 will have a distance of -1 from the cut-off. To account for negative values, I multiply the distance by -1 if the person was born before and in 1964. The interaction term accounts for the differences in slopes on either side of the cut-off. The term Z_{ic} denotes a vector of fixed effects controls for region and type of residence. I also control for trends in outcomes across birth cohorts using a third-order polynomial, age_i . The coefficient of interest, β_0 , captures the impact of the abolition of the apartheid-style regime on secondary school attendance and women autonomy. In other words, it measures the change in our several outcomes of interest by comparing women born before and in 1963 to women born in and after 1966. For my regressions, I consider a distance from the cut-off value of less than 7, which implies that my analysis focuses on women born between 1958 and 1972.

6. Results

6.1. Effects of the Reform on Women Educational Attainment

Before assessing the impact of schooling on women empowerment in their household and community, I first study the effects of the reform on their educational attainment. My estimates include years of schooling, probability of completing secondary school, probability of beginning secondary school and probability of being literate.

Table 2: Effect of the Reform on Educational Attainment

| Dependent Variable | Years of Schooling | Begin Secondary School | Complete Secondary School | Literacy |
|--------------------|--------------------|------------------------|---------------------------|----------|
| | (1) | (2) | (3) | (4) |
| Post-Reform | 0.922** | 0.212*** | 0.091** | 0.067** |
| S.E | (0.320) | (0.043) | (0.041) | (0.032) |
| Pre-Reform Mean | 5.424 | 0.240 | 0.123 | 0.728 |
| N | 3,723 | 3,739 | 3,744 | 3,722 |

*** p < 0.01, ** p < 0.05, * p < 0.1

Sample excludes women born in 1964 and 1965, from the 2005/6, 2010/11, and 2015 rounds of the ZDHS.

The results for the effect of the reform on women’s years of schooling are presented in column (1) of Table 2. The results show that for women born post-1965 relative to those born pre-1965, their years of schooling increase by 0.9, which is the equivalent of a 17 percent boost. This statistically significant increase in women’s years of schooling probably gave an opportunity to a relatively large group of women to either complete primary school or have a smoother transition from primary to secondary school. In column (2), I estimate the impact of the reform on their probability to begin secondary school. The dummy is equal to one if the individual began secondary school and zero otherwise. I find that the probability of beginning secondary school increases by 21.2 percentage points. This represents an 88.33 percent increase in the probability that women born after 1965 will begin secondary school. This result is statistically significant at the 99 percent level and suggests that nearly all women born after 1965 attended secondary school as a result of the reform implementation. I also find that women’s probability of completing secondary school increases by 9.1 percentage points and is statistically significant at a 95 percent level. This represents a 74 percent increase in the probability that women born after 1965 will complete secondary school. Finally, I report that women’s probability of being literate increases by 6.7 percentage points. Although this increase is relatively small compared to the large increases in the other education measures, this result is statistically significant at a 95 percent level. All our education measures provide evidence that the abolishment of the apartheid-like system created more educational opportunities for women and had a positive and significant impact on educational attainment for women in Zimbabwe.

Figures 1(a), 1(b), 1(c) and 1(d) plot the means for all the education measures analyzed above. The four figures display large discontinuous jumps in schooling for women born after 1965 relative to those born before 1965. These sharp increases in all education measures coincide with the implementation of the reform and reinforce my findings on the positive impact of the reform on schooling outcomes for women aged 15 or 16 when the reform was put into effect. Similarly to the other figures that will be reported in this paper, the years 1964 and 1965 are excluded from the trendlines given the fact that these two birth cohorts

both received partial treatment. This preferred specification is analogous to the figures where the discontinuity is clear.

6.2. Effects of the Reform on Women Empowerment

In this section, I test whether the increase in women’s education had a significant impact on channels through which their autonomy and bargaining power improve. These channels include labor market outcomes, domestic violence, wealth, freedom and, interest in politics and public affairs.

