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Regime Stability and the Persistence of Traditional Practices

Michael Poyker

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Abstract

I investigate the role of national institutions on the persistence of cultural norms and traditions. In particular, I examine why the harmful tradition of female genital mutilation (FGM) persists in certain African countries while in others it has been successfully eradicated. I argue that people are more willing to abandon their institutions and traditions if they are sure that the government is durable enough to set up long term replacements for them. If the regime is weak, people revert to their traditional cultural norms. I exploit the fact that ethnic groups in Africa were artificially partitioned by national borders and, using a country-ethnicity panel dataset, I show that one standard deviation in political regime durability explains at least 14% of the standard deviation of the share of circumcised women. The results are robust to an array of control variables and robustness checks. I confirm that the results are unlikely to be spurious by using within nation variation in regime durability induced by leaders' deaths from natural causes.

JEL Codes: D19, J15, O12, Z13

Keywords: Traditional Practices, Female Genital Mutilation, Regime Durability, Institutions

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[†] UCLA Anderson School of Management; e-mail address: mikhail.poyker.1@anderson.ucla.edu

1 Introduction

Why are some harmful and supposedly outdated cultural traditions still practiced, while others have been successfully eradicated? Why, for instance, was footbinding in China abolished while female genital mutilation (FGM) or the wearing of neck rings are still widely practiced in many developing countries? While these are cultural phenomena, scholars have demonstrated that culture itself might be endogenous to the economy and institutions. Alesina et al. [2013], Boyd [1988], Boyd and Richerson [1985, 1995], Nunn [2012] describe culture as a heuristic process, and suggest that traditions arise because people find those traditions beneficial. Over time, these practices become deeply held traditional values and religious beliefs (Gigerenzer [2007], Kahneman [2011]). Similarly, if a tradition is no longer useful and becomes obsolete, a culture should dispose of it over time, also as a part of a heuristic process. However, sometimes this process fails.

Some traditions appear to be abolished relatively quickly. For example, after a millennium in which footbinding was practiced in China, it was ended in one generation (Mackie [1996]). However, some other outdated traditions, for instance FGM, are still widely practiced despite numerous efforts of local governments, international NGOs, and even a negative attitude toward the tradition among people who practice it (UNI [2013]). Understanding why they are happening, and how to hasten the process for abolishing these harmful traditions, is highly important for development because of the harmful effects on health, education, and quality of life for the people affected by them. In addition to FGM, there are many other harmful traditions still being practiced, including the wearing of lip-plates, cultural preferences of sons rather than daughters, female infanticide, early marriage, force-feeding, nutritional taboos as well as practices related to birthing, use of traditional medicines and witch doctors, etc¹.

In this paper, I investigate the role of national institutions on the persistence and decay of cultural norms and practices in Africa. I describe the main existing hypotheses of persistence of traditional practices and solve the puzzle of why they sometimes work and why they sometimes don't. By using Demographic and Health Survey and Multiple Indicator Cluster Survey (hereafter DHS and MICS) individual level datasets for countries with FGM practices, I construct a panel dataset and show that because of regime durability traditions are gradually being abandoned in some places, while in other they persist.

Following Alesina et al. [2011], Michalopoulos and Papaioannou [2014] I use the artificial political partition of the African countries by colonial authorities to identify the effects of regime stability. Partitioning resulted in a situation where ethnic groups with similar cultural norms and traditions were randomly assigned to different institutional environments. Michalopoulos and Papaioannou [2014] showed that political institutions have no effect on within-ethnicity economic performance, thus ruling out the indirect effect of institutions on cultural norms and traditions through income. Therefore, institutions can only have direct effects on the persistence of cultural norms, such as FGM. For example, the *Dagari* ethnic group was artificially divided between Burkina Faso and Ghana by the colonial administration. Despite the similarity in socio-economic

¹Moreover, we can also interpret traditional practices as a tribal religious social norm systems practiced by society. Even if they are not harmful per se, if one particular region of a country starts to follow its traditional laws instead of the official national system, this can impede the country's wider economic development and the quality of its domestic institutions (Tabellini [2008]).

characteristics, FGM rates differ significantly on either side of the border: 87% in Burkina Faso vs. 51% in Ghana².

I use this quasi-natural experimental setting, in which ethnic groups are randomly divided into countries that experience varying degrees of regime durability over time, while controlling for other possible institutional factors that may have an effect on FGM persistence. I run all regression specifications with country-ethnicity fixed effects and time fixed effects, identifying only differential time trend across country-ethnicity in regime stability. I find that ethnic groups who are exposed to higher regime stability experience lower rates of FGM prevalence, conditional on the presence of anti-FGM policy. On the contrary, higher regime stability in regimes that do support FGM or that do not have a consistent anti-FGM policy experience higher FGM prevalence. Results also hold when I add country fixed effects, ethnicity fixed effects and time fixed effects at the same time, or if I use region-ethnicity fixed effects and time fixed effects. This finding is consistent with the evidence documented by NGOs working to abolish FGM, and this helps to explain why the same ethnic groups in different countries have strikingly varying rates of FGM prevalence.

Alternative explanations for the differences in FGM prevalence can be due to other institutional variables, such as political regime or state capacity. Alternatively, differences in FGM prevalence can be affected by a third variable that correlates with a country's FGM prevalence and regime stability, such as NGO activities or the presence of governmental health programs. I address this concern in three ways.

First, I control for other institutional variables, most notably, political regime, anti-FGM legislation, and state capacity. I show that my estimates are robust to the alternative measures and proxies for regime durability and an array of control variables. I find that controlling for these variables leaves the estimated effect of regime durability virtually unaffected. To alleviate concerns about NGO activities and governmental health programs, I show that regime stability has no effect on other health-related outcomes, such as infant mortality and HIV prevalence. Moreover, following approaches proposed in Altonji et al. [2005], Bellows and Miguel [2009] and Oster [2015] I show that the scope for omitted variable bias is limited and the influence of unobservable factors should be on average 6.8 times larger relative to observable factors to explain the relationship between regime stability and FGM prevalence.

Second, exploiting individual level data, I am able to take into account different values of regime stability throughout women's lifetimes by using survival analysis. In addition, following Kudamatsu [2012], I show that the results hold with mother fixed effects for those surveys that have information concerning all of the circumcised and uncircumcised daughters women have.

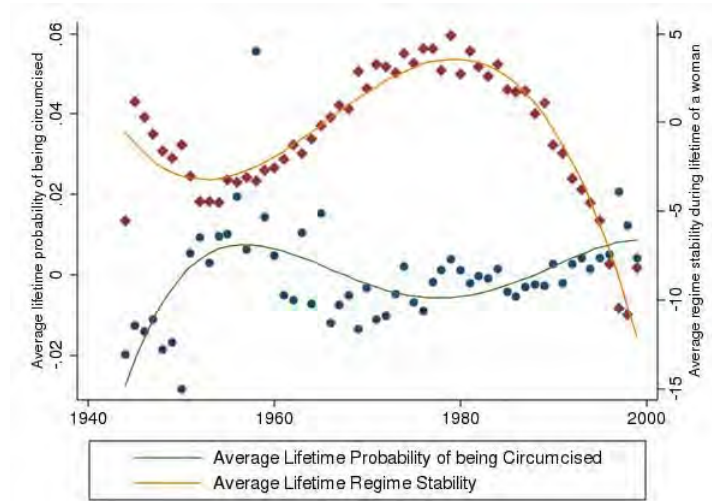
Third, following Jones and Olken [2005] I use the death of a country's leaders due to natural causes as an exogenous shock to regime stability. As such deaths are random this strategy alleviates possible omitted variables concern, since I use within nation variation of regime durability induced by leaders' deaths from natural causes. I document substantial increases in FGM prevalence after each death of a national leader, which is associated with a shock to regime stability. While this approach allows for the solution of previous

²Similarly, many other ethnic groups separated by national borders have different shares of the FGM prevalence (Figure A.1).

endogeneity problems, the number of such natural deaths is small (11) and exclusion restriction concerns may appear.

Postponing the discussion of data construction to Section 3, Figure 1.1 plots the average lifetime probability that women will undergo circumcision and the average lifetime measure of regime durability over time. There is a clear negative correlation, providing prima facie evidence in favour of the “regime stability” hypothesis.³

Figure 1.1: Regime Durability and FGM



The question arises as to why, even within the same ethnic group partitioned by a national border, some tribes keep their traditions and some do not. I contend that political institutions are crucial for changing traditions and beliefs. More precisely, the stability of the political regime matters. The causal mechanism is as follows: the presence of a durable regime means that government policy currently being enforced against tradition is unlikely to change in the long run, and people will benefit from abandoning the tradition. However, the presence of a weak democracy or autocracy means that the political situation is unpredictable and might change, so in this case it is better to stay with the status quo in order to reduce uncertainty and minimize the risks of interaction between people. Similarly, if in the unusual event of a regime being *de facto* in favour of such harmful practices (e.g. Sierra Leone in the case of FGM, or the practice of early marriage in Saudi Arabia), the effect of regime durability will be the opposite. The intuition behind these predictions is straightforward: regime stability affects cultural norms and traditions through expectations about how long the political regime that supports changes in a culture’s social norms will last.

In the case of FGM, it is mainly governmental or nongovernmental international nonprofit organizations (hereafter NGOs) who attempt to fight against harmful traditions. In most cases people are willing to

³Average probability of a woman undergoing circumcision during her eligible lifetime by cohort (blue dots) and average regime durability during that time interval (red dots) for all countries in the sample are depicted in Figure 1.1. The constructions of eligible years for FGM and a description of the regime durability measure are presented in the Section 3. All values are detrended and without country fixed effects. Ethnic groups that have never practiced FGM have been omitted.

abandon harmful outdated traditions, with the understanding that NGOs will enforce their abolition: “...we were asked to abandon an age-old practice, and we accepted although we were never exposed to all the disadvantages everybody is talking about...” (UNICEF et al. [2008]). Nevertheless, since FGM is a deeply held status quo tradition, it may easily reappear in the event that there are no consistent efforts aimed at eradicating it. In this case, in order to encourage eradication of the practice, NGOs should maintain their activity for significant periods of time. Local populations are aware that an NGO can arrive only if a country’s political regime is sufficiently stable and thus form expectations that an NGO is going to continue to pursue its efforts toward eradication of FGM. Thus the instability of national regimes causes people to revert back to their traditions. A striking example is Mali, where NGO activity in a large number of villages has led to a dramatic decrease in FGM shares. However, following a coup in 2012, households began to circumcise girls again. As Leimbach [2014] states: “...side effects of the political turmoil that struck the country in 2012 and continue today, making government attempts and commitments by nonprofit groups to improve conditions for women a huge struggle”. Another example can be found in Caldwell et al. [2000]: “many mothers who continue to “circumcise” their daughters say that they would desist if only that message were much stronger, thus guaranteeing that uncircumcised girls were in the majority. They feel that it is unfair of the government to promote change without doing it very loudly and clearly”. Hence, regime stability has an effect on the persistence and decay of cultural norms and traditions (e.g. FGM) through people’s expectations about the enforcement of its eradication, conditional on anti-FGM policy developed by national governments or NGOs.

This study seeks to outline both the factors influencing the persistence of harmful traditions and those that help to promote good health practices. This paper makes several contributions to the existing literature. First, it contributes to the field of political economy by shedding light on the persistence of cultural traditions (Alesina and Giuliano [2015], Bisin and Verdier [2000, 2001], Voigtländer and Voth [2012]) and their decay due to institutional change, creating another link to the effects that institutions have on economic development through cultural norms, and finding support for this theory in the data. Second, I contribute to the literature on the existence and evolution of social norms by understanding stability and decay of tribal institutions and practices (Bisin et al. [2009, 2011], Ellickson [1989, 1991], North [1990]). Third, it contributes to the study of the role of national institutions on African development. On the one hand, Acemoglu et al. [2005], Helpman [2009] highlight the importance of the institutions as a key determinant in economical underdevelopment. On the other hand, Nunn et al. [2013], Spolaore and Wacziarg [2013] emphasize the importance of geographical, cultural, and genetic traits when compared to the role of institutions, and Michalopoulos and Papaioannou [2014] find no effect of national institutions on the within-ethnicity economic outcomes. This study essentially shows that institutions do have an effect on cultural norms and traditions that negatively affect economic development. Thus, it links points made by Acemoglu et al. [2005] and Spolaore and Wacziarg [2013], who suggest that although institutions may not have a direct effect on economic underdevelopment, they do appear to have an indirect effect.

Finally, studying harmful practices like FGM contributes to the field of development economics, since

practices of this kind have a direct effect on economic growth through their negative effects on women, including increased death rates, compromised physical and mental health, lower educational achievement and labor market outcomes, and decreased productivity (Bicchieri and Marini [2015], Blaydes and Platas Izama [2015], Diabate et al. [2014], Wagner [2015]). This study contributes to those few studies that shed light on our understanding of the persistence of FGM in different countries and tests the existing hypotheses (Efferson et al. [2015], Mackie [1996, 2000, 2003], Mackie and LeJeune [2009], Shell-Duncan [2001, 2008], Shell-Duncan and Herniund [2007], Shell-Duncan et al. [2011]), thus providing policy considerations that can be used by NGOs and governments interested in abolishing such harmful practices. Useful policy advice may help to reduce the number of mutilation cases and the deaths associated with them, and contribute to the broader issues of ending violence against women and children and confronting gender inequalities.

The paper is organized as follows. The issue of female genital mutilation is introduced in Section 2. Section 3 describes the data. Estimation results and robustness checks are presented in Section 4. Alternative identification strategies are introduced in Section 5. Section 6 contains concluding remarks.

2 Female Genital Mutilation: Historical Background and Conceptual Framework

In this section I explain the cultural phenomenon of FGM and provide some background information about the practice⁴. In addition, I provide some historical facts about FGM and formulate hypotheses about its persistence and ways of abolishing it. Later in the section, I show evidence of the regime stability theory in the data.

2.1 Background and History

Health and human rights are known to be among the most important determinants of economic growth. The persistence of FGM has been extremely harmful to the physical and psychological health of women and also impacts on the health of their children (Brady [1999], Dorkenoo and Elworthy [2006], Elnashar and Abdelhady [2007], Koso-Thomas [1987], Morison et al. [2001], Shell-Duncan and Herniund [2007], Toubia [1994], Wagner [2015]) even in cases where it is performed by doctors (Shell-Duncan [2001]). Furthermore, FGM leads to high death rates among girls due to bad sanitary and surgical conditions. FGM procedures can immediately cause severe bleeding and urination problems, and can lead to cysts, infections, and infertility, in addition to complications in childbirth and increased risk of newborn deaths.

To the best of our knowledge, the practice is a tradition in some predominantly Muslim Western, Eastern, and Northeastern regions of Africa (Figure A.2); in addition some countries in the Middle East (e.g. Iraq and Yemen) have tribes that exercise circumcision for girls (UNI [2013]). According to the World Health

⁴For those interested in researching the topic beyond the material covered in this paper, possibly the best reference to consult is Mackie [1996].

Organization (WHO), there are more than 150 million girls and women living in 29 countries who have been circumcised, and another 30 million are estimated to be at risk of circumcision over the next decade. Some people mistakenly blame Islam as a religion for these figures; however Islam has little to do with the practice directly, as it mandates circumcision of boys only⁵. To be more precise, the circumcision of girls is part of the system of indigenous beliefs (which have over time merged with Islam) of the ethnic groups who practice it. Despite interventions and anti-FGM legislation, it is not clear why some tribes continue to practice FGM, while others have stopped, even if we take the anti-FGM laws into account (Miller et al. [2005], Rahman and Toubia [2000]). More importantly, such anti-FGM measures can in fact be harmful in and of themselves, either through neglecting health concerns in favour of women's rights (Shell-Duncan [2008]), by leading to unintended and potentially harmful effects on the way FGM is performed (Shell-Duncan [2001]), or through the types alternate avenues people pursue in order to bypass the FGM-ban (Camilotti [2015]).

The major of existing theories concerning the persistence of FGM and other harmful practices were developed by sociologists and have been summarized in Mackie [1996], Mackie and LeJeune [2009], Shell-Duncan and Herniund [2007], Unicef et al. [2007]. Translating the basic hypotheses into the language of economics, the male's primary goal is to father as many children as possible; however, it is obvious that only the woman who is carrying a child can be sure whether that particular child is hers or not. In this kind of situation men - especially in polygamist societies - are prepared to take costly action (e.g. in the form of FGM or footbinding) in order to increase the probability that the children they support are their own⁶. By undergoing FGM, women become less promiscuous because they lose the opportunity to enjoy sex. In this case another question arises: Why do women agree to such a costly action? If a man from a high economic strata wants to take such an action and a woman of the same economic status does not, another woman from a lower income family may agree to it. As an end result, all women with the exception of those in the lowest income groups, agree to undergo this costly action⁷.

FGM first appeared in the territory currently recognized as Northern Sudan and the practice was transmitted directly throughout Africa with the slave trade, and also indirectly through the spread of Islam. Following the establishment of the Arab Caliphate, Sudanese sex slaves (who underwent circumcision) were transferred via trade routes (Beachey [1976]), thereby causing FGM to become widespread in some polygamist regions. In addition, some ethnicities adopted polygamist traditions upon converting to Islam. In fact, conversion to Islam became widespread due to slavery concerns⁸, ethnic groups' proximity to trade routes (Michalopoulos et al. [2012]) and the presence of polygamist practices⁹. Both the spread of Islam,

⁵The indirect effect of Islam will be discussed below; however, readers interested in knowing more can also find some interesting hypotheses in Mackie [1996].

⁶Such costly actions are common in nature: e.g. some male spiders perform FGM for the same reasons (Mouginot et al. [2015]).

⁷There is evidence that in China only the poorest women, generally those who needed to work in the fields, did not have their feet bound.

⁸It is forbidden for a Muslim to sell another Muslim into slavery, thus African populations were converting to Islam in order to avoid becoming slaves. Since the Quran forbids the trade of people who are Muslims, some African tribes living in proximity to the Arabic trade routes started to convert into Islam in order to avoid being slave-traded.

⁹In pre-Islamic Africa, men were allowed to have many wives and concubines, and in Islam men are permitted to have up to four wives and concubines.

with its polygamous culture, and the trade in female slaves from the west bank of the Red Sea who had already undergone FGM shaped the current borders of the “FGM zone”(Freeman-Grenville [1975], Mackie [1996], Widstrand [1964]).

We can see evidence that a strong connection is made between FGM when we consider that many African women believe that FGM is required by Muslim tradition and that some Muslim scholars also claim the same. In fact, Islam does not support female circumcision. As Muhammad said (Mackie [1996]) in several of the *Hadiṡh*¹⁰, FGM is “noble but not commanded” and it is advised that “female converts refrain from mutilation because even if pleasing to the husband it is painful to the wife”¹¹.

Despite the fact that the practice is purely cultural, this explanation for the persistence of FGM is still debatable¹². For example, Bellemare et al. [2015] state that the continued practice of FGM is almost purely explained by household and individual factors, while others claim that it can be explained by the tribal identity (Karanja [2003]), or more broadly by ethnicity (Yoder et al. [2004]). Nevertheless, these works neglect the cultural constituent and the collective nature of FGM (Mackie [1996, 2000], Hernlund and Shell-Duncan [2007]), thus forcing us to search for answers in sociological and anthropological hypotheses.

All of the existing papers describing the persistence of FGM and examining approaches that may potentially be effective in ending the practice can be generalized into two hypotheses. The first suggests that modernization of a society can, through a variety of channels, have a negative effect on the number of FGM cases. It can decrease support for FGM practices, either by increasing the bargaining power of women and protecting their rights (Ebrey [1991], El Dawla [1999], Yount [2002], Easton et al. [2003], Ebrey [2003], Finke [2006]), or through the promotion of “modern values” and education (Easton et al. [2003], Finke [2006], Hayes [1975], Kennedy [1970]). For example, the importance of women’s right is shown in Harari [2014], wherein the author uses changes in Kenyan legislation (e.g., improving the inheritance rights of women) to show that increasing women’s bargaining power leads to a lower probability of women being circumcised in ethnic groups where FGM is not universal¹³. Better education may also lead to reducing the number of FGM cases, either because higher education means acceptance of “modern values” or because of an increased understanding of that they are losing face in the world by continuing such traditions. For example, women with no education are eight times more likely to support the continuation of FGM than women with secondary education or higher in Ethiopia, and in four times more likely to support it in Sudan. As another example of modernization theory, Kennedy [1970] describes the case of Nubian tribes living in Egypt who, after losing their land due to the construction of the Aswan Dam on the Nile River, switched to wage labour and thus to urban values, which resulted in higher education and adoption of modern egalitarian ideas. This shifted their *infibulation* tradition towards milder FGM practices (*clitoridectomy*). Hayes [1975] predicted that since the latent functions of FGM constitute a contribution to the village economy (via midwifery

¹⁰Stories about deeds and sayings of the Prophet Muhammad.

¹¹Under *Sharia* laws, the cost of promiscuous behaviour for women is too high (death by stoning). In this case, another costly mechanism for preventing women’s promiscuous behaviour is excessive.

¹²And, as shown in Alesina and Giuliano [2015], Dippel [2014], Voigtländer and Voth [2012], cultural practices are highly persistent.

¹³This result supports recommendations made in Gruenbaum [1982].

services or limiting population), modernization should weaken the FGM tradition. Finally, Bicchieri and Marini [2015] document a correlation between FGM rates and social capital.

