How do harmful social norms interact? Evidence from the Revised Family Code in Ethiopia

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PRELIMINARY DRAFT

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Abstract

The prevalence of female genital cutting (FGC) remains high, despite increasing policy efforts to combat this harmful practice. In Ethiopia, 25 million women alive today have been cut and FGC is strongly linked to norms regarding early marriage by serving as a signal for pre-marital virginity. I, therefore, study how a law that raised women's minimum marriage age marriage from 15 to 18 in Ethiopia affected FGC. Exploiting the staggered roll-out of the reform across regions with a two-way fixed effects approach, I find that the reform substantially reduced FGC prevalence by around seven percentage points. These effects are mostly driven by women living in rural areas. Among rural women, the effects are additionally larger in districts with lower child-marriage levels prior to the reform but do not seem to depend on ethnic groups' age of cutting. Overall, policies that target specific harmful practices can have positive spillover effects on other related norms, thereby improving women's well-being and potentially the development of economies altogether.

Keywords: Norms, Female Genital Cutting, Early Marriage, Revised Family Code

JEL Classification: I15, J12, J16, K36

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1 Introduction

The United Nations Sustainable Development Goal 5.3[1] aims at eliminating all harmful social norms, including female genital cutting (FGC)[2], the procedure of intentionally altering or removing a woman's external genitalia without medical reasons. FGC has no medical benefits and, on the contrary, large individual and economic costs by harming women's mental and physical health[3] (WHO, 2023). Many countries have thus employed information campaigns about the health risks of FGC and criminalized the practice. Empirical evidence on such policies suggests that they can be successful in reducing FGC rates (e.g. Khalifa, 2022, García-Hombrados and Salgado, 2022, Crisman et al., 2016). Nevertheless, prevalence remains high in many contexts and around 200 million women alive today have been subjected to FGC in Africa, the Middle East, and Asia (WHO, 2023). One factor that might slow down reductions in FGC prevalence is that it is entangled with other harmful social norms, e.g. early marriage. In many African countries, including Ethiopia, FGC is perceived as an important signal of premarital virginity, improves women's prospects on the marriage market[4], and is positively associated with early marriage. In order to effectively combat FGC, it needs to be better understood how other social norms interact with FGC and how policies targeting such norms might have unintended indirect effects on FGC as well.

The goal of this paper is therefore to study how an early marriage reform affected FGC. For this purpose, I investigate the effects of the Revised Family Code (RFC) in Ethiopia from 2000 that raised the minimum marriage age of women from 15 to 18 years (Federal Negarit Gazetta). The implementation process occurred in a staggered process in nine of Ethiopia's eleven regions[5] between 2000 and 2008 as the regional governments were responsible to implement the RFC. I exploit this natural experiment that caused exogenous variation in the average marriage age across regions and birth cohorts using a two-way fixed effects approach, following similar designs as in McGavock (2021) and Wilson (2022). Furthermore, I explore underlying heterogeneity with regard to rural residency, districts' pre-reform levels of early marriage as well as by ethnicities' age of cutting.

Preceding empirical evidence on the RFC shows that the reform substantially delayed marriage in women (McGavock, 2021), reduced child marriage, adolescent birth (Rokicki, 2021) as well as early cohabitation and infant mortality (García-Hombrados, 2022). Additionally, by more broadly improving women's rights, it resulted in more women

[1] See https://sdgs.un.org/goals/goal5, accessed September 11, 2023.

[2] Throughout the paper, "female genital cutting", "cutting" and "being cut" are used interchangeably.

[3] Potential immediate and long-term consequences include severe pain, risk of infection, childbirth complications, maternal mortality, serious psychological stress, depression, and anxiety.

[4] Khalifa (2022), for instance, finds in the context of Egypt that not cutting girls reduces the average bride price their families receive while increasing child marriage.

[5] During the study period, Ethiopia was still divided into 11 regions.

working outside the home, for pay, and in full-time jobs (Hallward-Driemeier and Gajigo, 2015).

What these findings might imply regarding the effects of the reform on FGC is ambiguous from a theoretical standpoint. On the one hand, by increasing the average marriage age of women, the gap between a women's onset of puberty and their age of marriage widens. This might in turn enhance the need of FGC to signal chastity, thereby causing an increase in FGC prevalence. On the other hand, the reform might reduce school drop-outs related to early marriage and thereby increase women's education levels on average. Education, in turn, has been found to partially substitute for FGC as a relevant signal on the marriage market (see evidence from Senegal by García-Hombrados and Salgado, 2022). This would result in a decline in cutting caused by the reform.