6.2.1. Effects of Schooling on Labor Market Outcomes

Previous research documented that an increase in education often leads to higher labor productivity. In fact, an increase in education gives women an opportunity to become high-skilled and thus have a higher probability of being employed and contribute to the economy. The same logic was used by other economists when explaining the causal relationship between education and fertility (Chicoine, 2018; Keats, 2018; Gebre, 2018). In fact, higher level of productivity could increase the opportunity cost of becoming pregnant and raising children. The increase in the opportunity cost of having children then results in women wanting fewer children. The labor market outcomes reported in the table below are the probability of being currently employed, probability of having worked in the last 12 months and probability of being self-employed.

Table 3: Effect of Schooling on Labor Market Participation

| Dependent Variable | Employment Status | Self-employment | Worked in the Last 12 Months |
|--------------------|-------------------|-----------------|------------------------------|
| | (1) | (2) | (3) |
| Post-Reform | 0.055 | 0.095** | 0.075 |
| S.E | (0.047) | (0.046) | (0.047) |
| Pre-Reform Mean | 0.458 | 0.327 | 0.488 |
| N | 3,743 | 3,740 | 3,638 |

*** p < 0.01, ** p < 0.05, * p < 0.1

Sample excludes women born in 1964 and 1965, from the 2005/6, 2010/11, and 2015 rounds of the ZDHS.

The result presented in column (1) of Table 3 shows that exposure to the reform increases women’s probability of being currently employed by 5.5 percentage points. Although this result is not statistically significant, it still represents a 12 percent increase relative to the pre-reform mean. Additionally, I find that employment in the last 12 months increases by 7.5 percentage points; however, this result is also not statistically significant.⁴ Their probability of being self-employed significantly increases by 9.5 percentage points, at a 95 percent confidence level. It represents a 29 percent increase in their probability of having their own-start up. Figure 2 supports my finding and the discontinuity shows that women born after 1965

⁴ The p-value was 0.12 and close to being significant.

have a higher probability of being self-employed. Despite the fact that the other two measures of labor market participation are not statistically significant, they are nonetheless positive and worth taking into consideration given their p-values.

6.2.2. Effects of Schooling on Domestic Violence

In this section of the paper, I study the impact of an increase in education on domestic violence. Several studies have found evidence that the impact of female economic empowerment on the level of domestic violence can be ambiguous. On one hand, a higher labor market participation, income transfers or access to welfare services may improve women’s bargaining power in their household and decrease their exposure to violence (Hidrobo & Fernald, 2013; Stevenson & Wolfers, 2006). On the other hand, an increase in the resources that are available to women may increase their husband’s likelihood to use violence and threats against them in order to maintain a certain control over them (Castro, 2013; Eswaran & Malhotra, 2011). The regression results are presented in Table 4. The variables include experienced any severe violence, experienced sexual violence and ever had bruises because of husband’s act.

Table 4: Effect of Schooling on Domestic Violence

| Dependent Variable | Experienced Any Severe Violence | Experienced Sexual Violence | Ever Had Bruises |
|--------------------|---------------------------------|-----------------------------|------------------|
| | (1) | (2) | (3) |
| Post-Reform | 0.010 | 0.077** | 0.101** |
| S.E | (0.031) | (0.036) | (0.033) |
| Pre-Reform Mean | 0.072 | 0.135 | 0.091 |
| N | 2,665 | 2,666 | 2,664 |

*** p < 0.01, ** p < 0.05, * p < 0.1

Sample excludes women born in 1964 and 1965, from the 2005/6, 2010/11, and 2015 rounds of the ZDHS.

The results above suggest that after they have been exposed to the reform, the probability of women experiencing any severe violence increases by 1 percentage point. Although this result is positive, it is not statistically significant and small in magnitude. In addition, I find that their likelihood to experience sexual violence significantly increases by 7.7 percentage points, which is equivalent to a 57 percent increase in the portion of women who experienced sexual violence from their husbands. Figure 3(a) does not support this finding and instead illustrates a decrease in their exposure to sexual violence. It is however a small decrease and could be partially due to the pre and post-treatment values reported in Table 1. I also find that their likelihood to ever have bruises from their husband’s act increases by 10.1 percentage points and is significant at a 95 percent level. Relative to the pre-reform mean, this represents a 111 percent increase in their likelihood to have bruises. Figure 3(b) illustrates this sharp increase in the post-1965 birth cohorts’

likelihood to ever have bruises. These results suggest that women become much more vulnerable to mistreatment when their level of education increases.