In contrast, some papers (Mackie [1996]) suggest that modernization won't help to eradicate FGM since, even in its worst state (*infibulation*), the procedure does not hinder female labour directly as is the case with other "horrible practices" (such as footbinding in Imperial China). Cloudsley [1983] suggested that the urbanization which took place in the case study by Kennedy [1970] caused Nubians to accept the lighter form of FGM accepted in Egyptian cities because of the fact that Egyptians were more numerous and prosperous, but that this acceptance was not due to modernization.

The second hypothesis states that FGM persists because it is a social norm (Easton et al. [2003], Hayford [2005], Lightfoot-Klein [1989], Mackie [1996], Shell-Duncan and Herniund [2007]). To have a better chance of finding a good match in the marriage market you need to follow social norms, and therefore, those desiring better prospects must be circumcised¹⁴. Moreover, there are sometimes direct income benefits, as is the case in Uganda, where a circumcised girl will earn her family 25 more cows as a bride-price than a non-circumcised girl¹⁵. By not following the social norm, a woman risks finding a worse match in the marriage market or even punishment by her kin¹⁶. Following Schelling [1980], Mackie [1996] explains the persistence of FGM and footbinding as a coordination problem, in which all people must choose between following the social norm (e.g., circumcise their daughters) or not based on their understanding of their quality of life without FGM and their expectation of the share of other people who will deviate from the practice. If the importance of quality of life without FGM is clear, the reason for considering the other people's choices is more strategic: people want to secure marriages for their daughters, thus if everyone circumcises their daughters, uncircumcised girls will be worse off on the marriage market. If few people are willing to circumcise their daughters, uncircumcised girls won't be any worse off on the marriage market. In the light of this logic and the example of the Chinese anti-footbinding campaign, modern NGOs and African governments are attempting eradicate FGM by explaining the adverse health consequences associated with the practice and trying to convince villagers to publicly pledge not to circumcise their daughters.

Summarizing, the equilibrium where all girls do or do not undergo FGM depends on their mothers' experience/knowledge that life without FGM is better (e.g., their daughters will enjoy sex) and parents' belief that they will be able to find their daughters good matches in the marriage market contingent on the fact that their daughters are uncircumcised - i.e., public opinion about the necessity of FGM. Thus in Mali, 58% of girls who have been circumcised are the daughters of mothers who think that FGM practices should be stopped. A similar story applies to men, as they also derive less satisfaction from having sex with women who were circumcised (Boddy [1982], Lightfoot-Klein [1989], Makhlof Obermeyer [2005], Shell-Duncan et al. [2011]). For example, in Guinea, where more than 85% of women are circumcised, only 19% of women think that FGM practice should be eliminated vs 42% of men who think the same.

¹⁴For example, Wagner [2015] showed that, in a sample of 13 countries, women who had undergone genital circumcision were on average 40% more likely to get married.

¹⁵http://www.karinweber.info/_uploaded/Good-Practise-Public-Declarations-on-FGMC-Abandonment.pdf

¹⁶For example, in some ethnic groups in Guinea-Bissau, uncircumcised women are not considered clean enough to prepare food, and are thus ostracized by fellow villagers; in Uganda they can be accused of witchcraft, etc.

As evidence in favour of this hypothesis, a causal effect of public opinion was demonstrated in Blaydes and Platas Izama [2015], where the authors showed that mothers whose first child is male (a circumstance that is associated with social values that harm women) are more likely to believe that FGM should continue. Hoff [2015] provides a case of abolishing FGM practices in Senegal, which was conducted by NGOs, and claims that lesser social exclusion of individuals who do not undergo circumcision helps to decrease the number of FGM cases. However, Bellemare et al. [2015] claim that the FGM preferences are almost purely explained by household and individual factors, thus contradicting Mackie's point about the importance of securing a good match in the marriage market, which exists on the village or regional level¹⁷. Finally, Efferson et al. [2015] provide evidence that FGM is not entirely consistent with the social norm hypothesis for one particular tribe in Sudan, while not rejecting other hypotheses developed by sociology and anthropology scholars¹⁸.

Nevertheless, the presence of FGM can still be influenced by contemporary political factors that can have an effect on it through the mechanisms described above. By modeling FGM as a global game in Section A.1, I show how regime stability can affect cultural norms and tradition, while still being consistent with Efferson et al. [2015], Hernlund and Shell-Duncan [2007], Mackie [1996].

2.2 Durability of the Regime and FGM

2.2.1 The Mechanism

Why do traditional practices exist? If a tradition is strong, it doesn't require any special understanding by the people practicing it for it to continue; it is simply part of the natural environment in which people live, and they are not always aware that they are living a "tradition". Ordinary people continue to live as their fathers and grandfathers lived (e.g. circumcising women), and the presence of traditional norms has allowed them to structure their interaction with the environment to reduce the uncertainty in relationships between people. Traditions become relevant precisely when life begins to change rapidly and the traditions are destroyed or under threat of eradication. When the old rules of the game no longer work in the drastically

¹⁷Whether Bellemare et al. [2015] can disprove the effect of social norms on FGM might be questionable. They estimate a cross-sectional regression of woman's attitude toward FGM on a dummy variable indicating that the woman has been circumcised. The identification strategy relies on the assumption that, conditional on observed household characteristics, the decision of parents to circumcise their daughter is as good as random. Even under these assumptions, the influence of societal factors is not ruled out because none of the societal variables are included in the statistical analysis. The authors point to high R-squared coefficient as an evidence that FGM preferences are explained by household-level factors. This approach is only valid if one assumes that societal factors are not correlated with household-level factors. For example, one should assume that the social stigma attached to the uncircumcised girls is not correlated with the parents' decision on whether to circumcise their daughter. This assumption seems hardly justifiable in the context of tight social structures of the communities in the countries in question. If one wishes to relax this assumption, then their results are amenable to the opposite interpretation. If one assumes that the decision to circumcise is largely driven by societal factors, then the jump in R-squared coefficient once the indicator for circumcision is included can be interpreted as the evidence of the importance of those societal factors. Finally, they use only data for 13 countries, however, the data are available for 29 countries, thus raising concern about external validity.

¹⁸In addition to external validity concern exacerbated with the fact that *Gezira* tribe was subject to various anti FGM campaigns for decades (Brausch [1964], Sharfi et al. [2013]), Efferson et al. [2015] used crucial assumptions that marriage market is determined on the village level, however, *Gezira* tribe has more complex marriage market structure: there are descendants of free people, descendants of slaves, and those who marry within the kin (Boddy [1989, 2007]) (44% of marriages in *Gezira* community were to first cousins (Ahmed [1979])). This fact can lead to aggregation of several very different marriage markets into one can distort their results.

altered conditions and new rules have not yet been formed, chaos often results¹⁹.

In this situation, if a country with a durable political regime is trying to eradicate a tradition by proposing to replace it with other legal norms instead, then sooner or later the attempt will succeed. However, if the government suddenly becomes weak, and consequently unable to uphold the transition to the new social norms, old practices can return. In times of turmoil, the return to traditions is one of the largely illusory ways of restoring the previous experienced order. Moreover, during such periods “invention of tradition” can occur. For instance, in some parts of Uganda FGM was recently proclaimed as a return to African tradition (Lightfoot-Klein [1989]) and in Syria, Iraq²⁰, and the Russian ethnic republic of *Dagestan*²¹, it was proclaimed as a return to Muslim tradition.

Thus, adverse shocks in regime durability can lead to an increase in the persistence of traditional practices. For instance, the Libyan Civil War wreaked havoc in the Magreb and Sub-Saharan African regions. During the unrest, Colonel al-Gaddafi used his vast financial resources to train, arm, and fund large numbers of *Tuaregs* - people from a semi-nomadic ethnic minority group²². When he died, the *Tuaregs* returned with their guns to Algeria, Mali, Niger, and Burkina Faso where they took control of territory in these countries²³. In Mali, the Tuaregs led a full-fledged rebellion that, for a time, seized the country’s northern half. A *Tuareg* group that called themselves the *National Movement for the Liberation of Azawad*²⁴ were conducted military assaults on targets not only in Mali but also in Niger and Burkina Faso, and the control reached as far as Niamey in South-western Niger. These events caused NGOs to cease their activities in affected countries, a situation which resulted in spikes in the number of FGM cases in Mali and Niger. A similar situation occurred in northern Nigeria, where due to *Boko Haram*²⁵ insurgency the prevalence of FGM in regions affected by terrorist activity increased significantly. Importantly, although neither the *Tuaregs* nor the *Boko Haram* followers practice FGM themselves, FGM prevalence spiked in those regions.

In the same way that FGM reappears as a means to minimize uncertainty in cases where national institutions fail to provide FGM-free marriage markets (for instance, by not providing NGOs an opportunity to promote anti-FGM programs). In some cases, people abandon state laws in favour of cultural and religious norms and traditions, and governments are unable to enforce them. A striking example of this type of situation happened in Nigeria, where the northern half of the country unofficially began to adopt Sharia laws. Moreover, some Nigerian states have officially allowed the switch to Sharia law, although the predominantly Christian south maintains secular laws (Alfano [2015]). A similar situation occurred in the Russia’s Northern Caucasus region, where a mixture of local tradition (*Adat*) and Sharia laws was imposed

¹⁹Sociologists invented a special term for this phenomenon: after Emile Durkheim, they began to call it the “*anomie*”. This type of situation is extremely uncomfortable for people: uncertainty dramatically increases the risks of interaction between people.

²⁰<http://www.nydailynews.com/news/world/isis-militants-order-female-genital-mutilation-northern-iraq-u-n-article-1.1878745>

²¹<http://philologist.livejournal.com/7402276.html>

²²More information about this can be found at <https://www.opendemocracy.net/hugh-brody/gaddafi-and-tuareg-lords-of-desert> or at http://www.nytimes.com/2012/02/06/world/africa/tuaregs-use-qaddafis-arms-for-rebellion-in-mali.html?_r=0.

²³<https://www.theguardian.com/commentisfree/2012/mar/23/coup-mali-dictatorship-tuareg>

²⁴<http://www.aljazeera.com/news/africa/2012/02/20122188513342701.html>

²⁵<http://www.state.gov/j/ct/rls/crt/2013/224829.htm>

following the dissolution of the Soviet Union (Lazarev [2012]).

Regime durability is a necessary but not sufficient condition that allows other mechanisms for abolishing FGM and other traditional practices to work. It also supplies some answers to the question of why footbinding was successfully abolished in China while the ideologically similar practice of FGM persists and has only declined in some African countries, despite similar methods employed by anti-FGM proponents to eradicate the practice.

Thus, what is the role of regime stability? If a stable regime supports anti-FGM campaigns, and NGOs consistently push the population to eradicate this harmful traditional practice, what keeps people from abandoning it and choosing not to circumcise their daughters? In this case, if people believe that policy against the tradition will persist in the long run, long enough for their daughter to find a match on the marriage market without undergoing FGM, and thus they do not have to circumcise their girls now. Conversely, if a political regime is weak and unable to enforce anti-FGM laws and ensure the continued presence of NGOs, people won't be persuaded the effects will persist long enough for their daughters to grow up and find a husband without undergoing FGM. In this scenario, it is more likely that FGM practices will persist. This means that the regime stability channel and the necessary condition of promotion of anti-FGM programs by NGOs or governments affects the decay of the tradition through people's expectations about future activities of NGOs and governments.

It is important to note that FGM is currently considered a social coordination norm and that this determines the success of anti-FGM campaigns. There are three ways governments can fight against FGM. The first is legal prosecution for committing FGM in cases where such criminal legislation exists. However, this approach is not efficient since state capacities for enforcement are generally very low; FGM legislation is generally not enforced even in cases where circumcision causes death (Rahman and Toubia [2000]). The second approach currently being used is to educate women about the consequences of FGM and their rights through programs created by government agencies or international NGOs or, infrequently, through media or billboard campaigns (UNICEF et al. [2008], Unicef et al. [2007], UNI [2013]). The most popular means of discouraging the practice is using governmental agencies or international NGOs to attempt to gather commitments from as many people as possible in each village that they will not circumcise their daughters and will promise to marry their sons only to non-circumcised girls (TOS [2013], DFI [2013], UNFPA and UNICEF [2013]). Clearly, this approach is based on the nature of FGM as a collective action, and the goal of the NGOs in these campaigns is to gather a critical mass of villagers and to broadcast a signal to all villagers that their uncircumcised daughters will still have the opportunity for good marriage market outcomes (Diop et al. [2004], Mackie and LeJeune [2009], UNFPA and UNICEF [2013])²⁶.

²⁶As an example, I present the story of the "*Diagoubou* declaration" - the first multilateral announcement to renounce the practice of FGM in Senegal. Two Senegalese villages, *Malicounda Bambara* and *Nguerigne Bambara*, decided to renounce the practice of FGM, although people in these villages continued to circumcise girls. This happened because the parents of girls who didn't undergo FGM found it impossible to find partners for them in nearby villages (Armoudian [2011]). To completely eradicate FGM, a local imam, Demba Diawara, working with an American NGO had to establish a multilateral declaration by the 11 nearest villages to create a critical mass to ensure opportunities for uncircumcised females in marriage market matching (TOS [2008]).

The microfoundation behind this theory is the value of time. On the one hand, if agents place greater value on future outcomes or, alternatively, if they are sure that the durability of the ruling regime is high and that their country will not descend into a civil war, the benefits of a decision to not follow a tradition should have more weight in the long run²⁷. On the other hand, if people's valuation of the future is low or, alternatively, if they believe that their country's leadership is unstable and that adverse long-run shocks (e.g. income) can occur, they may be more interested in following the harmful tradition²⁸.

2.2.2 Cases from the Factual Record

Some evidence for this theory can be found in NGO reports: not all participants of such public declaration programs by NGOs believe that girls will not be circumcised as a result of these events. For example, Diop et al. [2004] shows that 63% of people who had participated in a public commitment event felt the declaration would be respected, compared with 48% of non-participants, and a study by Marcus and Page [2014] provides similar figures (57% and 44%). At the same time NGOs are more efficient if they operate year to year in the same villages. According to Marcus and Page [2014], longer existing programs (for example *Tostan* and *Ishraq*, where programs have existed from 6-10, years or up to 15 years in different locations) are more successful than shorter programs (e.g. *Ndukaku* in Nigeria).

An explanation of this fact and the reasoning of some informants, mostly women, can be found in UNICEF et al. [2008]: "...we were asked to abandon an age-old practice, and we accepted although we were never exposed to all the disadvantages everybody is talking about; so we should get something in return that offsets this great loss (loss of a milestone, loss of a recognition sign, loss of ethnic/cultural identity)".

Moreover, in the villages where public declarations to end FGM were made several years earlier, interviews by UNICEF et al. [2008] suggested that while FGM rates did fall, resentment remains strong as people were expecting more of a payback in their daily lives. This means that if people are sure that anti-FGM policy persists and NGOs return to reward communities for abandoning FGM practices and continue to enforce opportunities for uncircumcised girls in local marriage markets through renewed commitments, they will not circumcise their daughters. A recent study by Bicchieri and Marini [2015] also documents that FGM dynamics are strongly associated with social expectations.

In Sierra Leone, fighting against FGM is taboo for the political elite, and the government does not support any form of consistent anti-FGM policy²⁹. In this country, FGM is an initiation procedure for joining the secret *Bondo society* that exists in every village and town and serves as a vital communications link between politicians and rural communities. If politicians attack FGM too enthusiastically, they run the risk of losing

²⁷For example, the Chinese, who were able to abolish footbinding in one generation, demonstrated a very high saving rate in comparison to citizens of countries practicing FGM. While both traditions are aimed at virtually the same type of marriage market outcomes, differences in the value of future, as well as expected lifetime, provides very clear evidence for my hypothesis.

²⁸After all, FGM is a cultural norm, and even if changing some cultural norms is beneficial in the long run, it may be costly in the short term. For example, not binding the feet of a daughter would be penalized by worse marriage market conditions for that young woman in the future, while the action handicaps the woman and permanently decreases quality of her life. This means that people who value the future more will be able to abandon such harmful traditions easier than those who value it less.

²⁹<http://www.theguardian.com/global-development/2015/aug/24/sierra-leone-female-genital-mutilation-soweis-secret-societies-fe>

women's votes. Other evidence exists that NGO activities in certain countries are not sustained due to political instability and weakening of the country's regime³⁰.

By contrast, consistent anti-FGM policy in Kenya and ongoing permission for NGOs to gain access to the villages is considered a "...*signal that social norms are changing, bring[ing] the subject out into the open and giv[ing] cover to parents or girls who don't want to go through it [undergone FGM]*"³¹.

To summarize my hypothesis concerning durability of political regime and, I present two graphs. On the left, I depict the FGM prevalence of the *Akan* ethnic group, which is divided between Ghana and Cote d'Ivoire. Both subgroups start with similar FGM rates and the same regime durability; however, starting in 1966, Ghana experiences a period of political unrest, while Cote d'Ivoire remains under stable authoritarian leadership. We can see that difference in the FGM rates jumps following shocks to regime durability, creating a situation in which FGM is more prevalent among *Akan* people in Ghana than among *Akan* people living in Cote d'Ivoire. A similar story can be seen in relation to the prevalence of FGM among the *Fulani* - an ethnic group divided between Burkina Faso and Guinea. Starting from almost the same rate of FGM prevalence and comparable regime durability measures, constant unrest in Burkina Faso was followed by a steady increase in FGM among *Fulani* people in this nation, while a durability shock in Guinea in 1995 caused FGM rates to grow faster than they had in Burkina Faso³². Both cases are examples of how ethnic groups randomly divided by state borders and having the same cultural norms can change over time due to changes in regime durability.

According to the hypothesis outlined above, we know that regime durability will not have a negative effect on FGM in all countries - the effect is observed only in those countries where the government has an anti-FGM policy. In the Figures A.4 and A.5 of Appendix A.5, I depicted similar correlations for those countries that currently fight against FGM. All of them demonstrate the same negative pattern³³. The second group of countries (Figure A.6) was successful in eradicating FGM, and the prevalence of the practice is minimal in those countries: 4% for Ghana and Togo, 2% for Niger, and 1% for Cameroon. In this instance there were no distinguishable patterns observed. The last group of countries contains those that do not have consistent campaigns against FGM (Figure A.7). Mali and Sierra Leone do not have anti-FGM criminal legislation, while Egypt, Iraq³⁴, Somalia, and Gambia didn't impose FGM bans until 2008, 2011, 2012 and 2015, respectively and I lacked the necessary data for those years for those countries. In Figure A.7 we can see, that the relationship between regime durability and FGM is positive for Egypt, since the practice was medicalized so that FGM is performed in hospitals³⁵. Graphs for Gambia and Mali do not seem to indicate any correlation, while graphs for other countries lacking anti-FGM legislation still show negative correlation

³⁰Anecdotes can be found at <http://orchidproject.org/wp-content/uploads/2013/02/Guinea-Bissau-Final.pdf> and at <http://www.newrepublic.com/article/world/96555/egypt-genital-mutilation-fgm-muslim-brotherhood>.

³¹<http://www.unfpa.org/news/taking-female-genital-mutilation-cutting-out-cultural-mosaic-kenya>

³²This durability shock was caused by President Colonel Lansana Conté remaining in the power by getting a majority for his ruling party in parliament, despite previous announcements that the country would return to civilian rule.

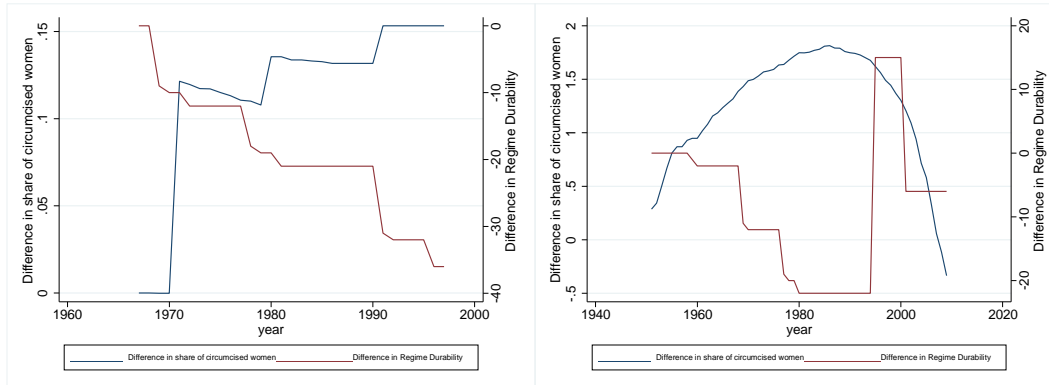
³³Although for Yemen there are two clouds that show similar correlation patterns between FGM rates and regime durability, but which exhibit different levels of FGM prevalence. These correspond to Southern and Northern Yemen.

³⁴The share of FGM prevalence in Iraq is small, only 8%, but the tradition is practiced by *Kurds* (for whom the share is 72%), not *Arabs*. Arabic governments did not put forward any positions about it until the end Saddam Hussein's regime.

³⁵More about the medicalization of FGM can be found at Shell-Duncan [2001].

that can be attributed to policies of NGOs allowance. Overall, I find there is a strong negative correlation between the durability of the regime and the total number of women who have undergone FGM of those who were eligible for FGM in all countries examined in the paper (Figure A.3).