I find that the RFC substantially reduced the overall prevalence of FGC by 6.6 percentage points, which is around 9 percent relative to the baseline mean. These effects were largely driven by women living in rural areas, where the effects on child marriage were also more pronounced than in urban areas. Therefore, I focus on *rural* women when exploring further underlying heterogeneity in the effects. When splitting the sample of rural women by districts with low vs. high pre-reform levels of child marriage, I find that the effects are much larger and statistically significant in the former, while they were absent in the latter group of women. This can potentially be explained by families in districts with lower child marriage rates being less attached to social norms compared to districts with higher rates, but more so than urban families for whom the treatment intensity seems to have been too low. Finally, I do not find any differences in how women belonging to ethnic groups with a lower as compared to higher age of cutting were affected by the RFC. The Results from the event study analyses support the assumption of parallel trends in FGC prior to the introduction of the RFC. Furthermore, I show that the implementation timing of the reform was exogenous to pre-reform district levels in child marriage, FGC, as well as education outcomes.

My findings contribute to strands of economic literature on both early-marriage laws and FGC. Firstly, recent studies have explored the effects of early-marriage laws. Collin and Talbot (2022) found that such policies were often weakly enforced in lower- and middle-income countries (LMICs). Nevertheless, Wilson (2022) discovered that early-marriage bans in 17 LMICs significantly increased age at first marriage and at birth and improved employment and education outcomes. His findings align with the evidence provided by several papers on the RFC in Ethiopia that, as described above in more detail, and found positive effects on marriage and fertility outcomes (García-Hombrados, 2022, Hallward-Driemeier and Gajigo, 2015, McGavock, 2021, Rokicki, 2021). In contrast to that, Bellés-Obrero María Lombardi et al. (2023) revealed that an early-marriage reform in Mexico did reduce the number of *registered* child marriages, but these were replaced by increased *informal* unions involving children, with no impact on school attendance and

early pregnancies. Overall, it however remains unclear how other harmful social norms that are entangled with early marriage might respond to these laws.

Secondly, a growing body of economic literature sheds light on the origins of FGC (Becker, 2019, La Ferrara et al., 2020) and the reasons underlying its persistence (Bellemare et al., 2015, Gulesci et al., 2021, McGavock and Novak, 2023, Shell-Duncan et al., 2011), as well as effective policy approaches. For instance, there is mixed evidence on the effects of banning FGC. Crisman et al. (2016) and García-Hombrados and Salgado (2022) found that FGC bans substantially reduced cutting in Burkina Faso and Senegal, respectively. However, Camilotti's (2016) findings indicate no reduction in FGC outcomes resulting from the ban in Senegal. Furthermore, Khalifa (2022) studied a radio information campaign in Egypt that informed about the risks of FGC. The campaign resulted in reduced cutting prevalence, as well as increased virginity testing and child marriage. Beyond this evidence on reforms that directly target FGC, it remains unclear how FGC might be affected more indirectly by policies targeting related harmful social norms as well.

I therefore integrate and extend these strands of literature, by providing first empirical evidence on how a law that strengthened women's rights, specifically targeting early marriage, affected FGC. This sheds light on the indirect effects of policies that do not directly address this harmful social norm. Additionally, it offers insights into the interaction between different harmful social norms, namely child marriage and female genital cutting. Finally, Ethiopia provides a unique setting that allows me to explore these effects given differences across ethnic groups' rates, ages, and types of cutting, to better understand how policies can most effectively address harmful social norms in a setting with a very complex and diverse ethnographic structure.

The remainder of the paper is structured as follows. In Section 2, background information on FGC in Ethiopia and the RFC are provided. Data and empirical method are specified in Sections 3 and 4, respectively. In Section 5, the results are presented and the paper is wrapped up with the conclusion in Section 6.

2 Institutional background

2.1 Female genital cutting in Ethiopia

In Ethiopia, FGC is still largely prevalent. While the share of women aged 15 to 49 who have been cut has declined from 74 percent in 2005 to 65 percent in 2016, still more than 25 Million Ethiopian girls and women alive today have undergone the practice (UNFPA and UNICEF, 2023). Out of Ethiopia's 66 largest ethnic groups, around 70 percent carry out FGC and the way it is practised varies by region and ethnic group. For instance, the prevalence ranges from 18 percent (Nuwer group) to 26 percent (Tigrie group) to up to

98 percent (Affar group). Overall, the most commonly used type of cutting in Ethiopia is Type I, i.e. the partial or total removal of the clitoris and/ or prepuce. In around seven percent of the cases the most severe type of FGC infibulation is performed, which involves sewing or stitching together the labia to narrow the vaginal opening.

FGC in Ethiopia is strongly entangled with norms regarding marriage and the degree to which these norms are connected varies across regions and ethnicities. Cutting can signal obedience towards elders and cultural norms as well as sexual purity. More precisely, this includes showing respect for tradition and cultural identity, exercising control over women's sexuality and behavior, and preserving their virginity until marriage to uphold family honoravoiding to be ostracised and stigmatised by the community. Additionally, it is a belief held by many that FGC is a religious requirement (28 Too Many, 2013).