In Table 3, I found evidence that women’s participation in the labor market increases following their exposure to education. An increase in women’s bargaining power through their exposure to better employment opportunities may accentuate their husband’s violence if they prefer that their wives do not work (Field et al., 2016). This ambiguous relationship between bargaining power and domestic violence is definitely puzzling and it is unfortunate to observe an increase in physical abuse as a result of the women’s exposure to education. In Appendix A, Table 10 contains three measures of women bargaining power which are final say on making large household purchases, on visiting relatives, and on their own healthcare. I find that although the coefficients are positive, higher educational level do not impact their bargaining power in their household. In addition, the variables reported in Table 9 measure women’s opinion on reasons that they believe can justify physical violence from their husbands. I report significant increases in their propensity to believe that beating is justified if they go out without telling their husband and if they argue with him. Relative to their pre-treatment counterparts, these respectively represent 42 percent and 26 percent increases in their likelihood to hold such beliefs. If women tend to believe that beating is justified in some instances, then they might be less likely to speak up against their husband’s act, which will further legitimize violence in their households. An increase in education may therefore expose women to more violence and not have any effect on their bargaining power within the household.

6.2.3. Effects of Schooling on Wealth Measures

For the remainder of this paper, I rely on data from the Afrobarometer Survey. In the following table, the outcomes of interest measure women’s wealth and include whether a woman or her family has ever gone without food, without water and without cash over the past year.

Table 5: Effect of Schooling on Wealth Measures

| Dependent Variable | Gone Without Food | Gone Without Water | Gone Without Cash |
|--------------------|-------------------|--------------------|-------------------|
| | (1) | (2) | (3) |
| Post-Reform | -0.076 | -0.031 | -0.076 |
| S.E | (0.128) | (0.145) | (0.087) |
| Pre-Reform Mean | 0.694 | 0.520 | 0.896 |
| N | 440 | 440 | 439 |

*** p < 0.01, ** p < 0.05, * p < 0.1

Sample excludes women born in 1964 and 1965, from the 2008/9, 2011/13, and 2015/16 rounds of the Afrobarometer survey.

I report no statistical increase in any of the variables reported in the above table. I find that the likelihood that they or their family members have ever gone without food decreases by 7.6 percentage

points. Relative to the pre-reform mean, this however represents an 11 percent decrease in their likelihood of ever going without food. Additionally, the likelihood that they or their family members have ever gone without water decreases by 3.1 percentage points. Finally, their likelihood of ever going without cash decreases by 7.6 percentage points. Although the sign of these coefficients are promising, the results are not statistically significant and are small in magnitude. Based on the labor market participation estimates, I would expect these results to be significant. However, they suggest that an increase in education and labor market participation may not significantly lead to more wealth in a household.

6.2.4. Effects of Schooling on Freedom Measures

In this section, I explore the extent at which, if any, the increase in the women’s education had an impact on their freedom. Several studies have highlighted the positive impact that increases in education have on women’s propensity to speak up, vote and share their views (Basu & King, 2001; Logan & Bratton, 2006). In other words, educated women tend to be more knowledgeable about politics and public affairs, and given the fact that they are more confident about that acquired knowledge, they are more eager to speak up and address issues that they refused to comment on prior education. The variables that I take a look at are their freedom of speech, freedom to vote, their likelihood to contact a local government counselor about an important problem or their views, their belief about the fact that the government should be able to ban any organization that goes against its policies vs being able to join any organization whether or not the government approves of it, and how careful they are of what they say about politics.

Table 6: Effect of Schooling on Freedom Measures

| Dependent Variable | Freedom to Vote | Freedom of Speech | Contact Local Government Counselor | Government Bans Organization vs. Join Any | Careful of What They Say About Politics |
|--------------------|-----------------|-------------------|------------------------------------|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| Post-Reform | 0.277** | 0.319** | 0.109 | -0.304** | -0.134** |
| S.E | (0.111) | (0.121) | (0.151) | (0.134) | (0.061) |
| Pre-Reform Mean | 0.820 | 0.766 | 0.446 | 0.753 | 0.970 |
| N | 431 | 433 | 440 | 417 | 436 |

*** p < 0.01, ** p < 0.05, * p < 0.1

Sample excludes women born in 1964 and 1965, from the 2008/9, 2011/13, and 2015/16 rounds of the Afrobarometer survey.