Figure 2.1: Differences in FGM Rates and Regime Durability for *Akan* and *Fulfilde* ethnic group



Notes: *Akan* ethnic group partitioned between Ghana and Cote d’Ivoire. *Fulfilde* ethnic group partitioned between Burkina Faso and Guinea. *Source:* FGM rates: DHS; Regime Durability: Polity IV project.

Concluding this Section, FGM is a cultural norm that appeared as an important mechanism of the marriage market. The means of abolishing it are known but do not work in all cases, thus providing an opportunity for further analysis of the problem. Finally, there is evidence that regime stability has an effect on the persistence of FGM, which is evidenced by countries with more durable regimes exhibiting lower rates of FGM. In the Appendix A.1 I build a model for abolishing traditional practices to justify the reduced form of the empirical specifications that will be proposed in Section 4.

3 Data

In this section, I briefly describe how the main dataset was constructed. Further details are available in Appendix A.2.

The main source of data for this research is the set of surveys by the Demographic and Health Survey (DHS)³⁶ and Multiple Indicator Cluster Survey (MICS)³⁷ programs. I used 55 surveys³⁸ (see Table 11) containing a question about the age of circumcision out of the more than 70 available surveys that contained “Female Genital Cutting” questionnaire. The DHS and MICS are very similar and are consistent, in terms of both the variables and the methods of data collection they use, thus making them comparable.

Survey data include the following information: whether a woman is circumcised or uncircumcised, age, age of circumcision, marital status, age of marriage, years of education, ethnicity and religion (of the respondent in the DHS data set and of the household head in the MICS dataset), country and region, and area of

³⁶<http://www.dhsprogram.com/data/>

³⁷<http://mics.unicef.org/>

³⁸There are 58 surveys for 23 countries, with one to five surveys per country. The access for three of the surveys (Yemen 1997, Eritrea 1995, and Eritrea 2002) is restricted, so the data from them was not used for this paper.

residency (rural\urban status). The response rate ranges from 80 to 99 percent. On the map A.2, I depicted the shares of circumcised women averaged over all surveys used in the paper. Summary statistics of these samples are presented in Table 12.

One of the most important concepts used in this paper is the “age of circumcision”. Even if FGM is a social norm in the society, the timing at which the girl is circumcised can vary significantly³⁹. The differences that do exist, such as the age of FGM, depend on ethnic and regional cultural traditions and on religious denomination (Karanja [2003], Yoder et al. [2004], UNI [2013]). Based on the “age of circumcision” variable ($fgm\ age_{ierd}$) for each region r , ethnicity e and religion d , I calculated “eligible age for circumcision” ($eligible_{erd}$) by taking the range of years between minimum and maximum “age of circumcision” for each ethnicity, religion and region⁴⁰.

Using variables that contain information about year of birth, age of circumcision and age of marriage, I construct a retrospective person-year panel similar to Collin and Talbot [2016], keeping only those years of women’s lives during which they are eligible for circumcision. I drop all observations for already circumcised women, as circumcision is an absorbing state and can be done only once.

The main dependent variable is the percent share of women who were circumcised (fgm_{cet}) in year t in country c of ethnicity e . It is constructed as a fraction of all women who were circumcised (fgm_{icet}) during year t in country c of ethnicity e divided by the number of women who were eligible for circumcision due to age ($age_{iect} \in eligible_{iec}$). Thus the variable of interest can be written as follows:

$$fgm_{cet} = \frac{\sum_{t=1}^{N_{iert}} I(fgm_{icet} = 1)}{N_{iect}} \times 100, \quad (3.1)$$

where N_{iert} is a number of women eligible for circumcision such that $age_{iert} \in eligible_{er}$ ⁴¹.

As for the country-year specific variables, data from the Polity IV project were used (Marshall and Cole [2013]), in addition to PennTables 8.1 (Feenstra et al. [2015]) and the World Bank’s World Development Indicators⁴². Data about anti-FGM legislation is taken from Rahman and Toubia [2000] and UNI [2013]. I assume that anti-FGM legislation exists if there is a criminal law that openly states the real punishment for performing any type of FGM⁴³.

The main variable of interest is political regime durability. As a primary measure of regime durability I use the DURABLE variable proposed by Polity IV, which shows the number of years (cumulative) since the

³⁹To clarify this, in the Figure A.8 I provide a cumulative distribution of the age at which FGM is performed using examples of two ethnicities: For the first (*Akan*), the eligible age for FGM is within between 5 and 18 years; for the second (*Guerze*), the eligibility range is from 1 to 30 years of age. For most ethnicities, the age of eligibility ranges from 0-18 years. In addition, I plot the hazard and survival functions for my sample of circumcised females and present the density of age of FGM, and a cumulative distribution of the age when FGM was performed (A.9).

⁴⁰For the sake of computational simplicity, I drop all observations for women whose circumcision age is above 25 years (which is 0.06% of the sample). All results are robust for calculating eligible age of circumcision without taking religion (d) into account ($eligible_{er} \in [\min(fgm\ age_{ier}), \max(fgm\ age_{ier})]$) or by using country (c) instead of region (r) ($eligible_{ec} \in [\min(fgm\ age_{iec}), \max(fgm\ age_{iec})]$).

⁴¹Later, for some specifications with a regional level of aggregation, I use the regional level dependent variable fgm_{ret} , which uses national regions r instead of countries c .

⁴²<http://data.worldbank.org/data-catalog/world-development-indicators>

⁴³According to WHO et al. [2008], there are four types of FGM, however as they all are ideologically the same, I do not distinguish them.

last substantive change in authority characteristics (defined as a 3-point change in the POLITY score). Thus, a variable, $Durability_{ct}$, that is equal to DURABLE assuming that the regime stability is a martingale, and the best predictor of future regime stability is the current regime durability. This is consistent with scholars' views on durability of political regime (Clemens and Cook [1999], Gates et al. [2006]). Scholars agree that the best predictor of the future regime durability is current regime durability (Gasiorowski [1995]) and it is often used in the economic (Girma and Shortland [2008]) and political science literature (Li [2005], Piazza [2007, 2008]). As POLITY score does not distinguish quality of national leaders, alternative ways to measure regime durability can be found in Section 4.4, where I use other possible measures of regime durability to show that my results are robust and that I do indeed capture the effect of regime stability.

All this leads us to the next chapter, wherein I describe the empirical specifications and identification assumptions used to test the hypothesis of regime durability.

4 Empirical Specifications and Results

In this section, I consider the main empirical specification, identification strategy and main results⁴⁴. I test the hypothesis that differences in countrywide regime stability across national borders explain within-ethnicity differences in FGM rates, such as more stable regimes having lower FGM prevalence.

4.1 Empirical Specification and Research Design

The identification is based on the fact that FGM is a cultural tradition that exists on the ethnic group level. As ethnic groups were randomly partitioned between ethnic different countries we have two identical in terms of cultural norms groups of people living across countries borders that are subject to different random shocks of regime stability conditional on observables. Thus the research design is based on the difference in difference setup. As partitioned ethnic groups share similar cultural norms and subject to different regime stability over time by using country-ethnicity fixed effects and time fixed effects I can identify differential time trend across country-ethnicity in regime stability conditional on observed national institutions.

For simplicity, let us assume that there are N ethnic groups divided between 2 countries (Stable and Unstable) and the time $t \in$ (Before,After). Thus we can derive the difference-in-difference estimator:

$$\hat{\beta}_{DD} = \overline{fgm}_{Stable,After} - \overline{fgm}_{Stable,Before} - \overline{fgm}_{Unstable,After} + \overline{fgm}_{Unstable,Before}, \quad (4.1)$$

where, \overline{fgm} is the FGM prevalence aggregated over N ethnic groups. As in our case we have multiple

⁴⁴The main empirical specification is derived from the model described in the Appendix A.1, where I develop a simple model of the abolishment a harmful tradition based on the global game approach proposed by Morris and Shin [1998, 2003]. I assume that the decision of each particular household depends on the actions of other households in the community; however, it also depends on uncertainty about what other households will do. I show that the common signal of regime stability has a positive effect on the share of people who will choose not to circumcise their daughters by affecting beliefs about fundamentals (expectation of the future in our case).

ethnicities and time periods, I employ general framework considered in Bertrand et al. [2004], Hansen [2007b] that leads us to the baseline empirical specification:

$$fgm_{ect} = \alpha + \beta Durability_{ct} + \Pi X_{ect} + \Psi \Gamma_{ct} + \mu_{ec} + \lambda_t + E_{ect}, \quad (4.2)$$

where, fgm_{ect} is the number of women who were circumcised divided by the number of women eligible for FGM of ethnicity e in country c in year t . The variable $Durability_{ct}$ is the regime durability of country c in year t . Matrix X_{ect} represents the set of variables averaged by ethnicity and country individual-level (including age, education, opinion about FGM, etc.), and matrix Γ_{ct} contains the set of country-year specific variables (such as GDP per capita, population, number of active NGO sites, and institutional variables). Finally, μ_{ec} is a country-ethnicity fixed effect, and λ_t represents time fixed effect. Because the main variable of interest varies at the country-year level, I cluster standard errors on the country level in order to be more conservative.

4.2 Treats to Identification

In this subsection I offer evidence of the plausibility of the identification assumptions. This analysis is possible due to the quasi-experimental setting that was created when the contemporary boundaries of the African countries were artificially drawn by European nations in the mid- to late 19th century. Ethnicities divided by national boundaries have similar cultural norms, anthropological traits, and natural environments, while at the same time are subject to different formal institutions. In contrast with Michalopoulos and Papaioannou [2014], who use the same identification strategy to study the effect of national institutions on economic outcomes, I cannot use historical ethnic maps to identify ethnic homelands because of the nature of the dependent variable. However, I use rich individual survey data that contain information about the ethnic group of the respondents as well as data about FGM prevalence. In addition, my approach explores time variation in formal institutions and regime durability in particular.

Thus ethnic groups that span more than one country allow us to identify the effect of regime durability, while ethnic groups that are unique to only one country contribute to the decrease of variance and higher explanatory power⁴⁵. I can consider regime durability as a continuous treatment for the divided ethnic groups. By using country-ethnicity fixed effects I am able to take into account most of unobserved heterogeneity, that varies on the national level that is not covered by institutional control variables. and national regions⁴⁶. As was shown in Michalopoulos and Papaioannou [2014], national institutions do not have an effect on economic performance within ethnicities, thus we don't need to disentangle the direct effect of institutions on within-ethnicity FGM persistence and the indirect effect through economic factors.

The least problematic assumption concerns the absence of reverse causality. It is very unlikely, that FGM

⁴⁵It is important to note that ethnicity explains up to 55% of the variation in FGM prevalence (UNI [2013]).

⁴⁶To be more conservative, in some specifications I use the fixed effects of national regions-ethnicity rather than simply country-ethnicity fixed effects. In addition, I use specification with fixed effects for ethnicity dyads, country and year.

of an individual will have any effect on the durability of the country's political regime. Similarly, the share of women circumcised in a certain year does not have an effect on the regime durability in the same year (while lagged FGM share might have an effect on current regime durability through economic underdevelopment). In addition, the migration factor can be ignored as FGM is predicted by the current location of habitation and not by the birthplaces of a women or their parents, since it is the local marriage market that dictates the type and necessity of FGM (Gallo and Abdisamed [1985]).

Another possible problem might arise due to omitted variable bias. In specification 4.2 I use country/region-ethnicity and year fixed effects and an array of control variables to take into account unobserved heterogeneity. Nevertheless, some omitted variables can still correlate with *Durability_{ct}*. For example, income or inequality might be correlated with regime stability because richer countries are more stable, while higher inequality might lead to political unrest. To take this into account, I add the log of GDP per capita as a control variable, while inequality is taken into account through country/region fixed effects. In cases where more populated countries have more volatile political regimes, I control for the country's total population.

Probably, the most important source of unobserved heterogeneity is due to the state capacity to enforce anti-FGM laws imposed by the government⁴⁷. To take this into account, I use proxies for the state capacity, such as severity of terrorist attacks, a dummy for failed states/in-turmoil regimes and a dummy for years with anti-FGM legislation in certain countries. Moreover, I add an indicator of the democratic regime and its interaction with regime durability in case the effect differs between democratic and autocratic regimes.

In case regime durability depends on the heterogeneity of population, I control for the shares of religious groups in each region. In addition to the controls mentioned above, I add some other variables that I expect to be important determinants of the FGM shares, such as size of the marriage market, share of polygamist families, public opinion about FGM, proxy for women's education, and share of rural area population.

Another possible problem may arise from measurement error. The data used in the study is clearly not perfect; despite the high response rate, the answers of respondents might be unintentionally incorrect⁴⁸. Approximately, 7.8% of women didn't indicate their FGM status or age of circumcision. In this case, I might have a measurement error in the dependent variable. However, assuming classical measurement error, this will only increase the variance without influencing the consistency of interest coefficients⁴⁹.

As the data is self reported, one can say that some women's answers may be untruthful. If this is indeed the case, we might expect that if FGM is forbidden in a particular country then women who have undergone FGM might claim that they haven't been circumcised. In this case, my estimates will be downwardly biased and I will again underestimate the effect of regime durability. In the case that women have under-reported

⁴⁷One way to take this into account is to use the State Fragility Index developed by Polity IV or the Mo Ibrahim Index of African Governance developed by the Mo Ibrahim Foundation; however, these have only been available since 1995 and 2000, retrospectively, thus decreasing variation in the main variable of interest.

⁴⁸For example, in the Appendix A.9 we can see the by the ages given by the respondents that there are distinct peaks at 20, 25, 30, 35 and 40; these can be explained by fact that the women do not remember their exact ages.

⁴⁹To back this assumption, I create a dummy variable *Missing_i* (equal to 1 if data is missing, and equal to 0 if not) and regress it on the treatment variable. Regime durability has no significant effect on the *Missing_i*, and I eliminated those observations from the dataset. The fact that some of the observations of women who have undergone FGM and don't remember their circumcision age are dropped will bias my results against finding evidence of the effect of regime stability on FGM prevalence.

their FGM status only if the regime is stable, results might be indeed biased. Nevertheless, the majority of respondents would have undergone FGM in childhood as a result of the choices of their parents. Thus we can assume that women do not lie about whether they are circumcised or not⁵⁰.

In addition, there are concerns about my measure of regime stability (*Durability_{ct}*). First, it can measure not perception of people about how stable political regime is, but something else⁵¹. Second, since *Durability_{ct}* is a proxy for people's perceptions of regime stability and continuation of anti-FGM campaigns, it will result in an attenuation bias. Finally, the Polity IV measure of regime durability does not take into account coups d'état, the personalities of national leader, wars and civil conflicts, types of autocracies; for example, a change of leadership to a dictators with a completely different political agenda that maintains a similar degree of political freedom can have no effect on *Durability_{ct}*. These facts will result in constant overestimation of regime durability and, as a result, will also contribute to the attenuation bias. Evidence that *Durability_{ct}* indeed measures the perception of people concerning the stability of a political regime and construction of a new measure of regime stability that takes into account the two other concerns are presented in the Section 4.4.

Finally, I confirm, that the mechanism of whether regime stability effects FGM works only through people's expectations but not because of NGO or health related programs throughout several tests. First, to be sure that this is not the effect of NGO activity in the region, I control for the number of NGOs, and the total amount of foreign aid that each country receives each year. Second, I show that regime durability has no effect on health related outcomes in the Section 4.5.

In the next section, I shown that regime durability can have an effect on FGM prevalence, such as more stable regimes getting rid of the harmful traditions faster than less stable ones. Moreover, regime durability affects cultural norms through expectations of future (e.g., the expectation that a government agency or NGO will return and continue to enforce the commitment of parents not to circumcise daughters). Additional robustness checks that aim to solve other possible concerns are reported in Section 4.5.

4.3 Results

Estimation results are presented in Table 1. Column I shows a two-way fixed effect estimation on the full sample of countries. The key variable of interest is regime durability (*Durability_{ct}*). The coefficient is negative and highly significant⁵². It can be interpreted as follows: a political regime which lasts for 12 years (one standard deviation of regime durability is equal to 11.76) leads to a moderate decrease in the share of

⁵⁰At the same time, questions about the circumcision of daughters can indeed be biased, as women can potentially under-report FGM cases if the regime is stable (Jackson et al. [2003]).

⁵¹Most criticism of the POLITY score is based on the fact that it is a subjective measure of democracy. In this case, the *Durability_{ct}* variable can measure perception of regime durability. However, it is even better in our case, as we are more interested in peoples' expectations about regime durability.

⁵²Adding a squared term for regime durability doesn't result in significant change; *Durability_{ct}* is still negatively significant while the squared term is negative but not significant. I avoid using the log of *Durability_{ct}* because it has many zero values and for the sake of easier interpretation of the results. Nevertheless, if I use $\ln(1 + Durability_{ct})$ as a dependent variable, all results hold.

women eligible for circumcision by age (fgm_{ect}) on 26.2% of its mean or 10.4% of its standard deviation⁵³. Because the observations are not independent due to aggregation, following Cameron et al. [2006], I correct for this using two-way clustering of the standard errors at the country-ethnicity level and present them in square brackets⁵⁴.

Table 1: Impact of Regime Durability on FGM

VARIABLES	I	III	III	IV	V	VI
Dependent Variable: Share of circumcised Women						
$Durability_{ct}$	-0.0632*** (0.0207) [0.0216]	-0.0701*** (0.0232) [0.0232]	-0.0622** (0.0246) [0.0259]	-0.0667*** (0.0235) [0.0273]	-0.0520* (0.0263) [0.0268]	-0.0697** (0.0273) [0.0275]
$Democracy_{ct}$		-0.480 (1.208) [1.208]	0.0721 (1.059) [1.248]	-0.121 (1.139) [1.139]	0.805 (1.323) [1.463]	0.683 (1.208) [1.241]
$Durability_{ct} \times Democracy_{ct}$			-0.153 (0.210) [0.210]	-0.150 (0.216) [0.233]	-0.250 (0.350) [0.351]	-0.229 (0.313) [0.315]
Controls	✓	✓	✓	✓	✓	✓
Fixed effects	Country-Ethnicity	Country-Ethnicity	Country-Ethnicity	Ethnicity & Country	Country-Ethnicity	Ethnicity & Country
Year Fixed effects	✓	✓	✓	✓	✓	✓
Aggregation level	Country-Ethnicity	Country-Ethnicity	Country-Ethnicity	Country-Ethnicity	Region-Ethnicity	Region-Ethnicity
Observations	4,476	4,462	4,462	4,462	29,176	29,176
R-squared	0.432	0.432	0.433	0.391	0.410	0.184

Notes: All regressions contain constants. Columns I-III are estimated using country-ethnicity and time fixed effects. Columns IV is estimated using ethnicity, country and time fixed effects. Columns V is estimated using region-ethnicity and time fixed effects. Columns VI is estimated using ethnicity, region, and time fixed effects. The following variables are used as controls: log of GDP per capita, log of population, shares of religions, number of active NGOs, budget of active NGOs, log of foreign aid public opinion about FGM, education, age, size of marriage market, share of polygamous households, fertility, dummy for anti-FGM legislature, state capacity, dummy for countries in turmoil, and rural area dummy. Robust clustered by country standard errors in round parentheses. Robust two-way clustered by country and ethnicity standard errors in square parentheses. *** p<0.01, ** p<0.05, * p<0.1

In order to control for political regime, I add a measure of democracy ($Democracy_{ct}$) in Column II since it can be an important omitted variable, one correlated with regime stability. The results for regime durability change insignificantly; democracy has negative while insignificant effect on the FGM share. To check whether the effect of the key variable has different effects in democracies and autocracies, I add an interaction term, ($Durability_{ct} \times Democracy_{ct}$), to catch the effect of durability for democracies. The results are presented in Column III where both $Durability_{ct}$ and the interaction of $Durability_{ct}$ and $Democracy_{ct}$ are negative. The variable $Durability_{ct}$ can be interpreted as the effect of change in durability for autocracies, while the interaction term adds the effect of change in durability for democratic countries. Thus, the collapse of a 12-year regime leads to an increase of 25.8% of the mean or 10.2% of the standard deviation of the share of circumcised women for nondemocratic countries. At the same time the collapse of a 12-year democratic regime leads to an increase of 35.4% of the standard deviation of the share of circumcised women, while insignificant on a country level clusterisation⁵⁵. The coefficient for $Democracy_{ct}$ changed sign and become

⁵³Since I only have 23 countries, my standard errors may be incorrect (Angrist and Pischke [2008]), although, according to Hansen [2007a] even 10 clusters should be enough. To completely alleviate this concern, following Cameron et al. [2008], I employ wild bootstrapping of the standard errors: the coefficient is still significant with p-value = 0.034.

⁵⁴In addition I cluster standard errors at the country-ethnicity, country-decade and two-way country-decade level, but these standard errors are smaller than those clustered at the country level, and I do not report them.

⁵⁵Adding the interaction terms of $Durability_{ct}$ with all other control variables jointly does not change the main result. Only

positive, indicating that only durable democracies contribute to the eradication of the practice of FGM, not simply the presence of a democracy per se. As democratic regimes depend more on the desires of politicians to be re-elected, they may be reluctant to impose any anti-FGM legislature that may be unpopular for some ethnic groups, which would thus be positively associated with higher FGM rates. Both *Durability_{ct}* and the interaction of *Durability_{ct}* and *Democracy_{ct}* coefficients, even if not significant in this very conservative specification, due to a small number of clusters, are highly significant with country-ethnicity or two-way country-decade clusterisation of errors thus indicating that the effect is still nonzero. Column IV, shows the results of employing ethnicity-dyad and country fixed effects instead of country-ethnicity effects as a robustness check; the results are similar to those in the previous columns.