Overall, the age at which girls get cut ranges from infant cutting (around 50 percent) up to being cut at ages 10 and older (20 percent). Especially in the Southern part of Ethiopia, FGC is closely associated with marriage and therefore performed at a later age. Given the strong link between marriage and FGC in some parts of Ethiopia, it is therefore likely that the RFC, especially by raising the minimum age of marriage, also affected FGC prevalence indirectly.

2.2 The Revised Family Code

The federal government of Ethiopia introduced the "Revised Family Code" (RFC) in July 2000, which, among other changes, modified the essential conditions of marriage (Federal Negarit Gazetta of the Federal Democratic Republic of Ethiopia, 2000). Those conditions are defined in Section 2 (Articles 6 and 7) and newly require "free and full consent" of both spouses. Additionally, it raised the minimum age of marriage of girls from 15 to that of boys (18 years). This minimum age is only allowed to be undercut by at most two years, given "serious cause" as well as parental consent. The child marriage ban, therefore, only affected *women's* minimum age of marriage. Additionally, the RFC improved women's rights regarding common marital property, and to work outside the home, and it facilitated divorce (Federal Negarit Gazetta).

While the law was amended by the federal government, the implementation of the reform occurred at the regional level. The first two regions to adopt the reform, as shown in Figure 1, were the chartered cities Addis Abbeba and Dire Dawa in July 2000. Seven more regions followed until 2008, with the latest implementing ones being Gambela and Harari in January 2008. In the two remaining regions, Afar and Somali, the reform has not been realized to date. The implementation process thereby occurred in a staggered manner over the period from 2000 to 2008. I follow McGavock's (2021) in exploiting this resulting exogenous variation in women's marriage age, to study how it affected FGC

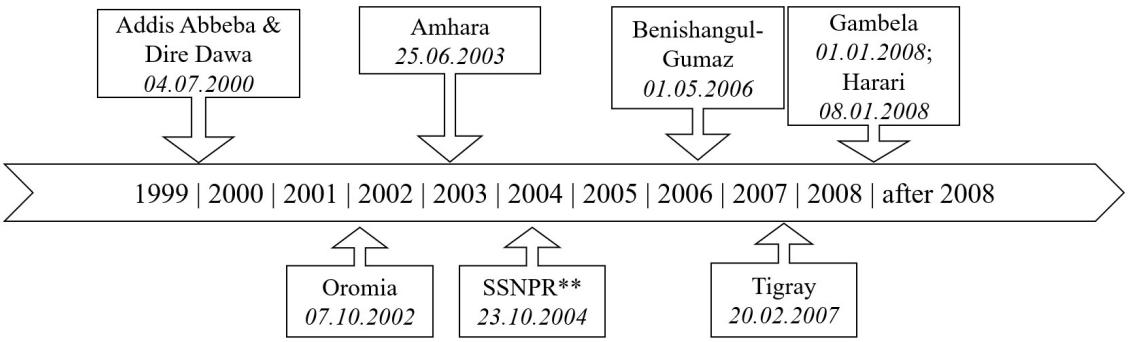


Figure 1 – Regional implementation dates of the child marriage reform in Ethiopia. Dates as provided in McGavock (2021).

prevalence, which is described in more detail in the next section.

Even though the legal enforcement of the reform in Ethiopia was rather low[6], García-Hombrados (2022) and McGavock (2021) show that the reform substantially reduced child marriage prevalence in Ethiopia.

3 Data

For the analyses, I use data from the Ethiopian Demographic and Health Surveys (DHS) from 2000, 2005, 2011, and 2016. These provide nationally representative information on women aged 15 to 49 from repeated cross-sections and were collected in partnership with the Central Statistical Agency in Ethiopia. I use data from the Integrated Public Use Microdata Series Project of Demographic and Health Surveys (IPUMS-DHS), in which all variables are consistently coded and labelled for all periods (Boyle et al., 2022).[7]

The surveys include information on a woman's marriage status, age of marriage, residential area, ethnicity, year of birth, and education level in all four waves. Three of Ethiopia's DHS surveys, those collected in 2000, 2005, and 2016, additionally report individual-level data on FGC. These include information on a woman's FGC status and the type of cutting that was performed (Type I/II or Type III) as well as her knowledge and support of FGC. DHS 2016 furthermore includes the woman's age of cutting. Women with children were additionally asked to report similar details regarding their daughters' FGC status[8].

Data on the implementation dates of the reform by region were taken from Appendix

[6]There are two underlying reasons for this. First, the overall legal enforcement in Ethiopia is rather weak. Second, most marriages in the country are performed by traditional and religious leaders, instead of being officially concluded at court (McGavock, 2021).

[7]The datasets are publicly accessible. (CSA Ethiopia and ORC Macro, 2000, 2005, CSA Ethiopia and ICF International, 2011, CSA Ethiopia and ICF, 2016)

[8]In the DHS 2000 and 2005, women were only asked to report about their *last* daughter that was cut, while in 2016, they were asked to provide details of *all* daughters.