I find evidence that the women’s freedom to vote increases by 27.7 percentage points and is significant at the 95 percent confidence level. Relative to the pre-reform mean, this represents a 33.78 percent boost in their likelihood to vote. In addition, their freedom of speech also increases and is statistically significant at the 95 percent confidence level. Relative to the pre-reform mean, this is the equivalent of a 41.65 percent boost in their propensity to speak up. Their likelihood to contact local government counselor to discuss an issue increases but is not statistically significant. They may be more

comfortable voicing out their concerns to people who are closer to them or in their social circle, rather than to a government official. Furthermore, following their exposure to the reform, they are less likely to hold the belief that the government should be able to ban any organization, compared to the belief that they should be able to join any organization whether or not the government approves of it. Relative to the pre-reform mean, this belief decreases by 40.37 percent and is statistically significant at the 95 percent confidence level. The last freedom measure shows that they are now less careful of what they say about politics. This result is statistically significant and represents a 13.8 percent decrease relative to the pre-treatment mean. The relative change in the freedom measures is fairly large in magnitude and these results definitely highlights channels through which women empowerment increases as a result of an increase in their educational level.

Figures 4(a), 4(b), 4(c) and 4(d) support the findings above. The first two figures illustrate the sharp increase in women’s freedom of speech and freedom to vote following the implementation of the reform. Similarly, the two other figures highlight the opposite effect of the reform on women’s propensity to be careful of what they say about politics and on their government’s right to prevent them from joining an organization. The post-1965 birth cohorts’ level of empowerment strongly increased as a result of their exposure to more educational opportunities and higher labor market participation.

6.2.5. Effect of Schooling on Interest in Politics and Public Affairs

For the last set of variables, I study the impact of the increase in schooling on the women’s interest in politics and public affairs. The two variables presented in Table 7 are their likelihood to discuss politics and their interest in public affairs.

Table 7: Effect of Schooling on Interest in Politics and Public Affairs

| Dependent Variable | Discuss Politics | Interest in Public Affairs |
|--------------------|------------------|----------------------------|
| | (1) | (2) |
| Post-Reform | -0.093 | -0.184* |
| S.E | (0.133) | (0.107) |
| Pre-Reform Mean | 0.683 | 0.873 |
| N | 440 | 437 |

*** p < 0.01, ** p < 0.05, * p < 0.1

Sample excludes women born in 1964 and 1965, from the 2008/9, 2011/13, and 2015/16 rounds of the Afrobarometer survey.

In column (1), the results above suggest that women are now less likely to discuss politics. This propensity although not statistically significant, decreases by 9.3 percentage points. This result slightly contradicts my finding in column (5) of Table 6, but it is important to note that they were asked “When you

get together with your friends or family, would you say you discuss political matters?” They may not be likely to discuss politics with their friends and family members maybe because they enjoy talking about other matters that are not necessarily related to politics. In column (2), I find that the coefficient on their interest in public affairs is negative, and this decrease is statistically significant at a 90 percent level. This represents a decrease of 21.08 percent relative to the pre-reform mean. Figure 5 illustrates the sharp decrease in women’s interest in public affairs after the implementation of the reform, which further supports the findings above. I believe that this result is not very surprising. First and foremost, in a few researches that have been conducted about political participation of men and women, it was found that women in Africa appear to be less active than men with regard to their political participation. For instance, Basu and King (2001) found evidence that “men are far more likely to say that they discuss politics, join with others to address problems, attend community meetings, and contact their leaders” (p.2). Secondly, given how restrictive Zimbabwe is politically, I believe that it will be hard for a woman to get involved in politics. Zimbabwe has not been very democratically progressive, and this can be seen by the simple fact their former president Robert Mugabe served as president from 1987 to 2017. Additionally, in Appendix A, the democracy measures, although not statistically significant suggest that women were less likely to have voted in the most recent election that happened in Zimbabwe and about 20 percent of all women in the 3 rounds of the Afrobarometer survey indicated that the system of government “doesn’t matter”, or that they “don’t know” which system of governance they prefer. From Table 6 and 7, I can conclude that although women are more prone to speak up and freely exert their rights, their interest in politics and public affairs decreases potentially due to the political climate in their country or their own preferences.