In Column V, I exploit the fact that the surveys are representative at the regional level and aggregate all individual level data to the regional-ethnicity level. This approach provides an opportunity to use more conservative fixed effects, since region-ethnicity is a subset of country-ethnicity fixed effects, and a larger sample size should decrease standard errors. On the other hand, the variable of interest varies on the country level, thus I still cluster standard errors on the country-ethnicity level. In addition, there are several cases where the number of individuals within a region-ethnicity group is small, thus creating more noise in the dependent variable. Nevertheless, even in this demanding specification the results are consistent with those in the previous columns, such as the case in which the collapse of a 12-year regime leads to an increase of 21.5% in the mean or 8.6% in the standard deviation of the share of circumcised women for nondemocratic countries. Similar to Column IV, Column VI uses ethnicity and country fixed effects and shows that the results remain unchanged.

It is important to note that all controls have the expected signs and do not contradict the existing hypotheses of FGM persistence. Thus the coefficients of population and the size of the marriage market have negative signs (while insignificant for the size of the marriage market). Both variables are proxies for the size of the marriage market and we expect them to be negative, since, if the market is large, there are more chances for uncircumcised women to find husbands. At the same time, the average age of eligibility for circumcision of women is positive and significant, meaning that the prospect of FGM is more plausible the closer they are to marriage age. These results corroborate all of the hypotheses described in Mackie [1996]. Also, education and GDP per capita have negative effects on the FGM share, supporting the “modern values” hypothesis. Thus when wealth and education increase, FGM disappears, e.g. due to increased rights for women or an increased understanding of how barbaric this tradition is. The dummy for the share of rural population is positive (while insignificant), being in line with the “urban values” hypothesis proposed by Kennedy [1970] and the observations of UNI [2013]. The coefficients for terrorist activity, dummy for failed state and democracy have positive signs, while they are insignificant with country level clusterisation. Probably the most intriguing results are those of the religion controls. The only significant (negative) coefficient is for the share of the protestant population. The coefficient on the share of the Muslim population is negative, while the interaction of education and polygamy variables are marginally (10%) significant (negatively). However, adding these interactions all together makes them jointly insignificant.

insignificant⁵⁶. The number of NGOs and the flow of foreign aid are negative and significant, which is also consistent with our expectations.

Taken together, I documented that regime stability exhibits a strong negative correlation with FGM rates, and is thus consistent with the hypothesis. While the quasi-natural experiment created by national border partitioning allows us to rule out most of the endogeneity issues, a plausible concern can be raised about measurement error or unobserved heterogeneity in national institutions affecting both FGM prevalence and regime stability. For example, the existence of government health programs or NGO activities can be attributed to a stable political regime and lower FGM rates. Alternatively, higher state capacity can be associated with more stable regimes and lower FGM rates. In the next sections, I first use alternative measures of regime stability in order to check the robustness of the results and construct a forward-looking measure of regime durability that better represents people's expectations about how durable the political regime is. Second, I show that my results are robust to the exclusion of certain countries from the sample and are not driven by other sources of heterogeneity. Third, I show that regime stability has no effect on the health-related outcomes that can be caused by health programs and NGO activities. Finally, I use selection on observables to elicit the likelihood that the effect of regime stability is driven by unobservable country level heterogeneity.

4.4 Alternative Measures of Regime Durability

In this section, I test alternative measures of regime stability. For this purpose, I re-estimate Specification 4.2 by using alternative measures of regime durability. As the regime durability presented by Polity IV shows the number of years (cumulative) since the last substantive change in authority characteristics (defined as a 3-point change in the POLITY score), the logical way to create an alternative measure of durability is to use an alternative POLITY scores. Following Barron et al. [2014], I use the Przeworsky Democracy Index (PDI) (Cheibub et al. [2010], Przeworski et al. [2000]), Freedom House Polity Index (FHPI) (FH [2013]), data by Geddes et al. [2014] (GWF) and the X-POLITY score by Vreeland [2008] as alternative measures of the POLITY score. More information about the construction of the durability measure based on these indexes can be found in Appendix A.2.

In addition to the use of regime durability based on the changes in each of the POLITY scores - PDI, FHPI and GWF - I use a principal component analysis and extract the first principal component of the four durability measures based on those indexes. Then, I compute regime durability based on this first principal component of the democracy scores. Results of the baseline regression 4.2 for all alternative measures of regime durability are shown in Columns II-VI of Table 2 and are similar in terms of signs and magnitudes to those of the baseline specification, which I repeat in Column I for comparison⁵⁷.

⁵⁶Coefficients of the control variables are available upon request. Adding cumulative share of FGM in order to control for FGM prevalence does not change the results in any aggregate-level specification and it is not distinguishable from zero. I do not include it in the set of control variables presented in the Table 1 in order to avoid possible problems in the estimation of the dynamic panel in Table 6.

⁵⁷The coefficients in Column VI cannot be directly compared to those in Column I, as the main variable of interest is the first principle component of regime durability. I do not use a durability measure based on X-POLITY score when I compute

Nevertheless, there may be a concern that cumulative number of years is not a very precise proxy for people’s expectations concerning the durability of a regime. Let’s assume, that there are two dictators who have been in power for 30 years, and the first is 80 years old, while the second is 55 years old. It is highly likely that citizens will evaluate the durability of the regime in the country with the younger leader as being higher than the durability of the regime in the country with the older leader. To answer this and other possible concerns caused by unobserved factors that can influence people’s perception of regime durability, I construct an index of perception of regime durability:

$$length_{ct} = a + \varphi Durability_{ct} + \Gamma X_{ct} + \mu_c + \lambda_t + u_{ct}, \quad (4.3)$$

where $length_{ct}$ is the number of years that a political regime existing at time t in country c has lasted after the last 3-point change in the POLITY score⁵⁸; X_{ct} is a set of country level controls, such as the gender, age, and squared age of a leader, the dummy for the type of political regime, GDP, population, coups d’état, type of authoritarian regime, dummy for type of leader’s entry into office, etc.; μ_c and λ_t are country- and year fixed effects. The results for several specifications of the regression 4.3 are presented in Table 13. I use specification in Column IV (with higher adjusted R^2) to compute Index of Regime Durability Perception (IRDP) – measure of expectation of how long particular regime will last: $IRDP_{ct} = length_{ct}$.

Table 2: Alternative Measures of Regime Durability

VARIABLES	I	II	III	IV	V	VI	VII
	Dependent Variable: Share of circumcised women						
Measure of durability	Polity	PDI	Xpolity	FHPI	GWF	PCA	IRDP
Durability _{ct}	-0.0622** (0.0246)	-0.0468* (0.0223)	-0.0618* (0.0307)	-0.0613*** (0.0197)	-0.0421* (0.0213)	-0.254* (0.121)	-0.0763*** (0.0239)
Democracy _{ct}	0.0721 (1.059)	1.278 (1.524)	0.521 (1.099)	0.179 (1.461)	0.663 (1.350)	-2.711 (2.936)	-1.131 (1.321)
Durability _{ct} × Democracy _{ct}	-0.153 (0.209)	-0.232 (0.255)	-1.726 (1.806)	-0.0159 (0.0627)	-0.197 (0.246)	-1.856 (1.546)	-0.0201 (0.146)
Controls and Fixed Effects	✓	✓	✓	✓	✓	✓	✓
Observations	4,462	3,597	4,462	3,597	3,597	3,597	4,445
R-squared	0.433	0.456	0.423	0.454	0.455	0.456	0.433

Notes: All regressions contain constants. Columns I-VII are estimated using country-ethnicity and time fixed effects. The following variables are used as controls: log of GDP per capita, log of population, shares of religions, number of active NGOs, budget of active NGOs, log of foreign aid public opinion about FGM, education, age, size of marriage market, share of polygamous households, fertility, dummy for anti-FGM legislature, state capacity, dummy for countries in turmoil, and rural area dummy. Results hold for regional level of aggregation and use of fixed effects on ethnicity dyads. Robust clustered by country standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Results of the baseline regression 4.2 with IRDP are shown in Column VII. The coefficient is 22.7% larger in magnitude than that of the coefficient of the baseline regime durability measure in Column I, which principal components as it is highly correlated with the POLITY score; however, if I use it, the results hold.

⁵⁸ $length_{ct} = \max_{t \in \{s_0, \dots, s^t\}} Durability_{c,t-s_0}; Durability_{c,t+s} = 0$ with such s_0 and s^t that $Durability_{c,t-s} = Durability_{c,t+s} = 0$. All political regimes that still exist (and therefore, those whose collapse we can’t predict) are dropped from the sample.

is consistent with the attenuation bias caused by measurement error concerns: a decrease of one standard deviation in regime durability increases the share of circumcised women by 31.6% of its mean or by 12.6% of its standard deviation⁵⁹.

4.5 Robustness Checks

In this section I will address additional robustness checks to corroborate my results in Section 4, which show that regime stability has a causal effect on the persistence and decay of traditional practices.

First, in Table 3 I show that the results in Section 4.3 are not driven by a statistical artifact in some countries. Column I contains results of the same regression specification as Column III in Table 1, and these figures are provided for comparison. To show that results are not driven by countries outside the African continent, I drop Iraq and Yemen in Column II⁶⁰. The negative effect of regime durability doesn't change appreciably and remains significant. In Column III, I drop all countries belonging to the Middle East and North Africa; while the magnitude drops, it remains significant. Further, in Columns IV and V, I restrict the sample to countries that at some point imposed anti-FGM campaigns and those with anti-FGM campaigns and a substantial degree of country-level FGM prevalence; however, the coefficient of interest does not differ statistically between the two columns. The reason is that FGM is a cultural norm that persists in ethnic groups. Therefore, in a country with an overall low rate of FGM, few ethnic groups would have high FGM prevalence and thus be subject to the effect of regime stability through expectations about the continuation of anti-FGM campaigns. To take this into account, I drop all of the observations with FGM rates of zero in Column VI. The effect of regime durability is significant, though smaller in magnitude, while at the same time the effect of regime stability in democratic countries is extremely large and significant. This is consistent on an intuitive level: first, the effect of regime stability overall is much more substantial for those who frequently practice FGM than those who only occasionally practice it. Second, weak democratic regimes (i.e. those with POLITY scores closer to zero) are more prone to coups and instability; therefore, people's expectations about regime stability will be more important if a democracy is strong than if it is weak. In Column VII, I repeat the same specification as in Column IV but with the constructed measure of regime durability (IRDP). As this measure of regime durability better represents people's expectations about how stable the political regime is and only takes into account a subsample of countries where regime durability should have an effect due to active anti-FGM campaigns, I take results of this column as the main results of the paper. The coefficient is larger than the one shown in Column VII of Table 2; a decrease in one standard deviation in regime durability increases the share of circumcised women by 35% of its mean or by 14.0% of its standard deviation.

Now, I return to the main hypothesis, which states that higher regime stability decreases FGM rates conditional on the existence of active anti-FGM campaigns. We have already shown that on the whole, in

⁵⁹To be more conservative in the following robustness sections I use Polity IV measure of regime durability instead of IRDP as its coefficient magnitude is smaller. Although all results presented in the paper holds with any measure of regime durability.

⁶⁰Yemen is counted as two countries (North and South Yemen) before 1990.

the sample and subsamples of countries where anti-FGM campaigns are imposed, regime stability negatively affects FGM rates. In the last column, I keep the sample of countries that do not have active anti-FGM campaigns or that exhibit de facto support of FGM. The effect of regime durability becomes insignificant, while the interaction of durability and democracy is positive and significant, thus corroborating the hypothesis.

Table 3: Impact of Regime Durability on FGM: Subsample I

VARIABLES	I	III	III	IV	V	VI	VII	VIII
	Dependent Variable: Share of circumcised women							
Durability _{ct}	-0.0622** (0.0246)	-0.0659** (0.0263)	-0.0419* (0.0212)	-0.0540** (0.0228)	-0.0457* (0.0235)	-0.0337* (0.0186)	-0.0849*** (0.0209)	0.0230 (0.0856)
Democracy _{ct}	0.0721 (1.059)	0.0655 (1.085)	0.262 (1.005)	0.269 (0.938)	0.780 (1.529)	0.892 (1.149)	-0.782 (0.870)	-0.664 (5.714)
Durability _{ct} × Democracy _{ct}	-0.153 (0.209)	-0.150 (0.213)	-0.258 (0.194)	-0.361 (0.250)	-0.348 (0.294)	-0.436* (0.212)	-0.208 (0.139)	0.147 (0.875)
Controls	✓	✓	✓	✓	✓	✓	✓	✓
Fixed effects	✓	✓	✓	✓	✓	✓	✓	✓
Sample	All	only Africa	not MENA	anti-FGM	anti-FGM & high FGM rates	non-zero FGM rates	w anti-FGM IRDP	w/o anti-FGM
Observations	4,462	4,358	4,103	3,837	3,168	3,255	3,837	621
Number of clusters	23	20	18	17	15	23	17	6
R-squared	0.433	0.432	0.401	0.227	0.221	0.351	0.228	0.341

Notes: All regressions contain constants. Columns I-VIII are estimated using country-ethnicity and time fixed effects. The following variables are used as controls: log of GDP per capita, log of population, shares of religions, number of active NGOs, budget of active NGOs, log of foreign aid public opinion about FGM, education, age, size of marriage market, share of polygamous households, fertility, dummy for anti-FGM legislature, state capacity, dummy for countries in turmoil, and rural area dummy. Results hold for regional level of aggregation and use of fixed effects on ethnicity dyads. Robust clustered by country standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

The next concern is that ethnic groups that are unique to certain countries do not contribute to the identification of the effect of regime stability. In Table 4 I provide the results of a regression similar to that in Column II of the Table 1 but with the sample limited to ethnic groups that live in more than one country. The negative effect remains, while the significance falls slightly.

Another concern arises if the marriage market is beyond locality, and thus people can intermarry between ethnic groups. This statement can be true for people living in urban areas, where the marriage market is larger, and ethnic fractionalization can be high. If the possibility to marry someone who is not from their ethnic group exists, then if individuals previously decided not to abandon tradition because of the decreased chances of finding a match, they now have a better chance of finding one among people of other ethnicities who possibly don't demand circumcision. This will lead to an attenuation bias in my coefficient of interest. At the same time, anthropologists and sociologists (Mackie and LeJeune [2009], UNI [2013]) point out that marriage markets in African countries are very narrow, and are limited not only by ethnic group identity, but also by smaller regional tribal identity or even kinship⁶¹. In this case, women in urban areas will have an even smaller pool of marriage partners, since they will be surrounded by people from different ethnic groups that cannot be considered in the marriage market, and will have less eligible men from their rural

⁶¹It is very common that marriage markets are bounded by the size of the family, since men marry their cousins because they have more information about family members than women who are not from their families. In addition, in patriarchal societies, it is often forbidden to marry cousins from the father's side but not from the mother's side, since they do not count blood ties from the mother's line.

homelands with whom they could potentially marry. To take this concern into account, in Columns III and IV of Table 4 run specification 4.2 on a subsample of individuals in rural and urban areas correspondingly. Both coefficients of interest are significant, and the effect of regime stability is more than twice as large for the urban subsample, thus supporting the view of anthropologists and sociologist⁶².

Another important source of bias can originate from the fact that women who support FGM may be biased. Thus anti-FGM campaigns can affect only those women who think that FGM should stop but still do not abandon the tradition due to social pressure. In Columns V and VI, I run specification 4.2 on the subsample of individuals who support FGM and who do not support FGM, respectively. While the coefficient of regime durability is negative in both cases, it is significant only for the subsample of women who oppose FGM. This result is intuitive, since women who wish FGM to be abolished will do circumcise their daughters if they are sure that the anti-FGM campaigns will continue, and thus more willingly commit not to circumcise daughters if political regime stability is higher. Women who think that the tradition of FGM should continue are less willing to abolish it, and possibly, while they do continue to circumcise their daughter, they also don't want them to end up in a marriage market that does not favour circumcison, which would explain the observed negative sign of the coefficient.

Table 4: Impact of Regime Durability on FGM: Subsamples II

VARIABLES	I	II	III	IV	V	VI
	Dependent Variable: Share of circumcised Women					
Durability _{ct}	-0.0622** (0.0246)	-0.0624* (0.0318)	-0.0364* (0.0180)	-0.0961* (0.0486)	-0.0130 (0.0217)	-0.0750** (0.0342)
Democracy _{ct}	0.0721 (1.059)	1.027 (1.210)	0.773 (1.081)	-0.0568 (1.359)	0.225 (0.791)	0.354 (1.260)
Durability _{ct} ×Democracy _{ct}	-0.153 (0.209)	-0.230 (0.294)	-0.249 (0.269)	-0.154 (0.243)	-0.0116 (0.164)	-0.274 (0.258)
Controls	✓	✓	✓	✓	✓	✓
Fixed effects	✓	✓	✓	✓	✓	✓
Sample	All	Partitioned Ethnicities	Rural	Urban	Support FGM	Oppose FGM
Observations	4,462	1,578	4,276	4,075	4,196	4,204
R-squared	0.433	0.364	0.521	0.445	0.466	0.351

Notes: All regressions contain constants. Columns I-VI are estimated using country-ethnicity and time fixed effects. The following variables are used as controls: log of GDP per capita, log of population, shares of religions, number of active NGOs, budget of active NGOs, log of foreign aid public opinion about FGM, education, age, size of marriage market, share of polygamous households, fertility, dummy for anti-FGM legislature, state capacity, dummy for countries in turmoil, and rural area dummy. Results hold for regional level of aggregation and use of fixed effects on ethnicity dyads. Robust clustered by country standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

In case regime stability is associated with some health-related policy programs and thus also has an indirect effect on FGM, in Table 5 I show that regime durability does not affect infant mortality or malaria deaths. Thus the channel works only through opposition to traditional practices and not through health reforms. To ensure regime durability does not capture the effect of state capacity, which allows NGOs to work better or whether the effect is simply the result of the presence of NGOs, I show no significant effect of

⁶²Another alternative explanation, can be that FGM rates in rural area are close to zero, thus the effect of regime stability is smaller due to the “floor” effect. However, FGM rates in rural area are not close to zero, thus ruling out this hypothesis.

regime durability on NGO-related health outcomes such as HIV prevalence and condom use. In addition, I show that regime durability has no effect on the traditional practice of polygamy. While polygamy, like FGM, is an ethnic group trait, there are no significant anti-polygamy campaigns to oppose it, as is the case with FGM⁶³. This is why we expect regime durability to have no effect on traditional practice of polygamy⁶⁴. The results provided in Table 5 indicate no effect of regime durability on polygamy. Finally, if regime stability decreases fertility it makes it easier for man to control woman and thus decrease the need of FGM as a anti-promiscuity mechanism. In last column, I show no significant effect of regime stability on fertility rate, however, the interaction of regime durability and democracy is positive and marginally significant.

In the case of autocorrelation of the dependent variable, it may be important to control the lagged dependent variable on the right-hand side of equation 4.2. However, if a lagged dependent variable is correlated with the unobserved panel-level effects, my estimates will be inconsistent. The logical choice to alleviate this concern is to use the Blundell-Bond estimator (Blundell and Bond [1998])⁶⁵. The result is shown in Column I of Table 6 and is consistent with other estimates.

Table 5: Regime Stability and Health Outcomes

VARIABLES	Infant Mortality	HIV	Life Expectancy	Polygamy	Fertility
Durability _{ct}	0.000717 (0.000970)	0.00277 (0.00861)	0.000319 (0.000480)	0.000364 (0.000436)	-0.000653 (0.000537)
Democracy _{ct}	0.00579 (0.0338)	0.912 (0.773)	0.0185 (0.0223)	0.0443* (0.0225)	-0.0519* (0.0287)
Durability _{ct} ×Democracy _{ct}	-0.00501 (0.00541)	0.00315 (0.0793)	0.000713 (0.00245)	-0.00319 (0.00303)	0.00825* (0.00429)
Controls	✓	✓	✓	✓	✓
Fixed Effects	✓	✓	✓	✓	✓
Observations	4,462	3,132	4,462	4,462	4,462
R-squared	0.940	0.926	0.933	0.850	0.889

Notes: All regressions contain constants. Columns I-V are estimated using country-ethnicity and time fixed effects. The following variables are used as controls: log of GDP per capita, log of population, shares of religions, number of active NGOs, budget of active NGOs, log of foreign aid public opinion about FGM, education, age, size of marriage market, share of polygamous households, fertility, dummy for anti-FGM legislature, state capacity, dummy for countries in turmoil, and rural area dummy. Results hold for regional level of aggregation and use of fixed effects on ethnicity dyads. The dependent variable in Column I (*InfantMortality_{ct}*) is a number of deaths per 1000 infants. The dependent variable in Column II is $HIV_{ct} = \ln(1 + \text{Prevalence of HIV, \%})$. Polygamy is a share of polygamous households. Fertility is a total number of births per woman. Robust clustered by country standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

In Columns II - IV, I exploit individual level data. By exploiting individual level data, I am able to take into account different values of regime stability throughout women’s lifetimes. I provide empirical specification, aiming to identify the probability that a woman will be circumcised due to changes in regime durability. I estimate the Cox proportional hazard model, where the length of time before the “failure event” (FGM in this specification) is considered in the estimation using a baseline hazard function. It uses individual

⁶³While this question goes beyond the scope of this paper, it is partially due to the fact that it does no direct harm to the health of women and is allowed by Muslim tradition.