Table B1 in McGavock (2021). In addition, I will use data from Murdock's Ethnographic Atlas on the pre-colonial marriage traditions of Ethiopian ethnic groups to differentiate the effects of the RFC by ethnic groups who do vs. do not commonly follow a bride price practice.

I restrict the sample to women who were born before 2001 so that they were at least 15 at the time of the survey and thus at an age, at which they were able to report their final FGC status.

In the analyses, women's treatment status is defined based on their age at the time of the regional implementation of the RFC. Women are considered treated if they were born less than 12 years prior to the regional implementation of the reform and are part of the control group otherwise. Defining the treatment based on a woman's age relative to the reform has the strong advantage that it isolates the effects of the RFC on FGC, which largely depends on a woman's age. Cutting will no longer be affected, once a woman has reached a certain age. I use the threshold of 12 years as this naturally marks the age at which the girls' menarche commonly starts setting in Ethiopia. It thereby also marks the relevant age at which girls start getting married and potentially get cut beforehand.

	Pre-Reform		Post-Reform		Pre- vs.
	Mean	SD	Mean	SD	Post-Reform
Rural	0.73	0.45	0.61	0.49	-0.11***
Age married	17.02	3.52	17.13	3.14	0.10**
Married below 16	0.35	0.48	0.18	0.38	-0.18***
Married below 18	0.55	0.50	0.32	0.47	-0.25***
FGC status (any type)	0.77	0.42	0.70	0.46	-0.07***
FGC status (infibulated)	0.11	0.31	0.13	0.33	0.02***
Heard of FGC	0.90	0.31	0.93	0.25	0.03***
Supports FGC	0.48	0.50	0.28	0.45	-0.21***
Education in years	2.14	3.96	4.26	4.53	2.14***
Some primary education	0.31	0.46	0.62	0.49	0.32***
Completed primary education	0.16	0.36	0.28	0.45	0.12***
Some secondary education	0.14	0.34	0.23	0.42	0.09***

Notes: This table shows average values and respective standard deviations of each variable of women prior to and after the reform, respectively, as well as the difference in means.

Table 1 – Descriptive statistics

Table 1 provides descriptive statistics for marriage, FGC, and education outcomes comparing pre- and post-reform averages of women who were above as compared to below 18 at the time of the reform. Regarding marriage-related outcomes, the descriptive statistics indicate a slight increase in the average marriage age after the reform while the probability of having child marriage, both before the age of 16 and 18, have substantially decreased. Additionally, the share of women who report having undergone FGC was reduced by seven percentage-points (percentage points). In contrast to that, the probability of having experienced the most severe type of cutting (infibulation) increased from 11 to 13 percent. Finally, the table shows that women's education outcomes have substantially improved after the reform. While the trend in the FGC outcome between before and after the introduction of the RFC is merely descriptive, a two-way fixed effects approach will be applied in the following chapters to study whether these trends can be

causally attributed to the reform.

4 Empirical Strategy

4.1 Two-way fixed effects approach

Main effects of the Revised Family Code on female genital cutting

To exploit the staggered roll-out of the reform, I employ a two-way fixed-effects (TWFE) strategy that compares the outcomes of women within and across birth cohorts and regions. As described in Section 3, Women are considered treated if they were born less than 12 years prior to the regional implementation of the reform and are part of the control group otherwise. In defining the treatment based on the age of women at the time of the reform, I follow a similar strategy as Wilson (2022) who uses 18 as the threshold of treatment in his child marriage analyses.[9] The following regression model is then used to estimate the effects of the RFC:

$$Y_{irbes} = \beta_0 + \beta_1 \cdot PostRFC_{irbes} + \mu_r + \eta_b + \theta_s + \phi_e + X + \varepsilon_{irbes}, \tag{1}$$

in which Y_{irbes} is the FGC status of woman i living in region r born in year b surveyed in year s (*FGC cut*, which is equal to one if a woman was cut with any type of cutting and zero otherwise). $PostRFC_{irbes}$ indicates the treatment and is equal to one, if a woman was aged below 12 in the reform year and zero otherwise. It is connected to the coefficient of interest, β_1, that provides the average effect of being born less than 12 years prior to the reform compared to being born earlier on the outcome variable. Finally, the regression model includes region (μ_r), year of birth (η_b), survey year (θ_s), and ethnicity (ϕ_e) fixed effects. Vector X accounts for rural residency and the age at the time of the survey. I cluster the standard errors at the district level, following McGavock (2021), as the treatment was advertised by local newspapers and NGOs within districts and because the marriage markets are closely clustered within districts.

Using a TWFE strategy to identify the causal effect of the RFC on FGC might yield biased estimates if the treatment effects were heterogeneous across groups and over time (e.g. de Chaisemartin and D'Haultfœuille, 2020, Goodman-Bacon, 2021). To account for this, I use Sun and Abraham's (2021) interaction-weighted estimator in the main specifications. As further addressed in the robustness section, I will check for the robustness of the results when using various alternative estimators.