7. Conclusion

This paper studied the impact of the 1980 reform on women’s educational attainment and level of empowerment, using a regression discontinuity design. I found evidence that the introduction of the reform led to significant increases in women’s years of schooling, probability to complete secondary school, probability to begin secondary school and literacy. In addition, the increase in women’s educational attainment impacted their labor market participation, welfare, freedom of expression and exposure to domestic violence, which are channels that can explain their level of empowerment in their household and communities. I find that women born after 1965, relative to those born before 1965, experience an increase in their self-employment and although they are more likely to be employed, the welfare measures presented in this paper increase but are not statistically significant. Furthermore, women born after 1965 are unfortunately more likely to be victims of domestic violence as a result of their increase in education. This could be explained by the fact that an increase in women’s bargaining power through their exposure to better employment opportunities may accentuate their husband’s violence if they prefer that their wives do

not work. Finally, I find that although women are more prone to express themselves and share their opinions about their country, their interest in being involved in politics and public affairs decreases.

My findings suggest that in African countries where women do not have a voice, promoting school access and other educational policies may be an effective tool to empower them. The 1980 reform was successful in not only increasing women's education outcomes, but also in providing more opportunities for women to be autonomous and emancipated. It would therefore be beneficial for other countries throughout Africa to address women low education outcomes by introducing reforms and policies similar to the one introduced in Zimbabwe. The increase in domestic violence however highlights a significant trade-off that resulted from the increase in education for these women. It might therefore be important to make a conscious effort in educating men about the importance of valuing the intellectual progress of their wives. This presents an opportunity for future research into countries where mixed results are observed when studying the impact of an increase in educational attainment on domestic violence incidents. It is important to identify the characteristics that accentuate women's exposure to violence or reduce it across countries. This will certainly help add clarity to any ambiguity that currently exists within the literature.

Bibliography

- Ainsworth, M., Beegle, K., & Nyamete, A. (1996). The impact of women's schooling on fertility and contraceptive use: A study of fourteen sub-Saharan African countries. *The World Bank Economic Review*, 10(1), 85-122.
- Agüero, J. M., & Ramachandran, M. (2018). The Intergenerational Transmission of Schooling among the Education-Rationed. *Journal of Human Resources*, 0816-8143R.
- Basu, A., & King, E. M. (2001). Does Education Promote Growth and Democracy? Some Evidence from East Asia and Latin America. *Washington, DC: World Bank*, 44.
- Bobonis, Gustavo J., Melissa Gonzalez-Brenes, and Roberto Castro. 2013. "Public Transfers and Domestic Violence: The Roles of Private Information and Spousal Control." *American Economic Journal: Economic policy* 5 (1): 179–205.
- Cannonier, C., & Mocan, N. (2018). The Impact of Education on Women's Preferences for Gender Equality: Evidence from Sierra Leone. *Journal of Demographic Economics*, 84(1), 3-40.
- Chicoine, L. (2018). Free Primary Education, Fertility, and Women's Access to the Labor Market: Evidence from Ethiopia.
- Chidzero, B. T. (1977): Education and the Challenge of Independence. International University Exchange Fund, Geneva.
- Cochrane, S. H. (1979). Fertility and education: What do we really know?
- Eswaran, M., & Malhotra, N. (2011). Domestic violence and women's autonomy in developing countries: theory and evidence. *Canadian Journal of Economics/Revue canadienne d'économique*, 44(4), 1222-1263.
- Field, Erica, Rohini Pande, Natalia Rigol, Simone Schaner, and Charity Troyer Moore. 2016. "On Her Account: Can Strengthening Women's Financial Control Boost Female Labor Supply?" https://www.povertyactionlab.org/sites/default/files/publications/719_On-Her-Account-Can-Strengthening-Women_Rohini-Simon_Nov2016.pdf.
- Friedman, W., Kremer, M., Miguel, E., & Thornton, R. (2011). *Education as liberation?* (No. w16939). National Bureau of Economic Research.