⁶⁴Another reason it is important to check the effect of regime durability on polygamy is that polygamy is an important factor in the persistence of FGM. Thus regime durability might have an indirect effect on FGM through polygamy.

⁶⁵For this I assume that there are no autocorrelations in the idiosyncratic errors and that the panel-level effects are uncorrelated with the first difference of the first observation of the dependent variable (*fgm_{ect}*).

level data that is organized in person-year panel data⁶⁶. As FGM is permanent, we can consider women's states of the world as a Markov chain, where "no FGM" is a transitional state, and "FGM" is an absorbing state⁶⁷. The duration of interest for each woman i is the time between t_0 , when she becomes eligible for circumcision, and t_T , the age when she has either undergone circumcision or has become ineligible due to age. In this case, if a woman is not circumcised, she contributes $t_T - t_0$ number of observations, while if she is circumcised at year s , she contributes $s - t_0$ observations.

Table 6: Impact of Regime Durability on FGM: Continuation

VARIABLES	I	II	III	IV
	Dependent Variable:			
	Share of circumcised Women	Dummy if Woman is circumcised		Daughter is circumcised
	Blundell-Bond	Cox P-H-M	Conditional Logit	LPM
$Durability_{ct}$	-0.110*** (0.0185)	-0.00316* (0.00163)	0.943 (0.054)	-0.00142** (0.000653)
$Democracy_{ct}$	-0.00871 (0.0994)	-0.00600 (0.0813)	1.13*** (0.025)	-0.260** (0.0549)
$Durability_{ct} \times Democracy_{ct}$	0.838 (0.520)	-0.0261* (0.0134)	0.1027*** (0.045)	-0.00330 (0.0285)
$fgm_{ect} L1$	-0.09415*** (0.01865)			
$Durability_{ct} L1$	0.03455* (0.01776)			
$Durability_{ct} \times Democracy_{ct} L1$	-0.0519 (0.0594)			
Country level controls	✓	✓	✓	✓
Individual level controls	✓	✓	×	✓
Fixed effects	✓	✓	Individual	Mother
Sample	All	All	All Switchers	Daughter Line Numbers
Aggregation level	Country-Ethnicity	Individual	Individual	Individual
Observations	4,438	3,388,649	1,709,261	33,457
R-squared			0.936	0.657

Notes: All regressions contain constants. I use country-ethnicity and time fixed effects in Columns I. Column I is estimated using two-step Blundell-Bond Dynamic Panel estimation. Lagged differences of fgm_{ect} , $Durability_{ct}$, and $Durability_{ct} \times Democracy_{ct}$ are taken as instruments. The following variables are used as controls: log of GDP per capita, log of population, shares of religions, number of active NGOs, budget of active NGOs, log of foreign aid public opinion about FGM, education, age, size of marriage market, share of polygamous households, fertility, dummy for anti-FGM legislature, state capacity, dummy for countries in turmoil, and rural area dummy. In addition, $Durability_{ct} L2$ and $Durability_{ct} \times Democracy_{ct} L2$ are used as controls in Column I, and household assets, cubic spline are used as controls in Column II. Only country level controls are used in Column III. Column II is estimated using the Cox proportional Hazard model and contains marginal effects. Column III is estimated using conditional logit and contains odds ratios. Column IV is estimated using OLS with mother fixed effects. Robust GMM standard errors in parentheses for Column I. Robust clustered by sample standard errors in parentheses for Columns II and III. Robust clustered by country standard errors in parentheses for Column IV. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

I present the Cox duration model in the Column II. Durability of the regime and the interaction term of democracy and regime durability are both negative and significant, thus corroborating my hypothesis. Thus, in a 12-year-old autocratic regime, $Durability_{ct}$ leads to a 3.8% decrease in the probability of women

⁶⁶I do not use a linear probability model or probit due to obvious autocorrelation of the observation for the same woman in different years of her life. Nevertheless, these results are consistent with other results and can be shown upon request.

⁶⁷A similar approach is implemented in studies about male circumcision (Venkataramani and Maughan-Brown [2013]), death\terminal cancer (Honoré and Lleras-Muney [2006]), and HIV (Burke et al. [2015]).

being circumcised in any given year of woman's life.

In addition to region, ethnicity, religion and year fixed effects, thanks to the thoroughness of the questionnaire there are a number of variables that can take into account most of the unobserved heterogeneity concerns. In order to control for variables that might correlate with regime durability, in addition to the controls for the baseline specification 4.2 I add dummies for households assets, such as land, or type of roof and floor⁶⁸. These variables should catch the effects of institutions and regime stability through possible land ownership legislation or assets expropriation.

Clearly, use of individual level data will suffer from serial correlation due to the nature of FGM tradition. Because observations are likely to be temporally correlated due to duration dependence or possible nonlinearity of the trend, the use of traditional techniques poses problems. To address this, following Beck et al. [1998] I include a natural cubic spline function of the number of years a female has been without FGM in all individual level estimations.

To better control for the unobservable heterogeneity of individual data, in Column III I present an alternative estimation method using conditional logit estimation (Chamberlain [1980]). Conditional logit can provide unbiased estimates of the parameters, but only for the sub-sample of individuals who were circumcised during the observed period of time. The odds ratio for regime and the interaction of regime durability and democracy are below unity; however, only the interaction of regime durability and democracy is statistically significant, such as a one-year increase in regime durability conditional the on average value of democracy (0.46 for this subsample) leads to a 41.9% increase in the odds of being circumcised during the lifetime. The effect is much stronger, as here we consider only the sample of circumcised women.

Finally, following Kudamatsu [2012], in Column IV I use those few surveys that have information concerning all of the circumcised and uncircumcised daughters women have⁶⁹. This allows me to take into account the mother's fixed effect. By using as a dependent variable dummy to describe whether a given woman circumcised her daughter in a given year, and controlling for rich set of institutional and individual control variables, I am able to estimate the effect of regime stability, as it changes over time, affects women's decisions to circumcise their daughters. Again, regime durability is negative and significant, (for instance, one standard deviation in regime durability leads to 1.7% decrease in probability of being circumcised). Because it is based on a subsample of countries, the magnitude of the estimated coefficient differs from the results based on the full sample; these results, however, are consistent with my hypothesis⁷⁰.

Despite the rich set of control variables, it may be the case that some unobserved heterogeneity still biases the effect of regime stability if omitted variables are correlated with both FGM prevalence and regime

⁶⁸Since I use person-year panel data constructed from the surveys which provide a snapshot of the household's information in a given year but not the years of life in which women were eligible for circumcision, use of a wealth index at the time of the survey can be misleading. At the same time, assets such as land or houses are often hereditary and thus contain less measurement error since they do not change appreciably over time.

⁶⁹This data is available from the following DHS surveys: Egypt 2014, Mali 2012-2013, Nigeria 2013, Senegal 2010-2011, Senegal 2014, and Togo 2013-2014.

⁷⁰Senegal and Togo have very low FGM rates. Egypt is different in the sense that, despite the presence of an anti-FGM campaign, the costs of female circumcision are much lower than in other countries, since the procedure is performed in hospitals rather than at home. In Mali there is an anti-FGM campaign that is conducted by an NGO, but the government doesn't impose anti-FGM legislation.

durability. In order to alleviate the concern about the effect of unobservables, in the following subsection I follow Altonji et al. [2005], Bellows and Miguel [2009] by evaluating the likelihood that the coefficient estimates are biased by omitted variables.

This approach is aimed at measuring the strength of the likely bias caused by a possible omitted variable. To do this, I estimate the coefficient for regime durability in two regressions, one with a full set of controls ($\hat{\beta}^{UR}$) (I use Column III of the Table 1) and one which is restricted and uses fewer or no controls. ($\hat{\beta}^R$). We are interested in the coefficient of proportionality $\frac{\hat{\beta}^{UR}}{\hat{\beta}^R - \hat{\beta}^{UR}}$, which basically shows how much larger the effect of unobservables should be in order to explain the coefficient of interest in unrestricted regression. On one hand, a larger $\hat{\beta}^{UR}$ in the numerator means that the effect of the omitted variable should also be larger in order to explain it away. On the other hand, the smaller the difference seen in $\hat{\beta}^R - \hat{\beta}^{UR}$, the smaller the effect of regime stability affected by the selection on observables, and thus the selection in unobservables should be larger as well. To sum up, the larger the ratio, the greater the effect of omitted variables should be in order to bias my results, thus making it less likely to happen.

Table 7: Using Selection on Observables to Assess the Bias from Unobservables

Panel A			
Controls in the restricted set	DURABILITY		
	(I) Polity IV	(II) PCA	(III) IRDP
None	-4.85	-11.45	-3.11
Democracy, terrorist severity	-5.37	-18.16	-4.59
Religion, polygamy, marriage market size, attitude toward FGM	-5.41	-6.23	-2.56
Panel P			
Controls in the restricted set	DURABILITY		
	(I) Polity IV	(II) PCA	(III) IRDP
None	1.615	1.109	1.105
R_{max}	0.56	0.59	0.56

Notes: Regime durability in Column I is a variable Durable from the Polity IV; durability in Column II is computed as in the first principal component of the polity scores; durability in Column III is an Index of Regime Durability Perception (IRDP). See Section 4.4 for more information about PCA and IRDP. Each cell of the Panel A reports ratios based on the coefficient for measure of regime durability from two regressions with Specification 4.2. The first regression includes the "restricted set" of control variables and results in coefficient $\hat{\beta}^R$. The second includes the "full set" of controls and results in the coefficient $\hat{\beta}^{UR}$. In both regressions, the sample sizes are the same and fixed effects are included. The reported ratio is calculated as follows: $\frac{\hat{\beta}^{UR}}{\hat{\beta}^R - \hat{\beta}^{UR}}$. First row in the Panel B reports the coefficient of proportionality δ computed by using psacalc STATA code Oster [2015]. The R_{max} is computed as $1.3R^{UR}$, where R^{UR} is a R-squared of the regression with the full set of controls. See Table 1 for a description of the full set of controls.

I consider three set of controls for the restricted regression: one without controls; one with controls for religion, polygamy and marriage market size; and one with controls for GDP per capita, population and share of rural population. In addition to the baseline specification with the Polity IV measure of regime durability, I use all other measures provided in Section 4.4. The ratios for all measures of regime stability are provided in Table 7. As can be seen, the range of the ratios is between 2.6 and 18.2, with mean and median equal to 6.8 and 5.4, respectively. This means that, in order to claim that the OLS estimate of the effect of regime stability is fully driven by omitted variables, selection on unobservables would have to be at

least 2.6 times greater than selection on observables and, on average, they would have to be over 6.8 times greater to explain away the full estimated effect. In other words, it is very unlikely that the estimated effect of the regime stability is fully driven by unobservables.

Nevertheless, the approach above can result in too optimistic values of the coefficient of proportionality as it was shown in Oster [2015]. In order to alleviate this concern I employ the procedure proposed in Oster [2015] in which she relaxes the assumption of equal selection and replace it with a not necessarily equal proportional selection relationship. Her approach is similar to the one developed by Altonji et al. [2005] in a way that she argues that unobservables should not be more important than the observables in explaining the treatment. At the same time, she suggests to adopt the conservative bounding value for the R-squared ($\overline{R_{max}}$) from the hypothetical regression with all observable and unobservables controls all together, and find the value of the coefficient of proportionality (δ) for which the estimator would produce a treatment effect of zero. Thus, intuitively, the coefficient of interest can be expressed as a function of δ and R-squared movements ($\beta = \beta(\delta, \overline{R_{max}})$), and by setting $\beta = 0$ we can calculate how big should be the effect of unobservables δ given $\overline{R_{max}}$. This approach is better then the one provided in Table 7 as it assumes that unobservables explain as much as observables ($\overline{R_{max}} = R^{UR} + (R^{UR} - R^R)$) and due to small changes in R-squared after adding control variables, $\overline{R_{max}}$ can be too low thus resulting in bigger values of coefficient of proportionality δ .

Results of the robustness test are shown in Panel B of Table 7. Similarly to Panel A I show results for three measures of regime durability, however, this time I consider only specification with no control variables and report δ for different values of $\overline{R_{max}}$. Following Oster [2015] I use value of $\overline{R_{max}} = 1.3R^{UR}$. For the baseline specification in Table 1 $R^{UR} = 0.43$, thus $\overline{R_{max}} = 0.56$ ⁷¹. As can be seen, the value of δ for Polity IV regime durability measure suggests that the unobservables would need to be 1.6 times as important as the observables to completely explain away the effect of political regime stability. Similarly, all other values of δ are above 1, thus suggesting that my results are robust.

5 Alternative Identification Strategy: Exogenous Shocks of Regime Durability

In the previous section, my results based on geographical identification provide support for the theory that political regime stability affects FGM rates, especially in democratic regimes. Nevertheless, despite the strong negative correlation that persists regardless of the ways in which I manipulate the data - using various model specifications, a rich battery of controls, and different subsamples in addition to exploiting individual level data - one can conclude that the effect of regime stability on FGM prevalence in ethnic groups can be bundled with some other nationwide factor that is not taken into account by fixed effects or control variables. In this section, I pursue a number of strategies, aiming to ensure that the correlation

⁷¹It is important to note, that $\overline{R_{max}} > 0.55$ for all columns. According to UNI [2013], ethnicity explains up to 55% of the variation in FGM, and my observation is on country-ethnicity level, thus making it a logical choice for the appropriate $\overline{R_{max}}$.

between regime durability and FGM rates is in fact causal. Following Jones and Olken [2005] I use exogenous shocks to regime durability arising from the deaths of national leader's due natural causes, as such deaths are random and are not likely to correlate with possible omitted variables. This strategy alleviates the bundle treatment concern, since I use within nation variation of regime durability induced by leaders' deaths from natural causes.⁷²

I use the Archigos 4.0 database⁷³, which contains information on all world leaders between 1875 and 2015, and choose those leaders who died in office. This methodology was used for the first time in Jones and Olken [2005], who examined whether leaders mattered for economic growth. In this paper, I use a leader's death due to natural causes as an exogenous shock of regime stability. I use 11 cases of leader's death (see the list in Table 15).

I consider the regression similar to Jones and Olken [2005]; however, instead of GDP growth rate, I use the growth rate in women who are circumcised:

$$\Delta fgm_{ct} = \alpha PRE_z + \beta POST_z + v_c + \lambda_t + E_{ct}, \quad (5.1)$$

where Δfgm_{ct} is the change in share of circumcised women in country c in year t . Index c is an index of a country, index t is an index of time, while z is an index of leader death. For this Specification I create a dummy variable for 5 years before the death of the leader (PRE_z), and a dummy for 5 years after the death of the leader ($POST_z$). Country and time fixed effects are presented with v_c and λ_t .

Then I use the Wald test used by Jones and Olken [2005]:

$$J = \frac{1}{Z} \sum_{i=1}^Z \frac{(POST_i - PRE_i)^2}{2\hat{\sigma}_{E_i}^2 T}, \quad (5.2)$$

Where Z is the number of dead leaders, $\hat{\sigma}_{E_i}$ is an estimate of $\sigma_{E_i}^2$ for country i ; T is number of year before and after death of leader, and $POST_i - PRE_i$ is a change in growth of women who were circumcised in country i . Under the null hypothesis (that leaders do not matter) and the i.i.d. errors assumption,

⁷²In addition to these, in Appendix A.3 and A.4 I use two additional identification strategies. First, I use the artificial division of the *Mandinka* ethnic group between Côte d'Ivoire and Guinea, countries similar in most institutional aspects except regime stability in 1998, and rich socio-economic and demographic individual-level data from DHS to evaluate the effect of regime durability by using propensity score matching of women on either side of the border. Higher regime durability is associated with at least a 17.5% decrease in the probability of being circumcised for women in Cote d'Ivoire when compared to women in Guinea; this result is similar to the prediction of the individual level specification in Column V of the Table 6, which predicts a 23.3% decrease in the probability of being circumcised for the given difference in regime durability. Second, I employ terrain ruggedness as an instrument and compute IV estimates of the effect of regime stability on women's decisions to circumcise their daughter. Using a cross-section of individuals I employ IV strategy by using regional variation in the ruggedness of the terrain to ensure that regime stability has a causal effect on the decisions women make about their daughters' circumcisions. As harsh rugged terrain makes it easy to hide, similar to the story developed in Nunn and Puga [2012], ruggedness may also conceal the presence of illegal armed groups that disrupt states and directly affect regime stability (Fearon and Laitin [2003]). This approach, allows me to estimate LATE and address measurement error and unobserved heterogeneity issues while abandoning panel level estimation due to the cross-sectional nature of the instrument.

⁷³<http://www.rochester.edu/college/faculty/hgoemans/data.htm>

$Z \times J \sim \chi^2(Z)$. In comparison with Jones and Olken [2005] who were only interested in the effect of leaders on the economic outcome, disregarding its sign in the case of FGM, we expect and observe $\beta > a$.

The results are presented in Table 8; thus I reject the null hypothesis. In addition to $t = 5$, I create tests for longer periods of time, which are considered as a treatment due to sudden death of a leader. With a 6-year period, the results become slightly stronger while at 7-years, the effect decreases, although it is still significant. As a placebo test, I perform the same test assuming the death of the leader occurred 5 and 6 years before their actual death and show that the effect on FGM rate is insignificant. Finally, in addition to the leaders who died due to natural causes, I add leaders who resigned due to health reasons and show that the results are robust to inclusion of additional leaders⁷⁴.

Table 8: Do Leaders Matter?

	Natural Death		Natural Death or Resignation	
	J-statistics	Wald P-value	J-statistics	Wald P-value
Treatment timings				
t	1.948	0.029**	1.675	0.058*
$t + 1$	1.636	0.081*	1.425	0.138
$t + 2$	1.398	0.165	1.367	0.166
Control timings				
$t - 5$	0.855	0.554	0.951	0.485
$t - 6$	0.328	0.955	0.320	0.976
Number of leaders	11		13	
Number of observations	1,175		1,175	

Notes: Under the H_0 , FGM rates are similar before and after randomly timed leader deaths. P-values indicate the probability that the H_0 is true. The J-statistic is the test statistic described in equation 5.2: under the H_0 , $J = 1$, and higher values of J correspond to greater likelihood that the null hypothesis is false. P-values in columns 2 and 4 are from Chi-squared tests, where the POST and PRE dummies are estimated via OLS allowing for country-specific AR(1) process. Estimation using alternative error structures for the Wald test produce similar or stronger results. The regressions reported in this table compare five-year average changes in FGM rates before and after leader deaths. The treatment timing t considers changes in FGM rates in the five-year period prior to the transition year with changes in FGM rates in the five-year period after the transition year. The treatment timings $t + 1$ and $t + 2$ shift the POST period forward one and two years, respectively. The control timings shift both PRE and POST dummies five and six years backward in time. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Nevertheless, my identification will fail if death of leader due to natural causes will affect FGM prevalence through other factors. As was shown in Jones and Olken [2005] it can affect the GDP growth, however, short term income shock shouldn't influence the decision for daughter's circumcision, since it is done long before the her marriage can smooth the income. More important, if leader's death can affect health program and other cultural norms, such as polygamy. To alleviate this concern, in Table 14 I show that national leader's deaths have no effect on HIV prevalence, life expectancy, polygamy or fertility⁷⁵. At the same time, they have positive effect on infant mortality, that can be possible explained by the deterioration of health care programs. However, it can be also a consequence of increased FGM rates, as 20% of all circumcision cases occur within the first year of girls life thus all deaths due to unsuccessful FGM will contribute to infant

⁷⁴Results are even stronger if I omit leaders with less than 2 years of tenure. All leaders in my sample are autocrats according to Polity IV, and I cannot check if the results are different for democratic countries.

⁷⁵The effect on fertility is marginally significant for $t = 5$, however, insignificant for other values of t and inclusion of leaders who resigned due to health problems.

mortality. Nevertheless, as HIV prevalence is not affected by national leaders deaths I consider that FGM cannot be affected through the changes related to the health policies.

Despite the small number of national leaders who died due to natural causes, this simple test provides additional support for the regime stability hypothesis.

6 Concluding Remarks

In this paper I describe the eradication of harmful cultural traditions and norms using the logic of global games and test the importance of institutional factors such as political regime stability. This article contributes to the research on national institutions by opening another channel to examine the ways in which institutions can affect economic development; it also contributes to the literature on the evolution and development of cultural norms and traditions by examining the delicate interplay between formal institutions and ethnic traits. I show that ethnic groups living in countries with more stable regimes abandon FGM faster than those in less stable regimes, conditional on the governments of these countries pursuing anti-FGM policy. Moreover, I explore the effect of regime stability on FGM as a cultural norm and conclude that expectation about the future is indeed the channel through which national institutions and regime stability affect FGM prevalence.

I have attempted to describe harmful cultural traditions such as FGM in terms of a rational mechanism - the need for better marriage market outcomes for girls - and have formulated the hypothesis by taking into account factors that can decrease the number of FGM cases and thus contribute to the abolition of this tradition. In addition to the existing hypotheses on the persistence of traditional health practices, I provide institutional explanations for a factor important in influencing the persistence or abolition of these practices - regime stability. When people expect that a political regime that is attempting to eradicate the practice of FGM will be long-lasting and that it will continue in its efforts to eradicate FGM, the practice of female circumcision ceases. However, if a regime is weak, people expect that it will be unable to ensure a program of abolition. In this case, uncertainty influences people's choices to circumcise their daughters in order to improve their chances in the marriage market.