[9] This is in contrast to the approach by McGavock (2021), who studies the effects of the same RFC on marriage, fertility and empowerment outcomes and who defines treatment based on a woman's year of *marriage* relative to the year of the reform (i.e. she compares women who got married before vs. after the reform).

García-Hombrados (2022) and McGavock (2021) show that the RFC caused a reduction in child marriage. I use a similar specification as shown in Equation (1) to verify the effects on child marriage with my approach. I, however, define the treatment indicator $PostRFC_{irbes}$ based on whether a woman was aged below 18 (instead of 12) at the time of the reform. This means that girls who were below 18 at the time of the reform are considered treated, while girls who were older than 18 are part of the control group. The rationale behind this is that, by definition, child marriage occurs before the age of 18 and mostly after the age of 12 (which is why the threshold of 12 would here be unsuited). The results of the RFC effects on child marriage are shown in Table A1 and show a reduction of around six percentage points in the full sample. As Wilson (2022) finds that the effects of early-marriage reforms in the sample of 17 LMICs differ by residential area, I furthermore show results after splitting the sample accordingly. In contrast to Wilson (2022), who finds larger overall effects on child marriage in the urban sub-sample, I find that the effects are only statistically significant and also larger in magnitude among rural women. This could potentially be explained by a larger intensity of the treatment occurring in rural areas, where child marriage levels are generally much higher than in urban areas.

Given these heterogeneous effects by residential area in the child marriage analyses, as well as the general complexity in how FGC might respond to an early- marriage reform, I use the same sample split for the FGC analyses. As the effects of the RFC on FGC are again driven by rural women, I focus on the rural sub-sample when further exploring underlying heterogeneity in the results.

Heterogeneity of effects among rural women

First, given that McGavock's (2021) finds heterogeneous effects of the RFC on early marriage with regard to districts' pre-reform average marriage ages, I employ a similar sample split. More precisely, I explore the effects by whether districts' pre-reform child marriage rates are above or below the median rate of the sample. In districts with higher pre-reform levels, the RFC would likely be more relevant in affecting child marriage and therefore also FGC outcomes.

Second, the age of cutting is an important factor that is related to how closely marriage and FGC norms are entangled, with later cutting usually being more strongly associated with early marriage. Therefore, I use the sample median age of cutting (after excluding infant cutting, i.e. age zero) and split the sample by whether the main ethnic groups' median age of cutting (when excluding infant cutting) is above as compared to below the sample median. I hypothesize that the effects are larger in the former group.

As a next step, I will furthermore explore sample splits by whether ethnic groups follow a bride price custom or not, expecting that the effects should be driven by the

former.

4.2 Event study analyses

The empirical approach as described above requires as a major key identifying assumption that women from the treatment and control group would have followed similar trends in FGC over time in absence of the RFC. To explore the validity of this assumption and investigate the treatment effects over time, I employ an event study design with the following regression model:

$$Y_{irbes} = \sum_{t=-T}^{-2} \beta_t \cdot D^t_{irbes} + \sum_{t=0}^{T} \beta_t \cdot D^t_{irbes} + \mu_r + \eta_b + \theta_s + \phi_e + X + \varepsilon_{irbes}, \qquad (2)$$

in which most elements are similiar to (1) but the treatment indicator ($PostRFC_{irbes}$) is now replaced with a set of event time dummies (D^t_{irbes}) that indicate a woman turning 12 t years before or after the reform was implemented (e.g. in t equal to zero, a woman turned 12 exactly in the year of the reform). The omitted category is t equal to -1. I aggregate all observations with more than nine years of difference to the implementation year into two single time periods (more than nine years before and more than nine years after implementation, separately). Again, Sun and Abraham's (2021) estimator is used in the main specification but the results will be provided for the alternative estimators as mentioned in the robustness section.

4.3 Further identifying assumptions

As an additional identifying assumption, the implementation timing of the reform needs to be exogenous to pre-reform levels of the outcome variables. In Table A2, I show that the regional implementation timing of the reform was not correlated with districts' pre-reform levels of child marriage, FGC, primary, and secondary education as well as age of marriage and average years of education.

Finally, it must be ruled out that any other reform that occurred during the implementation period of the RFC might have biased the results. This part is yet to be addressed.

5 Results

5.1 Effect of the Revised Family Code on female genital cutting

Main effects of the Revised Family Code on female genital cutting

This section discusses the main results. The effects of the RFC on FGC prevalence are presented in Table 2 for the full sample as well as split by rural and urban residency, respectively. Overall, the RFC caused a significant reduction in FGC prevalence of 6.6 percentage points or around 9 percent relative to the baseline mean. Splitting the sample by rural and urban residency reveals an interesting underlying heterogeneity. The RFC had no statistically significant effects on FGC among urban women, even though the coefficient points towards a small reduction in FGC prevalence. In contrast to that, rural women experienced a much larger and statistically significant reduction in FGC of 9.5 percentage points, thereby driving the overall results. Relative to the baseline mean of 76 percent, this is a reduction of almost 13 percent. These findings are in line with the child marriage effects shown in Table A1 that suggest that the RFC only had a statistically significant effect on child marriage in rural but not in urban areas. The magnitude of the rural effects is also significantly larger. The treatment intensity was therefore also larger in rural areas that tend to be more traditional and attached to social norms in general.