- Gebre, Tihtina Zenebe (2018). Free Primary Education, Timing of Fertility, and Total Fertility. *The World Bank Economic Review*.
- Handa, S. (1999). "Maternal Education and Child Height", *Economic Development and Cultural Change*, 47(2): 421-439.
- Hidrobo, M., & Fernald, L. (2013). Cash transfers and domestic violence. *Journal of Health Economics*, 32(1), 304-319.
- Godefroy, R., & Lewis, J. (2018). Does male education affect fertility? Evidence from Mali. *Economics Letters*, 172, 118-122.
- Keats, A. (2018). Women's schooling, fertility, and child health outcomes: Evidence from Uganda's free primary education program. *Journal of Development Economics*, 135, 142-159.
- Logan, C., & Bratton, M. (2006). The political gender gap in Africa: Similar attitudes, different behaviors.
- Maïga, E. W. (2013). The Impact of Mother's Education on Child Health and Nutrition in developing countries: Evidence from a Natural Experiment in Burkina Faso. In *African Economic Conference*.
- Nhundu, T. J. (1992): "A Decade of Educational Expansion in Zimbabwe: Causes, Con- sequences, and Policy Contradictions.," *Journal of Negro Education*, 61(1), 78–98.
- Osili, U. O., & Long, B. T. (2008). Does female schooling reduce fertility? Evidence from Nigeria. *Journal of development Economics*, 87(1), 57-75.
- Riddell, R. (1980): Education for employment. Mambo Press, Gweru, Zimbabwe.
- Scholaro Pro. Education System in Zimbabwe. Retrieved from <https://www.scholaro.com/pro/Countries/Zimbabwe/Education-System>.
- Stevenson, B., & Wolfers, J. (2006). Bargaining in the shadow of the law: Divorce laws and family distress. *The Quarterly Journal of Economics*, 121(1), 267-288.

Appendix

Table 8: Effects of Schooling on Democracy Measures

| Dependent Variable | Voted in Most Recent Election | Supports Democracy |
|--------------------|-------------------------------|--------------------|
| | (1) | (2) |
| Post-Reform | -0.083 | 0.094 |
| S.E | (0.142) | (0.125) |
| Pre-Reform Mean | 0.672 | 0.816 |
| N | 407 | 408 |

*** p < 0.01, ** p < 0.05, * p < 0.1

Sample excludes women born in 1964 and 1965, from the 2008/9, 2011/13, and 2015/16 rounds of the Afrobarometer survey.

Table 9: Effects of Schooling on Wife's Beliefs About Reasons That Justify Domestic Violence

| Dependent Variable | Goes Out Without Telling Him | Argues With Him | Refuses Sex |
|--------------------|------------------------------|-----------------|-------------|
| | (1) | (2) | (3) |
| Post-Reform | 0.127** | 0.064* | 0.004 |
| S.E | (0.041) | (0.039) | (0.040) |
| Pre-Reform Mean | 0.302 | 0.245 | 0.301 |
| N | 3,726 | 3,724 | 3,714 |

*** p < 0.01, ** p < 0.05, * p < 0.1

Sample excludes women born in 1964 and 1965, from the 2005/6, 2010/11, and 2015 rounds of the ZDHS.

Table 10: Effects of Schooling on Bargaining Power

| Dependent Variable | Final Say on Making Large Household Purchases | Final Say on Visits to Family or Relatives | Final Say on Own Health Care |
|--------------------|---|--|------------------------------|
| | (1) | (2) | (3) |
| Post-Reform | -0.011 | -0.0002 | 0.038 |
| S.E | (0.033) | (0.032) | (0.041) |
| Pre-Reform Mean | 0.905 | 0.924 | 0.851 |
| N | 2,582 | 2,568 | 2,566 |

*** p < 0.01, ** p < 0.05, * p < 0.1

Sample excludes women born in 1964 and 1965, from the 2005/6, 2010/11, and 2015 rounds of the ZDHS.