I follow Alesina et al. [2011] and Michalopoulos and Papaioannou [2014] by taking advantage of the fact that the borders of contemporary African states were arbitrarily drawn by the colonial administration in Europe, thus partitioning numerous ethnic groups in different countries and subjecting identical cultures residing in geographically homogeneous territories to different country level institutions, and I am able to identify the causal effect of national institutions and regime stability in particular on the persistence of FGM practices. I find that the collapse of a regime that has lasted for 12 years (one standard deviation) will increase the share of circumcised women by 14.0% of its standard deviation.

To argue that the relationship is indeed causal, I pursued a number of different strategies. First, I control for a set of institutional controls, such as political regime, state capacity, and anti-FGM legislation. Second, my findings are robust to the use of alternative measures of regime stability and are not driven by

the particular subsample of countries. Third, following Altonji et al. [2005] and Oster [2015], I show that, on average, selection based on unobservables would have to be 6.8 times greater than selection based on observables in order to completely explain away the effect of regime durability on FGM prevalence, making it unlikely that my estimates are driven by unobserved heterogeneity. Finally, similar to Jones and Olken [2005] I use exogenous shocks to regime stability caused by the deaths of national leaders due to natural causes.

This paper provides evidence of the importance of national institutions in influencing the evolution of cultural norms and traditions, thus affecting all aspects of human life and national economies.

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A Online Appendix (Not for Publication)

A.1 The Model

You may ask why people continue practicing FGM if, for example, more than half of African women are critical of it? The problem is that, while such action may not influence all other people to discontinue the practice, if one household discontinues the practice of FGM or stops using the services of a witch doctor instead of a conventional one, such deviations will be punished, either economically due to lowered marriage market prospects or through social punishment by the kin. It should be noted that a recent study has shown that regarding FGM as a social coordination problem can be justifiably criticized (Efferson et al. [2015]⁷⁶). Nevertheless, use of the global game approach allows for description of the social phenomena of FGM without contradiction.

The decision of each particular household depends on the actions of other households in the community; however, it also depends on uncertainty concerning what other households will do. Thus the share of people who will choose not to circumcise their daughters will depend nontrivially on their beliefs about fundamentals (expectation of the future in our case). This means that modeling traditional practices, such as FGM, is consistent with the empirical findings of Efferson et al. [2015], who failed to find pronounced discontinuity in FGM rates in communities where circumcision is practiced and those where it is not since the global game can yield any FGM share, depending on people's expectations.

In this section I use the global games approach, developed by Morris and Shin [1998, 2004], to model the process of abolition of a harmful cultural traditions and the effect of regime stability⁷⁷.

Setup

Consider an area⁷⁸ with a continuum of agents-households (i) of the measure one, uniformly distributed over $[0, 1]$. As marriages between ethnic groups are extremely rare, I can assume that there is no ethnic heterogeneity among households and that they belong to one ethnic group. I assume that each agent is a household or a woman who has a daughter.

Household i 's payoff can be rewritten as follows:

$$u_i = \begin{cases} m - c & \text{if the household practices FGM} \\ \theta + \tau(1 - A) & \text{if the household doesn't do FGM} \end{cases} \quad (\text{A.1})$$

where $m \geq 0$ is an exogenous private benefit from following the tradition (UNICEF et al. [2008], UNI [2013]) or a benefit on the marriage market from being circumcised (Mackie [1996], Mackie and LeJeune [2009], Unicef et al. [2007])⁷⁹, and $c > 0$ is a health cost of being circumcised (Dorkenoo and Elworthy [2006], Koso-Thomas [1987]). Parameter θ captures the expected lifetime value of benefits from governmental or international NGOs that fight against FGM in that village. Here I assume that FGM is a status quo, i.e., people have an innate preferences for FGM, as their parents, grandparents, etc., practiced it and instructed them to do so.

⁷⁶Nevertheless, Efferson et al. [2015] has two major concerns that make their results questionable. First, the external validity may be violated, as they draw their conclusions by studying only one ethnic group in Sudan, that was actively treated by NGOs anti-FGM campaigns for the last 30 years, thus making it different from the other ethnic groups. Second, they incorrectly determine the marriage market locality, as they assume that it is determined by the village size, however, for that ethnic group there are three distinctive marriage markets within a village (descendants of slaves, descendants of free population, and those families that prefer to marry among the family members (mostly cousins). In this light, the results of Efferson et al. [2015] should be taken with the grain of salt.

⁷⁷The model can be easily generalized into Dynamic Global Game according to Angeletos et al. [2007], however result in similar predictions and are not presented for the sake of brevity.

⁷⁸It can be a region, a city, a village or a cluster of villages, territory that determines the size of the marriage market. Hereafter I use village as a baseline area.

⁷⁹As I cannot distinguish them in the data, I indicate them as one parameter.

Importantly, I allow “punishment” for deviation from the tradition for households that do not practice FGM: their payoff depends on $A \in [0, 1]$, the total share of women deciding not to circumcise their daughters (Mackie [1996]). This means that the deviated household is punished by its kin (e.g., through worse marriage market conditions), and $\tau \leq 0$ is a magnitude of this punishment. Nevertheless, as households deviated from the tradition, and don’t circumcise their daughters, there are no costs due to worse health conditions (c).

I assume that villagers have a diffuse prior distribution of $\theta \in \mathbb{R}$. Each villager receives an independent private signal $x_i = \theta + \xi_i$, where $\xi_i \sim \mathcal{N}(0, \beta)$, is noise. I assume that this signal is delivered by NGOs and represents the expected lifetime value of benefits if they abandon the tradition. In addition, all citizens receive a common signal $p = \theta + \varepsilon$, where $\varepsilon \sim \mathcal{N}(0, \alpha)$, is noise. I assume that this signal represents knowledge about regime stability that affects the evaluation of future benefits from NGOs.

In this case, people update their private signal with the public one, such as $\bar{\theta}_i = \theta | p, x_i \sim \mathcal{N}\left(\frac{\beta x_i + \alpha p}{\alpha + \beta}, \frac{\alpha \beta}{\alpha + \beta}\right)$.

Analysis

Villagers have a strategy profile:

$$a_i(\bar{\theta}_i) = \begin{cases} \text{Practice FGM} & \text{if } \bar{\theta}_i \leq \kappa^* \\ \text{Don't practice FGM} & \text{if } \bar{\theta}_i > \kappa^* \end{cases} \quad (\text{A.2})$$

That is, villagers do not practice FGM if their beliefs about future benefits from NGOs is high, i.e., $\bar{\theta}_i$ is above some threshold κ^* . There is a unique equilibrium cutoff κ for the villagers defined by the expectation of future benefits from NGOs that makes an individual indifferent regarding the choice of following FGM tradition or not. In this setting, everyone receives the signal about regime stability and they know that everyone understands it.

The equilibrium participation threshold κ is the solution to the equilibrium condition:

$$\kappa^* + \tau \Phi\left(\sqrt{\gamma}(\kappa^* - p)\right) = m - c, \quad (\text{A.3})$$

where $\gamma = \frac{\beta(\alpha + \beta)}{\alpha^2(\beta + 2\alpha)}$. As it is shown in Morris and Shin [1998, 2004] the equilibrium is unique if regularity conditions $\tau^2 \gamma < 2\pi$ hold.

Condition for uniqueness of equilibrium:

Let’s define $U(\kappa^*)$ as the left-hand side of the equation (2). A sufficient condition for a uniqueness of the solution is that the left-hand side increases in a weakly monotonic way in κ^* . Here I follow Morris and Shin [1998, 2004] proof of uniqueness:

$$U = \kappa^* + \tau \Phi\left(\sqrt{\gamma}(\kappa^* - p)\right), \quad (\text{A.4})$$

We need the derivative of $U(\kappa^*)$ with respect to κ^* to be non-negative:

$$\frac{\partial U}{\partial \kappa^*} = 1 + \tau \sqrt{\gamma} \varphi\left(\sqrt{\gamma}(\kappa^* - p)\right) \geq 0, \quad (\text{A.5})$$

$$1 \geq \tau \sqrt{\gamma} \varphi(\sqrt{\gamma}(\kappa^* - p)) \geq \tau \sqrt{\gamma} \frac{1}{\sqrt{2\pi}}, \quad (\text{A.6})$$

Here I use the fact that the standard normal p.d.f.' ($\varphi(x)$) maximum value is equal to $\frac{1}{\sqrt{2\pi}}$ at $x = 0$ and substitute $\varphi(\cdot)$ with $\frac{1}{\sqrt{2\pi}}$ in equation A.6. This gives the sufficient condition for a unique equilibrium:

$$2\pi \geq \tau^2 \gamma. \quad (\text{A.7})$$

Comparative statics and discussion of existing hypothesis of the persistence of traditional practices

Having pinned down the equilibrium thresholds κ^* , we can derive the equilibrium participation, A :

$$A = \Phi(\sqrt{\gamma}(p - \kappa^*)) \quad (\text{A.8})$$

Proposition 1. : *The share of people who abandon the tradition is always increasing the signal the communicates regime stability ($\frac{\partial A}{\partial p} = \sqrt{\gamma} \varphi(\sqrt{\gamma}(p - \kappa^*)) > 0$).*

This very simple model also explains all other existing hypothesis concerning the persistence of FGM.

For the purposes of this paper, I need to determine the functional form for the regression analysis and show the comparative statics for the effect of regime durability.

First, I introduce the equation for the share of deviating households, which is given by $A = \Phi(\sqrt{\gamma}(p - \kappa^*))$. It is continuous and strictly increasing in p . Let $fgm = 1 - A$ be the share of circumcised women (i.e., those households that don't deviate from the tradition).

$$fgm = \Phi(\sqrt{\gamma}(\kappa^* - p)) \quad (\text{A.9})$$

The reduced form of equation A.9 is used for the first empirical specification in the Section 4.

Proofs of propositions that reflect other hypotheses of persistence of FGM:

Proposition 2. : *The share of people who abandon the tradition is always decreasing in social punishment for not following the tradition ($\frac{\partial A}{\partial \tau} < 0$).*

Proof:

$$\kappa^* + \tau(1 - A) = m - c \quad (\text{A.10})$$

$$\frac{\partial A}{\partial \tau} = - \frac{f}{f_A} = \frac{(1 - A)}{\tau} < 0. \quad (\text{A.11})$$

The parameter τ delineates punishment by the kin for not following the tradition. We can assume that improvements in women's rights \setminus bargaining power and the adoption of modern values both lead to less

punishment for those women who do not undergo circumcision. Thus Proposition 2 is in line with this hypothesis as stated in various sources⁸⁰; empirical evidence for this is provided in Harari [2014].

Proposition 3. : *Share of people who abandon the tradition is always increasing in health cost of FGM ($\frac{\partial A}{\partial c} > 0$) and decreasing in marriage benefits of FGM ($\frac{\partial A}{\partial m} < 0$).*

Proof:

$$\frac{\partial A}{\partial c} = -\frac{1}{\tau} > 0 \text{ and } \frac{\partial A}{\partial m} = \frac{1}{\tau} < 0 \quad . \quad (\text{A.12})$$

Proposition 3 can help to explain the situation in Egypt, where the share of women who have undergone FGM is above 98%. By allowing FGM to be performed in hospitals rather than unsanitary conditions at home, the health costs of FGM decreased dramatically (Shell-Duncan [2001]). At the same time, if benefits through marriage increase for women who have undergone circumcision, it becomes more profitable for families to circumcise their daughters (Wagner [2015]).

A.2 Variables' Construction

In this subsection I explain how the control variables used in this study were constructed.

I create the variable $circ_i$ based on the following questions: “Have you ever been circumcised?” and “What type of circumcision do you have?” If woman i answered “Yes” for the first question or not “No”, and answered on the second question, I assigned a value of 1 to the $circ_i$. For women who answered “No” on the first question I assigned a value of 0.

For further estimation, for each women in my sample I created a panel of observations corresponding to her total years of life when she becomes eligible for FGM; for instance, $fgm_{iret} \in \{0, 1\}$ is a variable determined for each woman i , region r , ethnicity e and year t :

$$fgm_{iret} = \begin{cases} 1 & \text{if } circ_i = 1 \text{ and } t = s \\ 0 & \text{if } circ_i = 1 \text{ and } t < s, \\ 0 & \text{if } circ_i = 0 \end{cases} \quad (\text{A.13})$$

where $circ_i = 0$ if woman i was circumcised and equal to unity otherwise, and $s = fgm_age_e$ is the age when woman i was circumcised. For example, if $eligible_{er}$ in the particular region r and ethnicity e is between the age of 0 and 19, then for each woman of this ethnicity and region I make 20 observations. Women who have not been circumcised ($circ_i = 0$) will have $fgm_{iret} = 0$ for all observations, and women who have been circumcised ($circ_i = 1$) at time s will have $fgm_{iret} = 0$ if $t < s$, and $fgm_{iret} = 1$ if $t = s$, and all observations for $t > s$ will be dropped from the panel. I drop these data as FGM is irreversible and I can consider it as an absorbing state.

There are about 221 ethnicities in the dataset. As ethnicity data for some samples of (Egypt, Mauritania and Tanzania) does not exist because it has not been recorded and is for some (Niger and Nigeria) partially missing, I constructed ethnicity by using language and/or religion. For example, almost all Muslims in Nigeria (more than 90% in the Nigerian sample from 1999) belong to the *Hausa/Fulani* group; for all missing observations I assigned all Muslims in the Nigerian samples (2003 and 2008) as *Hausa/Fulani*. All Christians speaking the *Coptic* language or *Orthodox Christians* not speaking the *Amharic* language in Egypt are considered *Copts*. Respondents speaking *Zarma* in Niger were assigned to the *Djerma/Songhai* ethnicity, etc. I dropped ethnicities for which no FGM cases were reported (mostly foreigners). Finally, I united all ethnicities having fewer than 10 individuals into “*Other “Name of the Country”*” groups; this resulted in a total of 204 ethnicities.

Due to the fact that some samples contained highly detailed names for religious denominations while some had very broad names for religious affiliations, in order to control for religion I created dummies for *Islam, Catholic, Protestant, Orthodox, Other Christian, Indigenous believes, Atheists, and Other*. For

⁸⁰See Kennedy [1970], Hayes [1975], Ebrey [1991], El Dawla [1999], Yount [2002], Easton et al. [2003], Finke [2006].

example, I merged the respondents belonging to smaller religious groups, which were described as *Traditional/spiritual/animist, traditional, animist, voodoo*, etc., into a single *Indigenous Beliefs* category.

To take into account the capacities of marriage market specification 1, I construct a *Share of Non-Married Women*, which describes the fraction of all women who were married during year t divided by the total number N_{ier}^{um} of women that might be married (if they are more than 10 years old and not yet married) in region r , year t .

$$Share\ of\ Non - Married\ Women_{ret} = 1 - \frac{\sum_{i=1}^{N_{ier}^{um}} 1(married_{iret} = 1)}{N_{ier}^{um}}, \quad (A.14)$$

For individual level data specification, I produced the *Marriage Switch* variable, which is equal to 0 unless a woman is married, is equal to 1 once she becomes married, and remains equal to unity for all years after. This variable is crucial, as FGM is closely related to marriage market, and the fact that a woman is already married and remains uncircumcised should significantly decrease her chances of being circumcised in the future.

$$Marriage\ Switch_{it} = \begin{cases} 1 & \text{if } married_i = 1 \text{ and } t \geq s \\ 0 & \text{if } married_i = 1 \text{ and } t < s, \\ 0 & \text{if } married_i = 0 \end{cases} \quad (A.15)$$

where $married_i = 0$ if woman i was never married and equal to unity if she was, and s is the “Age of the first Marriage”.

Lastly, I use the *Total Years of Schooling* and *Age* variables to construct the variable of schooling for each woman for each year of her life t in which she is eligible for circumcision:

$$Years\ Of\ Schooling_{irt} = \begin{cases} 0 & t \in [0; 6] \\ \sum_{s=1}^t 1 - 6 & t \in [7; TY S_{ir}] \\ TY S_{ir} & t > TY S_{ir} \end{cases} \quad (A.16)$$

While computing *Years Of Schooling_{irt}* I assume that all women start to begin their education at the age of seven and study continuously year by year without breaks.

I use logarithms of GDP per capita and population, and trade-to-GDP ratio as country level control variables.

Trust measures are taken from aggregations made on regional level data from individual level 5th, 4th and 3rd waves of Afrobarometer. These aggregated data were merged to the DHS and MICS datasets via one-to-one regional and year (the nearest available year) mapping.

In addition, I create an indicator for democratic countries based on *POLITY 2_{ct}* $\in [-10; 10]$ score by Marshall and Cole [2013]:

$$Democracy_{ct} = \begin{cases} 0 & \text{if } POLITY 2_{ct} < 0 \\ \frac{POLITY 2_{ct}}{10} & \text{if } POLITY 2_{ct} \geq 0 \end{cases} \quad (A.17)$$

The variable $Democracy_{ct} \in [0; 1]$ represents an authoritarian or in-transition political regime if $Democracy_{ct} \rightarrow 0$ and a full democracy, if $Democracy_{ct} \rightarrow 1$.

PDI is a binary index, which is less subjective than the POLITY score, and $PDI = 1$ if there was a turnover in government following an election and equals 0 otherwise. FHPI measures how easily people can participate in the political process (e.g., vote, run for office, join political parties, elect representatives, etc.). Lastly, GWF offers the most systematic examination of autocratic governments, thus better capturing the spells of authoritarian rule. To create a suitable democracy index that will distinguish democracy and autocracy, I mark all types of autocracies identified by the GWF as 0 and all other countries as 1. In this case, regime durability based on PDI and GWF data show the number of years (cumulative) since the last

change in authority characteristics (defined as a 0-to-1 or 1-to-0 switch in PDI and GWF), while the regime durability based on the Freedom House data is computed in the same way as it is calculated by Polity IV.

A.3 Exploiting artificial boundaries of African countries

Following Michalopoulos and Papaioannou [2014] I exploit the fact that African borders were mostly drawn by the colonial administration, disregarding historical areas of ethnic habitation. I use the fact that the historical homelands of the *Mandinka* ethnicity were artificially divided between Cote d'Ivoire and Guinea. In 2009, Guinea experienced a durable regime, while the regime in Cote d'Ivoire was not durable. In comparison to the model specifications from Section IV, this robustness check relies on using matching techniques to find virtually similar women of the *Mandinka* ethnic group living on either side of the border in Cote d'Ivoire and Guinea. I assume that those women living in Cote d'Ivoire experienced a high level of regime durability, while those who lived in Guinea experienced a regime durability shock. Thus, by using the propensity score I match women in Guinea with women in Cote d'Ivoire based on their socio-economic characteristics.

Propensity score matching is suitable in this scenario, as the selection into treatment is completely random. All women of the *Mandinka* ethnicity were randomly born in Cote d'Ivoire or Guinea and were thus treated randomly. In this case, we can say that, conditional on their observable socio-economic characteristics, the assignment to treatment is random and the matching strategy will allow us to make convincing comparisons between treated and control subjects.

One can ask whether regime durability is the only parameter that differs between the two countries and whether it is the only one that can have direct or indirect effects on the persistence of FGM. Clearly, by matching all women with the same cultural norms and traditions (for example, the share of circumcised women among the *Mandinka* people is about 90% in both countries, while the total share of circumcised women is 96% in Guinea and 34% in Cote d'Ivoire) and religion (99 of *Mandinka* women in both countries are Muslim) living in a similar geographical zone and environment by their socio-economic and background information, all country level institutional effects will be impossible to disentangle from the effect of shock in durability. To address this challenge I will try to explain why both countries are similar in all ways but regime durability. First, both countries were ruled by France and share the French continental legal system. As of 1998, both countries were considered autocracies by the Polity IV definition, and had the same score (35 out of 100) on the Mo Ibrahim Index of African Governance⁸¹ and its main components (safety and rule of law, participation and human rights, sustainable economic opportunity and human development). Neither country suffered from internal or external conflict. Finally, the regions inhabited by the *Mandinka* ethnic group are situated at the maximum distance from the national capitals, and according to the Michalopoulos and Papaioannou [2014], the effect of formal institutions in these regions should be minimal. The only institutional difference between the two countries is regime durability: the variable $Durability_{Cote\ d'Ivoire, 1998} = 38$, while $Durability_{Guinea, 1998} = 0$.

In order to estimate and balance the propensity score, I use an algorithm proposed by Becker et al. [2002]. The list of control variables used for the logit estimation is as follows: total years of education, age, total number of children, woman's opinion of FGM, dummy for rural area, age of daughter, line number of child, household's wealth index, dummy for marital status, and age of first marriage. After testing the balancing properties of the propensity scores in all blocks (for each covariate I test if the means are statistically different for treated and controls in all blocks), I estimate the average treatment effect on the treated. The results are presented in Table 9.

The results are striking: all matching methods resulted in at least an 18% decrease in the probability of being circumcised for women living in Cote d'Ivoire due to high regime durability when compared to women in Guinea.

⁸¹This index measures the provision of political, social and economic goods and controls for provision of human rights for citizens of African states.

Table 9: Average Treatment Effect on the Treated for *Mandinka* Ethnicity

Matching method	Number of treated	Number of controls	ATT	Bootstrap standard errors	t-statistics
Nearest neighbour	26	18	-0.462	0.210	-2.194
Radius	22	167	-0.175	0.076	-2.299
Kernel	26	167	-0.392	0.162	-2.416
Stratification method	21	172	-0.333	0.101	-3.306

Notes: The following variables are used as balance controls: age of marriage, wife number, age at 1998, number of children ever born, woman’s total years of education, husband’s total years of education, opinion about FGM, and dummy for rural area. I use 6 blocks and 0.5% significance level for balancing.