	All	Urban	Rural
	(1)	(2)	(3)
Post-RFC	-0.066***	-0.021	-0.095***
	(0.023)	(0.076)	(0.035)
Mean outcome (baseline)	0.76	0.78	0.76
Observations	30733	9561	21172

Notes: Significance levels show $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$. Standard errors are clustered at the district-level and shown in parentheses. The specification includes regional, survey year, year of birth, and ethnicity fixed effects, as well as age at the time of the survey and a rural dummy (only included in (1)).

Table 2 – Effect of the Revised Family Code on female genital cutting

Heterogeneity of effects among rural women

Given that the RFC effects are concentrated in the rural sub-sample only, the results presented in Table 3 focus only on this specific group of women when exploring further potential heterogeneity. Columns (1) and (2) show the effects of the RFC for sub groups split by lower and higher child marriage rate at the district level prior to the reform, respectively. Surprisingly, the effects seem to be largely driven by the former districts, in which FGC was reduced by around 14 percentage points (18 percent). In districts with larger pre-reform child marriage rates in contrast, the coefficient indicates a small reduction in the outcome that is however not statistically significant. This interesting heterogeneity could be rationalized with a non-linear treatment effect. In this case, families in very conservative rural districts with higher child marriage levels would be too strongly attached to their social norms to react to the reform. In contrast, families from less conservative districts with lower levels of child marriage, who are not as strongly attached to their norms (but still strongly enough to experience a high enough treatment intensity compared to urban families to be affected by the reform), seem to experience the most pronounced treatment effect.

In Columns (3) and (4), the results are presented when considering the main ethnic groups' median age of cutting, below vs. above the sample median (after having excluded infant cutting), respectively. Both effects are quite large and statistically at least marginally significant. However, the coefficients are not statistically different from another. The absence of heterogeneity in the age at which ethnic groups practice cutting contradicts the earlier hypothesis that RFC effects should be more pronounced in groups that practice cutting at a later average age. This might be either because there simply is no heterogeneity to be found and the ethnic groups' age of cutting is not a good enough predictor for whether cutting is strongly linked to marriage. An alternative explanation is that the measure used to split the sample by age of cutting is not precise enough. I will verify this, using alternative measures.

	Low CM district (1)	High CM district (2)	Low ethn. FGC age (3)	High ethn. FGC age (4)
Post-RFC	-0.143***	-0.051	-0.107**	-0.081*
	(0.049)	(0.048)	(0.050)	(0.044)
Mean outcome (baseline)	0.80	0.73	0.73	0.78
Observations	7196	13976	10747	10425

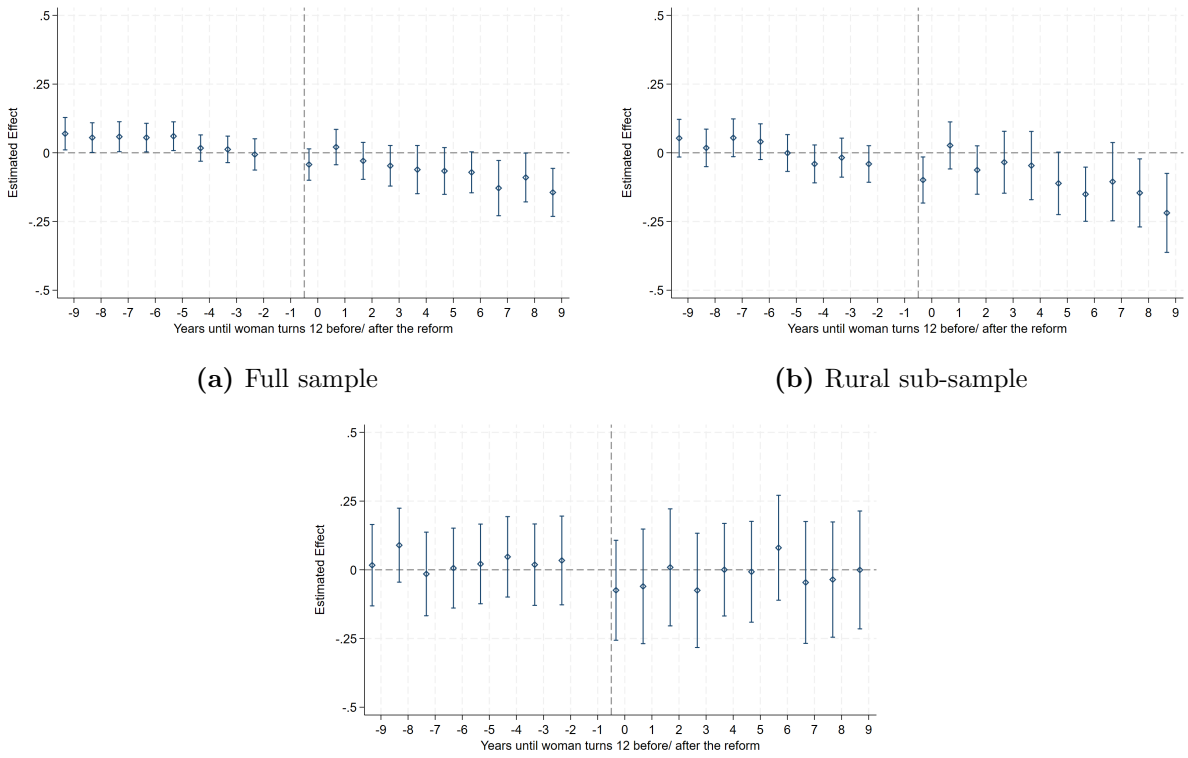
Notes: The table shows the effects on rural women disaggregated by districts' pre-reform child marriage rates (CM; below vs. above the median rate) in the first two columns and by median ethnic groups' age of cutting (below vs. above the sample median of 8 years). Significance levels show * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors are clustered at the district-level and shown in parentheses. The specification includes regional, survey year, year of birth, and ethnicity fixed effects, as well as age at the time of the survey.

Table 3 – Heterogeneous effects of the Revised Family Code on female genital cutting (rural women only)

5.2 Event studies analyses

Figure 1 graphically presents the coefficients from estimating the treatment effect of the RFC with an event study design as described in Equation (2). The graphs are provided for the full sample (a), as well as the rural (b) and urban (c) sub-samples, separately. They mostly support the assumption of parallel trends prior to the reform as the pre-reform coefficients are closely concentrated around zero. Only in the full sample, some pre-treatment coefficients are marginally significant. However, this is negligible since the effects of the RFC are concentrated in the rural sub-sample, where there is no indication of any systematic pre-trends. The event studies further show that the effect size in the full sample as well as the rural group of women increased over time, meaning that the younger women were at the time of the reform, and thus the more treatment exposure they had, the stronger the reduction in FGC they experienced. Among urban women, in contrast, all pre- and post-reform coefficients are close to zero and statistically significant, which is in line with the absence of any effects in Table 2.

Figures A1 and A2 in the Appendix additionally present the event study results for rural women, when splitting the sample in a similar manner as in Table 3, i.e. by districts' pre-reform child marriage rates and ethnic groups' age of cutting. Again, the absence of



(a) Full sample

(b) Rural sub-sample

(c) Urban sub-sample

Figure 2 – Event study graphs

any significant trends among the pre-reform coefficients lends credence to the assumption of no pre-trends in FGC prevalence.

6 Robustness Checks

To check the robustness of the results, I will run several tests. First, I will test whether the results are robust when using two alternative age thresholds to define the treatment variable: (i) the ethnicity-specific median age of cutting (after excluding infant cutting)[10] as well as the age of (ii) eight, which is the median age of cutting in the overall sample (again after excluding infant cutting). Second, I will use alternative estimators when estimating the effects of the RFC. These include a standard ordinary least squares (OLS) TWFE estimator as well as alternative estimators by Borusyak et al. (2021), Callaway and Sant'Anna (2021), de Chaisemartin and D'Haultfœuille (2020), and Gardner (2021). Both robustness checks are run for the TWFE as well as the event study analyses. Third, I will use never-treated (instead of not-yet treated) women as an alternative control group in all analyses. Fourth, I will cluster the standard errors at the regional level to assess whether the effects remain statistically significant in this case.

[10] I do not use this as the main specification because it results in a much smaller treatment group and therefore cannot estimate the effect of the RFC as precisely due to less statistical power.

7 Conclusion

In Ethiopia, 25 million girls and women alive today have undergone FGC, a social norm that is strongly related to early marriage in this context. It signals premarital virginity and can thereby improve women's prospects on the marriage market. Policies that target the early marriage might thus also have indirect effects on FGC and the direction of these effects is unclear. I therefore study how the RFC in Ethiopia that raised the minimum age of marriage for girls from 15 to 18, affected FGC prevalence.

My results suggest that the RFC significantly reduced cutting by 6.6 percentage points, which is around 9 percent relative to the baseline mean. Exploring the heterogeneity of this effect by residential area reveals that the overall impact was largely driven by women living in rural areas, while urban women were not statistically significantly affected. I therefore focus on rural women and explore further underlying heterogeneity in the results. When splitting the sample by districts with low vs. high pre-reform levels of child marriage, I find that the effects are much larger and statistically significant in the former, while there occurred no significant effects in the latter group of women. This can potentially be rationalized by families in rural districts with lower child marriage rates being less attached to social norms compared to families in districts with higher rates but more so than urban families for whom the treatment intensity seems to have been too low. Finally, I do not find any differences in how women belonging to ethnic groups with a lower as compared to higher age of cutting were affected by the RFC.