A.4 IV Estimates

By now, I have shown that regime durability has an effect on FGM prevalence, for instance that more stable regimes abolish harmful traditions faster than less stable ones. I used several different tests to separately alleviate measurement error and unobserved heterogeneity concerns. Finally, I used shocks of regime durability due to national leaders deaths, but despite the obvious exogeneity of the event, this robustness check can be criticized for plausible exclusion restrictions. However, we want to be sure that regime durability affects cultural norms through expectations of the future (e.g., that an NGO will return and continue to enforce people’s commitment not to circumcise their daughters).

Nevertheless, to solve this issue and to ensure that no other source of endogeneity biases my results I employ an instrumental variable strategy, to ensure that regime stability has a causal effect on the decision to circumcise a daughter. The IV strategy involves ruggedness as an instrument, which is correlated with perception of regime stability but uncorrelated with public health and NGO programs that may affect FGM rates through other channels⁸². The logic behind this instrument is straightforward: harsh rugged terrain makes it easy to hide, similar to the story developed in Nunn and Puga [2012]. According to Fearon and Laitin [2003], the ruggedness of a country’s terrain can be of benefit to illegal arms groups who disrupt states and have a direct effect on regime stability. In this case, I am able to estimate the LATE of regime stability on the intention to circumcise a daughter. This instrument captures the potential benefit of rugged terrain to the concealment of armed groups, thus having effect on the perception of regime stability; at the same time, this presumably doesn’t have effect on FGM prevalence.

In this section I perform an empirical test, to check if regime stability does indeed have an effect on FGM only through people’s expectations. I use cross sections of the surveys that contain a question about people’s intention to circumcise their daughters. In this case, regime stability should have negative effect on the decision to circumcise a daughter, which reflects people’s expectations of whether anti-FGM policy will be maintained in the immediate future.

Women’s decisions about circumcising their daughters depend on their expectations of whether anti-FGM campaigns (e.g. those conducted by NGOs or government agencies) will remain active when their daughters enter the marriage market. Thus the perception of the stability of the current political regime should have a direct effect on women’s decisions (for instance, women may be less likely to want to circumcise their daughters if the current regime is stable and supports anti-FGM campaigns). This allows me to determine that the mechanism of the effect of the regime stability on the cultural norms and traditional practices is people’s expectations. In addition, this approach allows me to better control for anti-FGM policies, state capacity and quality of institutions by controlling for NGO activity and the Mo Ibrahim Index of African Governance, which is possibly the best proxy for the state capacity for African countries. I control for all possible country level institutional and individual level variables, thus making the possibility of unobserved heterogeneity highly unlikely. Finally, using ruggedness as an IV, I am able to solve the problem of measurement error in regime stability and any other possible concern regarding unobserved heterogeneity.

The main drawback of this approach is that, as ruggedness does not change over time, I lose most of the time variation in regime stability. In addition, possible non-classical measurement error in the dependent variable can be an issue. In the case of a stable regime, where FGM is forbidden or village anti-FGM declaration is currently enforced, it is possible for a woman to lie about her intention to circumcise her daughter by saying that she is not going to let her daughter be circumcised. This might bias the results

⁸²I use the terrain ruggedness index (TRI) taken from Nunn and Puga [2012].

by overestimating the effect of regime durability. However, it is unlikely that a woman will later secretly circumcise her daughter later secretly since circumcision procedures are subject to huge festivities in the village and cannot be hidden from her neighbours or relatives. More plausibly, a woman can be strategic and truthfully answer that she is not going to circumcise her daughter, but circumcise the daughter later if the regime stability changes and her daughter is still of the eligible age.

Ruggedness without a doubt has no direct effect on FGM prevalence and is plausibly uncorrelated with other factors that affect FGM. For instance, rugged terrain may have an effect on FGM through trust (e.g., through trust in other people's public declarations not to circumcise daughters or marry their sons to circumcised girls) as ruggedness has been shown to have an effect on trust through the slave trade (Nunn and Wantchekon [2011], Nunn and Puga [2012]). To account for this, I control for local trust (e.g., trust towards neighbours)⁸³. In addition to trust, ruggedness can have an indirect effect on FGM through income (Nunn and Puga [2012]). To control for this, I add controls for household wealth. In the event ruggedness has an effect on the state capacity and quality of institutions, I control for the Mo Ibrahim Index of African Governance.

The results are presented in Table 10, where the first column reports the OLS estimates of the regression of the index of regime durability perception (IRDP)⁸⁴ on the dummy for intention to circumcise a daughter and a reduced form regression of the ruggedness on the intention to circumcise a daughter. Both coefficients have the expected signs, indicating that more stable regimes are associated with a lower probability that a woman intends to circumcise her daughter, whereas ruggedness is associated with a higher probability that she will circumcise her daughter. The 2SLS results for the first stage and the IV estimation for ruggedness as an instrument for the index of regime durability perception are presented in Column II. The partial $R^2 = 0.28$ and the first stage F-statistics is equal to 27.8, thus supporting my assumption about the strength of the instrument⁸⁵. We can see, that ruggedness has an expected negative relationship with regime durability (e.g., complex terrain leads to lower regime stability). Overall, the IV coefficient of regime stability on the decision about a daughter's circumcision is relatively high (for instance, expectation that current regime, which supports anti-FGM policy, will last for 12 years leads to a 72% decrease in the probability that a woman will decide to circumcise her daughter).

It is important to note that the IV coefficient is 4 times larger than the OLS coefficient. This can raise a red flag about the validity and strength of the instrument, and thus, needs to be addressed in greater detail. The first reason that the IV coefficient is larger than the OLS coefficient is that the instrument is weak. However, as noted above, both of the F-statistics of the excluded instrument and the partial R^2 are high enough, thus indicating that it is unlikely that the instrument is weak.

The second reason the IV estimate may be larger than the OLS estimate is that the exclusion restrictions are violated. Even if the direct effect of ruggedness on FGM is almost surely nonexistent, the indirect effect can still be an issue. Herein I follow Conley et al. [2012] I relax the assumption of perfect exogeneity and examine the bounds I am able to place on the true effect of regime stability on the intention to circumcise daughter. The idea behind the method is simple, If in addition to exogenous and endogenous variables I add instrument (ruggedness in my case) its coefficient (γ) required to be equal to zero according to standard IV estimation. However, by relaxing the constraint I can find the bounds for my IV estimate of regime stability (β). If one expects ruggedness to have direct or indirect negative effect on the decision concerning a daughter's circumcision ($\gamma < 0$) I will underestimate the true effect of the regime stability on the circumcision of daughters. This gives me the minimum prior for γ . More challenging is to determine the maximum prior of γ . The natural choice is to look at the variable that's significance in the decision concerning a daughter's circumcision is undoubtedly important. OLS regression suggests, that mother's opinion if FGM should continue is highly important variable, such as if woman thinks that FGM should be stop, she is 25% less likely to circumcise her daughter. This fact gives me the upper bound for γ , since it means that in worse scenario ruggedness will have the same effect as women's opinion about FGM. Applying Conley et al. [2012], I find that the bounds on the strength of β are still below zero (at 95% confidence level). Therefore, even allowing for plausibly imperfect exogeneity, the negative effect of regime stability on the decision concerning

⁸³The trust data is taken from Afrobarometer surveys. The list of surveys used in this section, in addition to complete information about the variable construction in this study, is provided in the Appendix A.2. As all trust questions in Afrobarometer have categorical answers, I construct a measure following Nunn and Wantchekon [2011]. First, I assign the value of 0 if an individual responds "not at all"; thereafter, 1 corresponds to "just a little", 2 to "somewhat", and 3 is assigned if the individual's answer is "a lot".

⁸⁴Using the Index of Regime Durability Perception (IRDP) as a forward-looking measure of the regime stability makes more sense.

⁸⁵Use of the alternative measures of ruggedness (population weighted TRI, average slope, local standard deviation in elevation and percentage of moderate to highly rugged terrain) show very similar results.

a daughter's circumcision is confirmed.

Table 10: Effect of Regime Stability on Intention to Circumcise Daughter: IV Estimates

	I	II
OLS: Dependent variable is an intention to circumcise a daughter		Second stage: Dependent variable is an intention to circumcise daughter
IRD	-0.014*** (0.005)	-0.060** (0.016)
partial R-squared		0.286
Reduced form: Dependent variable is an intention for daughter circumcision		First stage: Index of regime durability perception
Ruggedness	2.90*** (0.44)	-53.1*** (10.6)
Individual controls	/	/
Regional Controls	/	/
Fixed Effects	/	/
Number of Observations	150165	150165
Number of Clusters	27	27
F-stat of excl. instrument		27.89

Notes: The top panel of Column I reports OLS estimates of the regression of the dummy for intention to circumcise a daughter on the index of regime durability perception. The bottom panel of Column I reports OLS estimates of the reduced form regression of the dummy for intention to circumcise daughter on ruggedness. Column II reports 2SLS estimates. The top panel reports the second-stage estimates, and the bottom panel reports the first-stage estimates. The following variables are used as controls: constant, dummy for mother's circumcision, mother's and public opinion about FGM, education, age, age squared, size of marriage market, rural area dummy, dummy for polygamy, log of GDP per capita, log of population, dummy for ethnicity and religions, region dummy, trust in neighbours, relatives, strangers, local government, leader and parliament, dummy for anti-FGM legislature, dummy for household assets. Robust clustered by DHS sample standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Thirdly, IV can be larger than IV in the event that there is a measurement error in the regime stability, thus causing attenuation bias in the OLS regression. As terrain ruggedness is measured with high precision, IV helps to overcome the measurement error in regime stability.

Finally, the reason ruggedness helps to estimate LATE and the effect of regime stability on compliers (those countries where the FGM share is growing with the ruggedness) is larger than on other groups. To test this hypothesis, I propose a placebo test: I omit all compliers (countries with high FGM rates and high ruggedness) and regress the dummy for the intention to circumcise daughter on the ruggedness. In the event ruggedness has significant effect on the intention to circumcise daughter, ruggedness has an effect beyond the effect it exerts through compliers. As the coefficient is not significant, the whole effect of ruggedness on FGM comes through compliers.

Therefore, even allowing for plausibly imperfect exogeneity, the negative effect of regime stability on the decision about a daughter's circumcision is confirmed. Overall, the results of this section suggest that the regime stability has an effect on FGM prevalence through expectations about future anti-FGM policy enforcement and that the effect is causal.

A.5 Tables

Table 11: List of the Samples used in the Paper

#	Country	DHS	MICS	Year of FGM Prohibition
1	Benin	2001, 2006, 2011-12		2003
2	Burkina Faso	1998, 2003, 2010		1996
3	Central African Republic	1994-95	2010	1966
4	Cameroon	2004		-
5	Chad	2004	2010	2003
6	Cote d'Ivoire	1994, 1998, 2011-12		1998
7	Egypt	1995, 2005, 2008, 2014		2008
8	Gambia	2013		2015
9	Ghana		2010-11 (<i>Accra</i>), 2011	1994
10	Guinea	1999, 2005, 2012		1965
11	Iraq		2011	2011
12	Kenya	1998, 2008-09		2001
13	Mali	1995-96, 2001, 2006, 2012-13		-
14	Mauritania	2000-01	2011	2005
15	Niger	1998, 2006, 2012		2003
16	Nigeria	1999, 2003, 2008, 2013	2011	1999-2002 (multiple states)
17	Senegal	2005, 2010-11, 2014		1999
18	Sierra Leone	2008, 2013	2010	-
19	Somalia		2011 (<i>Northeastern zone, Somaliland</i>)	2012
20	Tanzania	1996, 2004, 2010		1998
21	Togo	2013-14	2010	1998
22	Yemen	2013		2001

Source: Rahman and Toubia [2000] and UNI [2013].

Table 12: Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
FGM	607648	0.426	0.494	0	1
Age of FGM	258747	6.054	5.275	0	30
Age	607648	28.78	9.404	10	49
Total Years of Schooling	607648	4.937	5.310	0	25
Age at Marriage	474611	17.987	4.294	0	49
Ever Married	607648	0.784	0.411	0	1
Rural	607648	0.609	0.488	0	1
Number of Children ever born	607648	2.976	2.862	0	29
Public opinion for continuation of FGM	607648	0.580	0.255	0.032	1
If thinks FGM should not continue	607648	0.428	0.495	0	1
Wealth Index	607648	0.265	0.278	-1	1
Ethnicities	607648			1	217
Regions	607648			1	326
Catholic	607648	0.0893	0.2852	0	1
Muslim	607648	0.5235	0.4994	0	1
No Religion	607648	0.0163	0.1270	0	1
Other Religion	607648	0.2043	0.4031	0	1
Other Christians	607648	0.0810	0.2729	0	1
Protestants	607648	0.0614	0.2401	0	1
Indigenous Beliefs	607648	0.0238	0.1525	0	1

Source: DHS, MICS.

Table 13: Determinants of the length of the political regime

VARIABLES	I <i>length_{ct}</i>	II <i>length_{ct}</i>	III <i>length_{ct}</i>	IV <i>length_{ct}</i>
Durability	0.873*** (0.0814)	0.763*** (0.128)	0.767*** (0.102)	0.757*** (0.0654)
Durability squared				0.000155 (0.00141)
Leader's Age	-0.106 (0.482)	0.0545 (0.419)	0.251 (0.406)	0.254 (0.413)
Leader's Age squared	0.000507 (0.00419)	-0.000839 (0.00367)	-0.00244 (0.00351)	-0.00246 (0.00356)
Polity2		-0.821*** (0.208)	-0.901*** (0.184)	-0.906*** (0.173)
Irregular entry into power			-1.617 (1.198)	-1.629 (1.189)
Foreign Imposition			-9.337*** (2.530)	-9.370*** (2.697)
Regular exit of leader			-1.267 (2.295)	-1.260 (2.276)
Natural Death			4.234* (2.436)	4.257* (2.426)
Irregular exit of leader			-2.387 (2.341)	-2.402 (2.377)
Foreign involvement in leader's exit			-7.810** (3.617)	-7.890** (3.790)
Retired Due to Ill Health			5.412*** (1.092)	5.381*** (0.980)
Constant	16.23 (13.75)	7.066 (12.34)	1.080 (11.46)	1.013 (11.60)
Country and Year fixed effects	,/	,/	,/	,/
Observations	2,096	2,070	2,070	2,070
R-squared	0.897	0.913	0.924	0.924

Notes: Dummies for leader's regular entry into power and leader is still in office are used as a baseline. Robust clustered by country standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 15: List of Leaders used in 5.1

#	Leader's Name	Country	Year of death	Cause of Death
1	Ahmad bin Yahya Hamidaddin	Northern Yemen	1962	While sleeping
2	Sir Milton Margai	Sierra Leone	1964	After "brief illness"
3	Abdul Salam Arif	Iraq	1966	Plane crash
4	Gamal Abdel Nasser	Egypt	1970	Heart attack
5	Jomo Kenyatta	Kenya	1978	While sleeping
6	Ahmed Ould Bouceif	Mauritania	1979	Plane crash
7	Sekou Toure	Guinea	1984	Heart attack during surgery
8	Seyni Kountche	Niger	1987	Cancer (brain tumor)
9	Felix Houphouet-Boigny	Cote d'Ivoire	1993	Following surgery for prostate cancer
10	Sani Abacha	Nigeria	1998	Heart attack (some say poisoned)
11	Gnassingbe Eyadema	Togo	2005	Heart attack
Resignation as an end of the rule				
12	Ahmadou Babatoura Ahidjo	Cameroon	1982 (resignation)	Resigned, for health reasons
13	Umaru Musa Yar'Adua	Nigeria	2007(resignation)	Resigned, for health reasons

Source: Archigos 4.0 database.

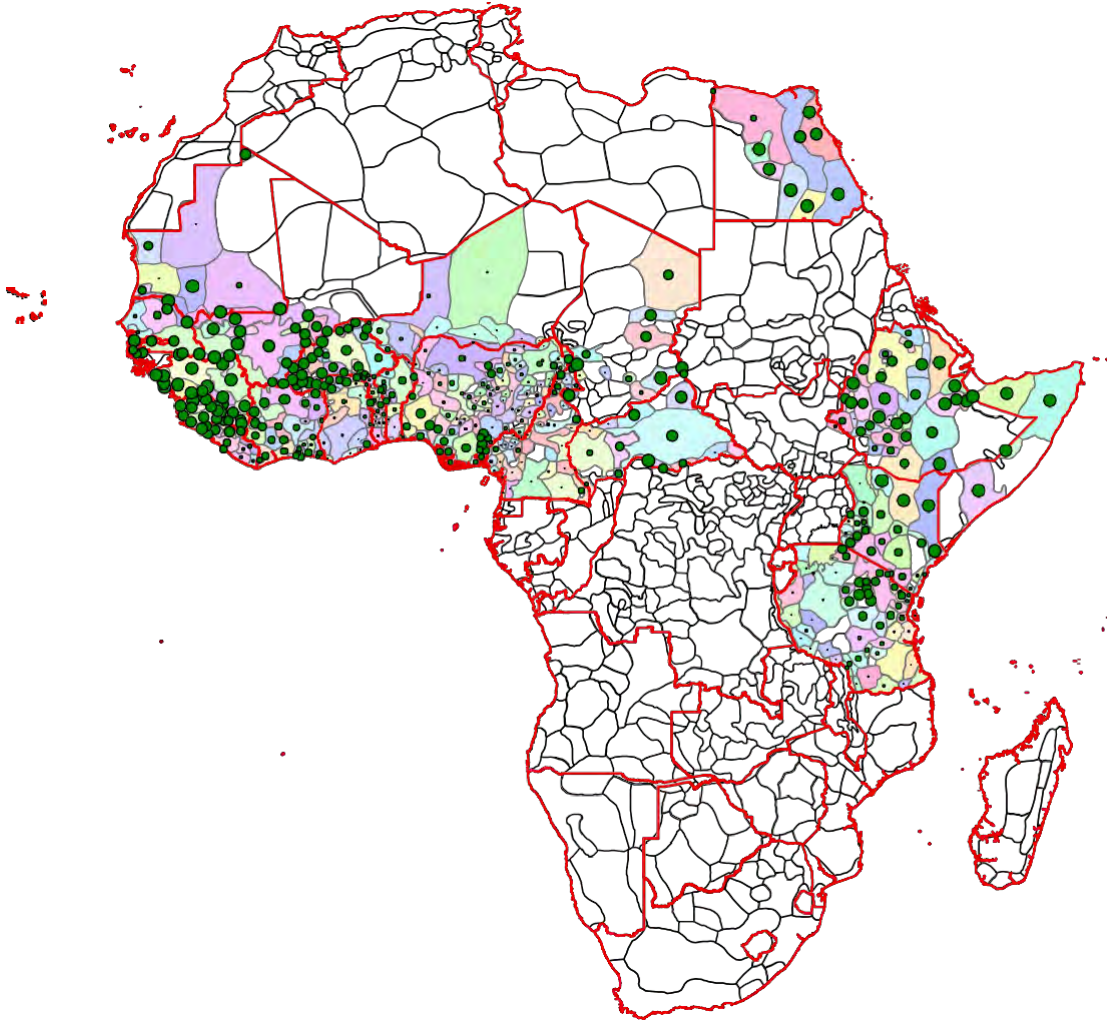
Table 14: Do Leaders Matter? Health Outcomes

Panel A - Natural Deaths										
	Infant Mortality		HIV		Life Expectancy		Polygamy		Fertility	
	J-statistics	Wald P-value	J-statistics	Wald P-value	J-statistics	Wald P-value	J-statistics	Wald P-value	J-statistics	Wald P-value
t	2.305	0.008***	0.178	0.911	1.067	0.383	1.758	0.111	1.715	0.064*
t - 5	1.295	0.241	0.714	0.489	1.465	0.164	0.025	0.956	0.311	0.954
Number of leaders	11		3		11		5		11	
Panel B - Natural Deaths and Resignations										
	Infant Mortality		HIV		Life Expectancy		Polygamy		Fertility	
	J-statistics	Wald P-value	J-statistics	Wald P-value	J-statistics	Wald P-value	J-statistics	Wald P-value	J-statistics	Wald P-value
t	2.045	0.014**	0.078	0.989	0.912	0.539	1.758	0.111	1.505	0.107
t - 5	1.042	0.405	0.594	0.619	1.196	0.289	0.025	0.956	0.342	0.972
Number of leaders	13		4		13		5		13	

Notes: See description under the Table 8. Description of the dependent variables is in the Table 5 *** p<0.01, ** p<0.05, * p<0.1