Overall, the RFC caused a substantially large reduction in FGC prevalence in rural areas. Policies that target a specific harmful social norm, in this case early marriage, might therefore come along with substantial positive spillover effects on other norms, like FGC. Strengthening the rights of women and, in particular, setting a reasonably high minimum age of marriage might therefore have additional positive effects on women's wellbeing as well as potentially on the development of economies as a whole.

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Appendix

	All	Urban	Rural
	(1)	(2)	(3)
Post-RFC	-0.059***	-0.039	-0.064***
	(0.021)	(0.048)	(0.025)
Mean outcome (baseline)	0.54	0.38	0.59
Observations	51966	16454	35512

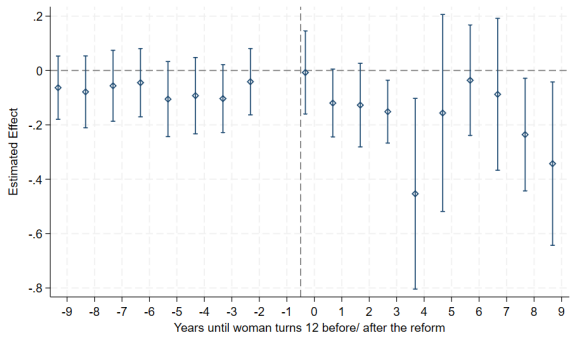
Notes: Significance levels show * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors are clustered at the district-level and shown in parentheses. The specification includes regional, survey year, year of birth, and ethnicity fixed effects, as well as age at the time of the survey and a rural dummy.

Table A1 – Effect of the Revised Family Code on child marriage

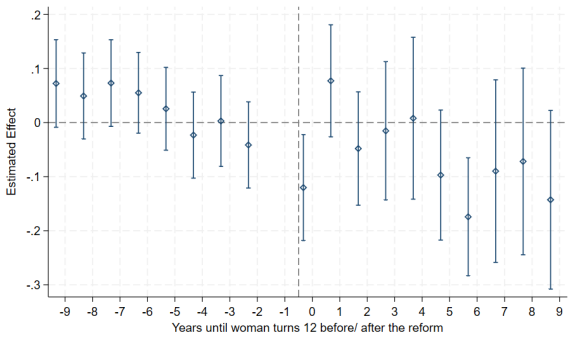
Age married	Married < 16	Married < 18	FGC cut	Education (years)	Education (some prim.)	Education (some sec.)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
0.027	-0.176	-0.128	-0.056	-0.024	-0.018	-0.291
(0.024)	(0.164)	(0.130)	(0.057)	(0.024)	(0.170)	(0.193)

Notes: The table reports the results when testing for a systematic relationship between the regional timing of the reform and pre-reform marriage, FGC, and education rates. For this purpose, the difference in months between between July 2000 (federal reform) and the date of the reform in each region was regressed on district-level averages of each outcome listed in the column. Significance levels show * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors are clustered at the district-level and shown in parentheses.

Table A2 – Exogeneity of the implementation timing of the Revised Family Code

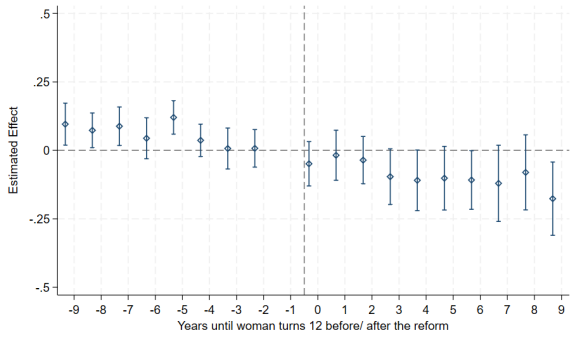


(a) Low child-marriage districts

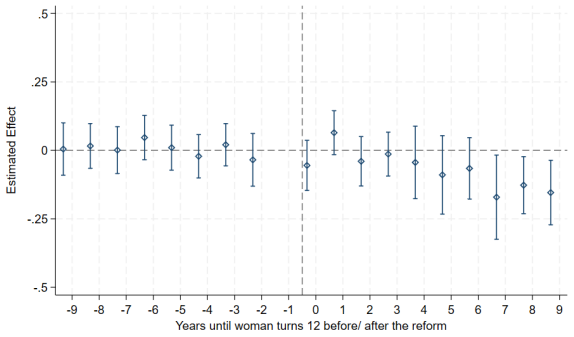


(b) High child-marriage districts

Figure A1 – Event studies by districts' child marriage rates



(a) Low ethnic group cutting age



(b) High ethnic group cutting age

Figure A2 – Event studies by ethnic groups' age of cutting