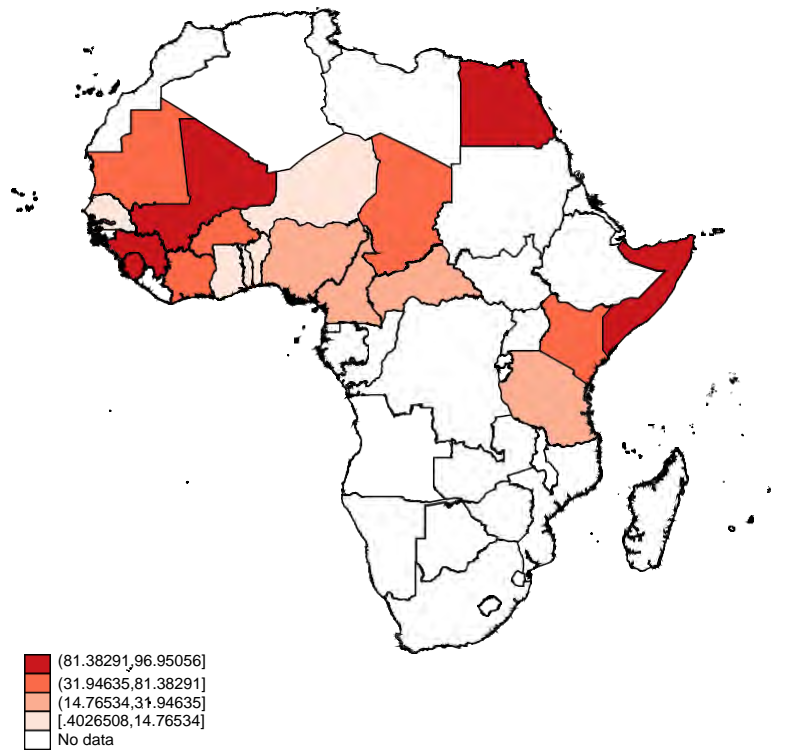
A.6 Figures

Figure A.1: Historical Boundaries of Ethnicities before Colonization and FGM Prevalence



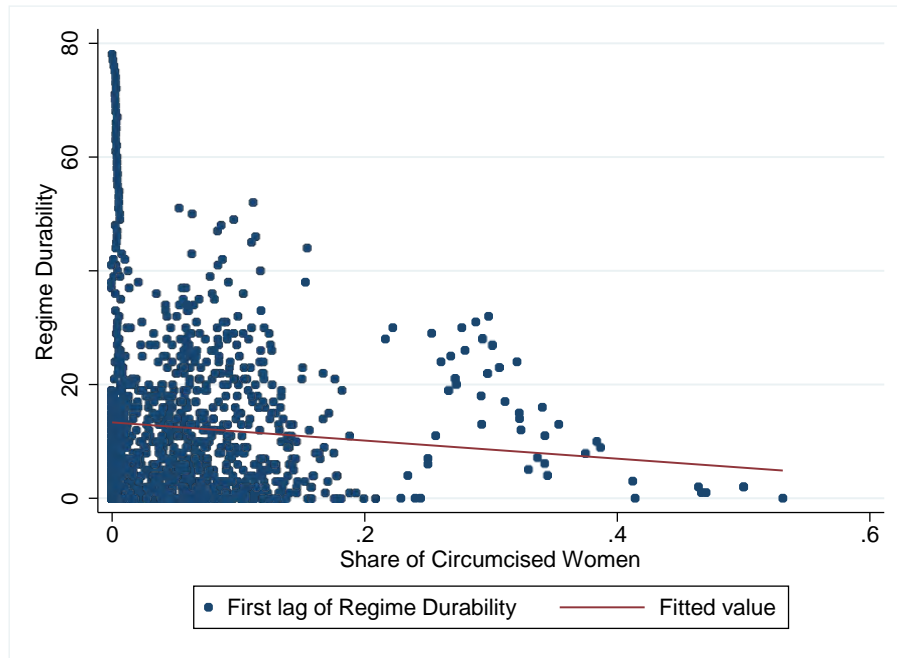
Notes: Data for Sudan, South Sudan, and Uganda is not available. Other African countries have FGM rates close to zero. Source for ethnic borders: Murdock [1959]. FGM rates: latest available DHS surveys with GPS coordinates and FGM questionnaire. Data for Mauritania and Somalia are taken from MICS. FGM rates for Chad, Gambia, Mauritania, and Somalia are merged to Murdock [1959] map by using questions about the ethnic group of the respondent.

Figure A.2: Map of shares of circumcised women by country



Notes: Averaged FGM rates (with red color) across all African surveys used in the paper.

Figure A.3: Regime Durability and FGM



Notes: Scatter plot of the durability of the regime and fraction of women that had FGM out of all women eligible for circumcision at a given year for all countries used in the paper between 1970 and 2005. Similar graph without trend and countries fixed effects also shows negative correlation, but not presented as it does not provide insight to the true values of regime durability and yearly FGM rates. Ethnic groups that never practice FGM are omitted.

Figure A.4: Regime Durability and FGM for countries that fight against FGM by 2005

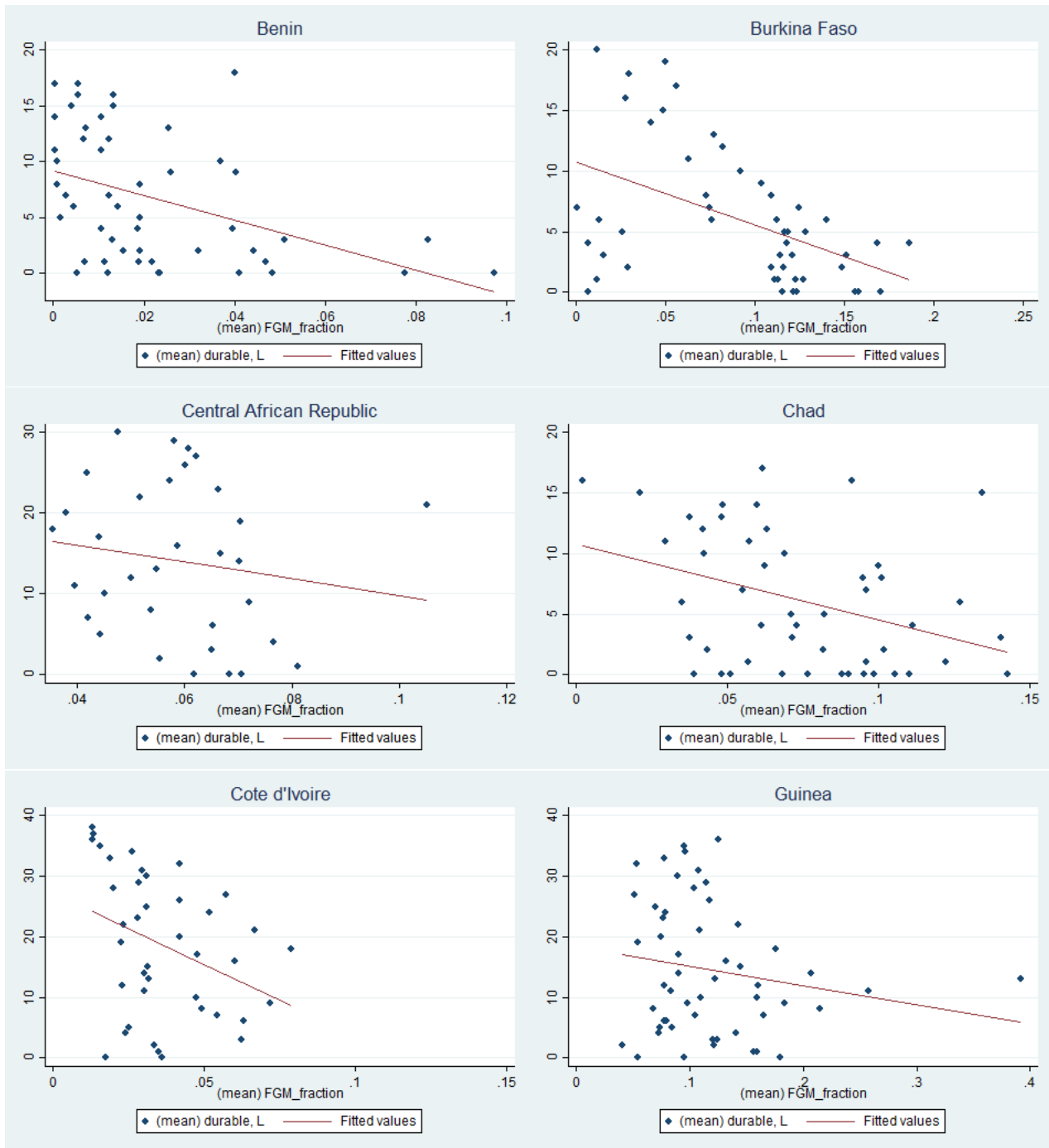


Figure A.5: Regime Durability and FGM for countries that fight against FGM by 2005

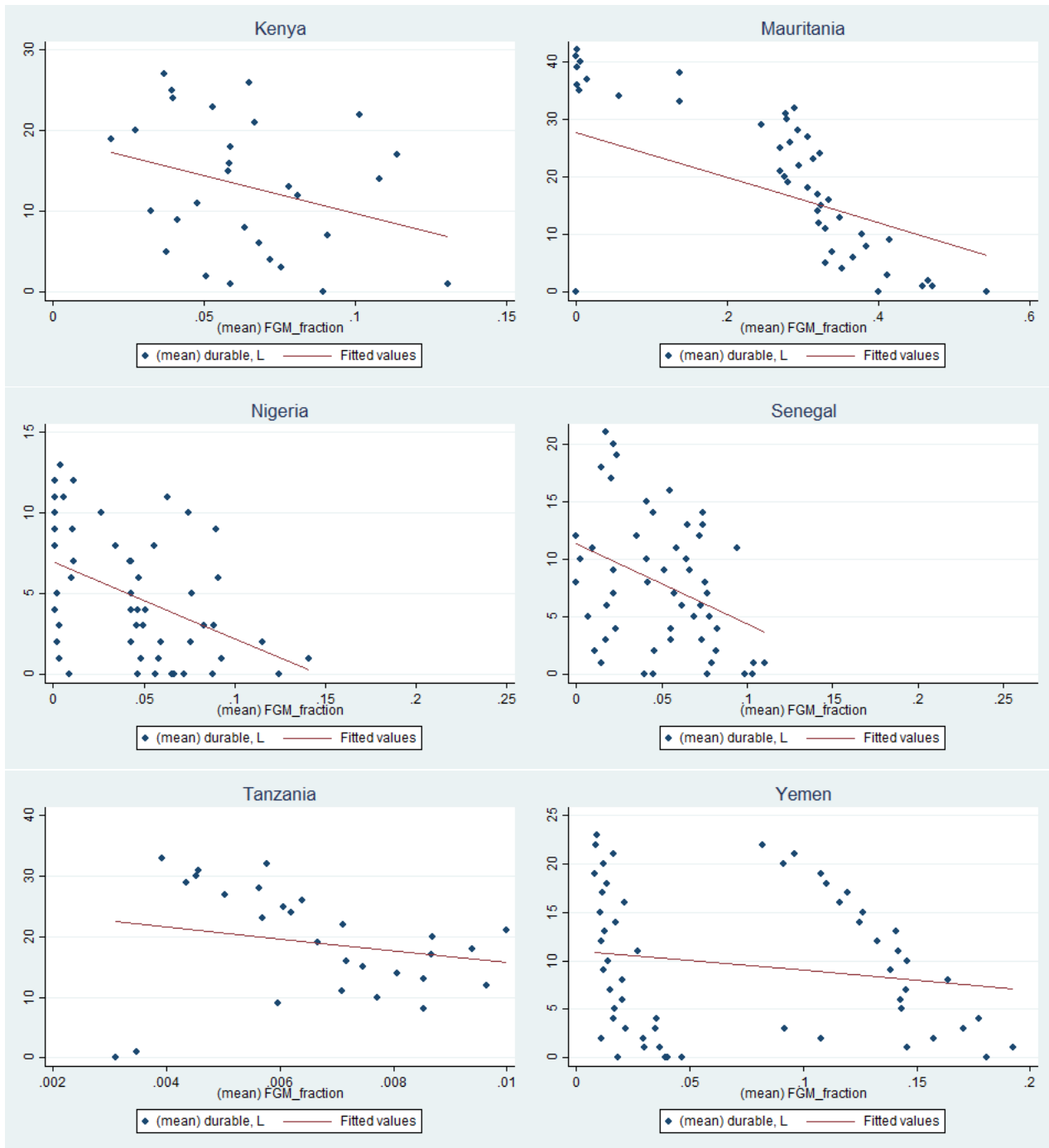


Figure A.6: Regime Durability and FGM in countries with small FGM prevalence.

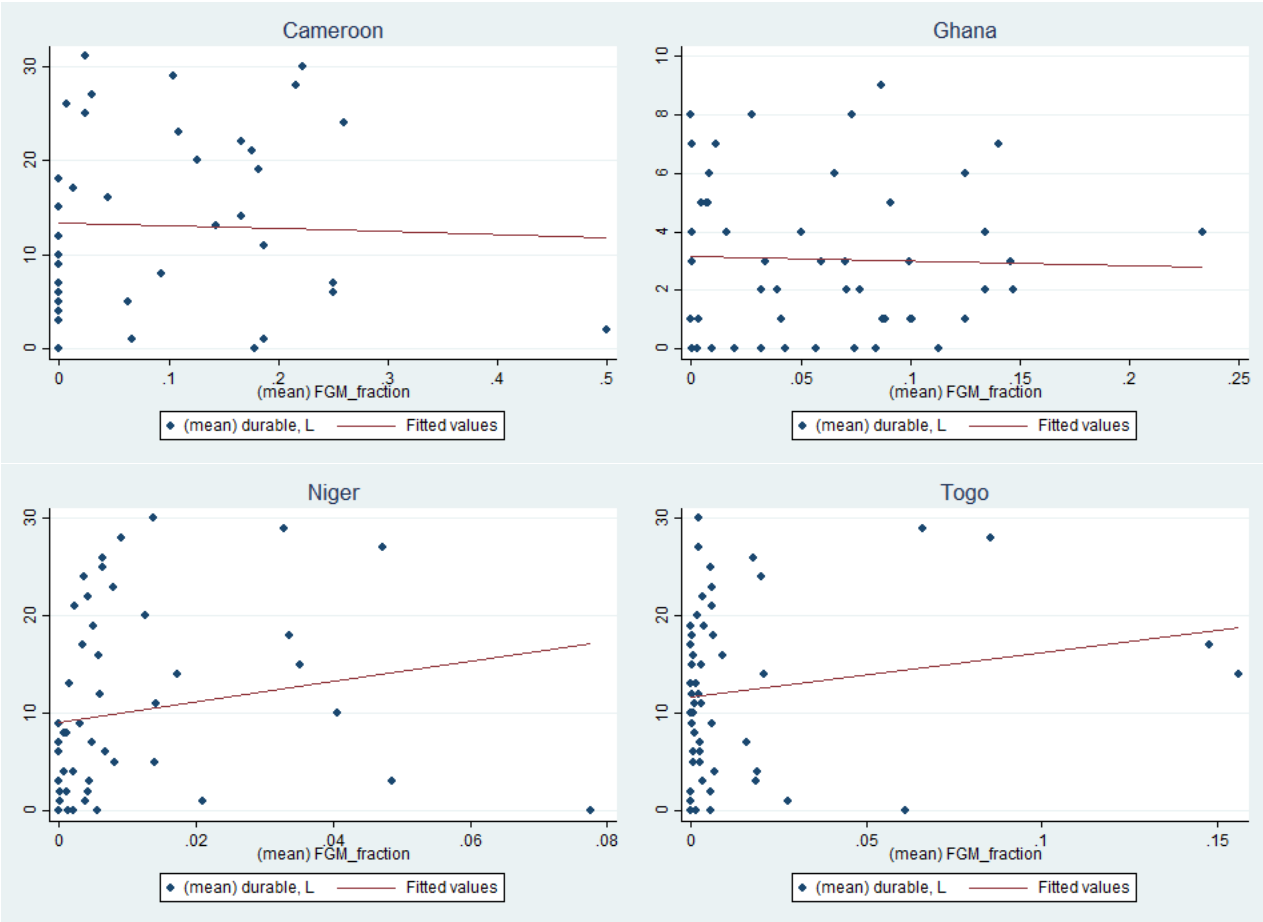


Figure A.7: Regime Durability and FGM in countries without consistent anti-FGM policy

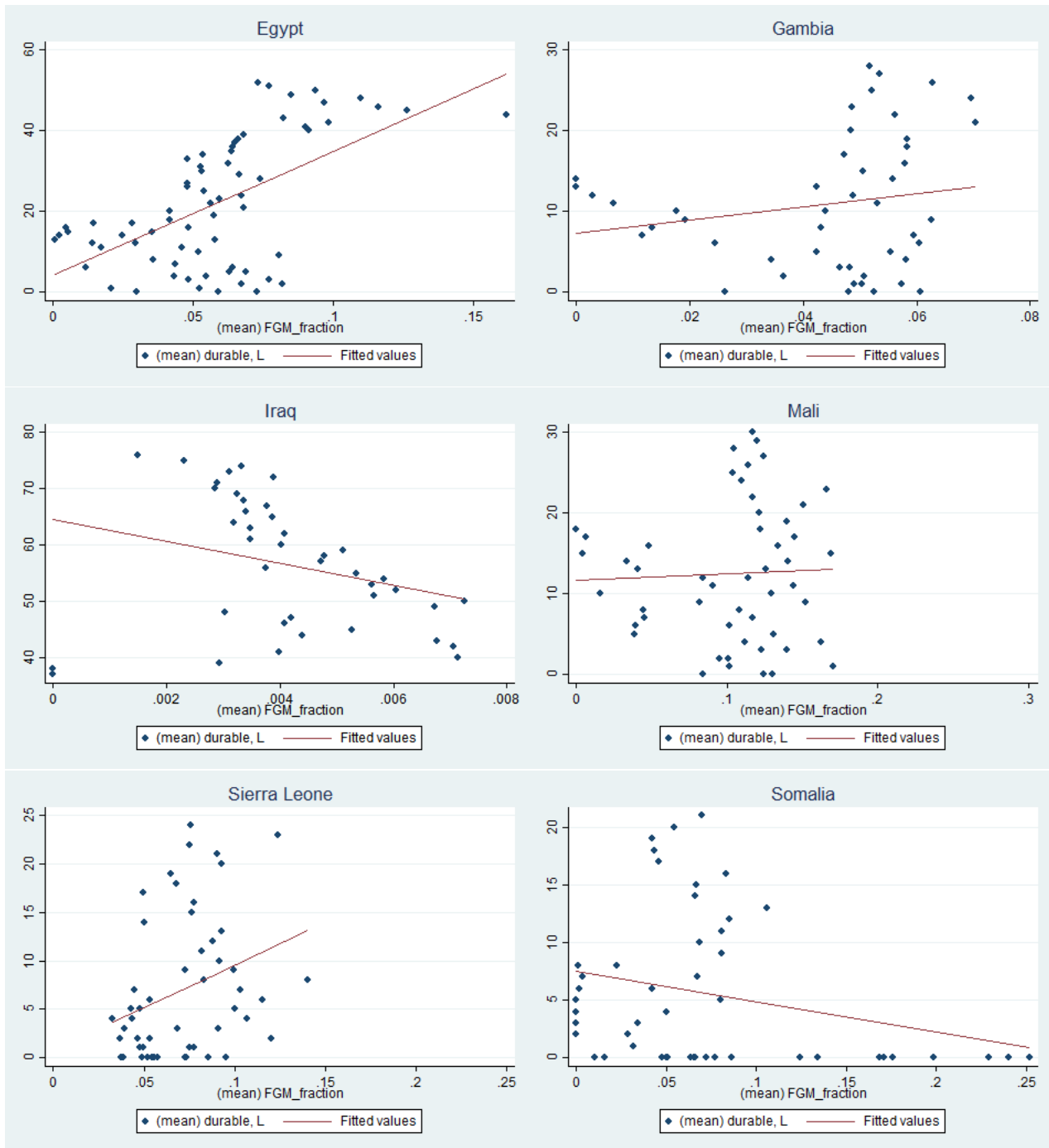
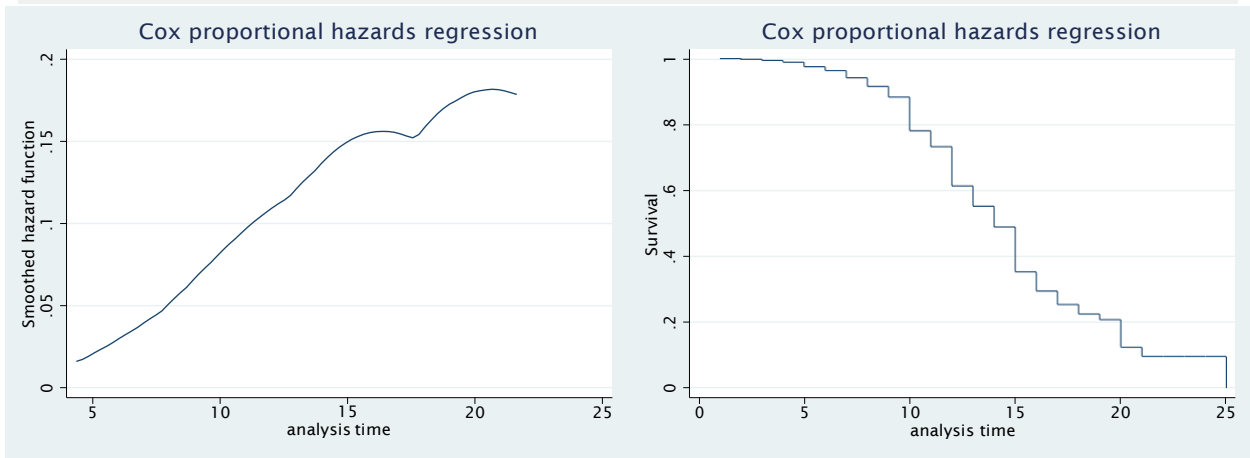
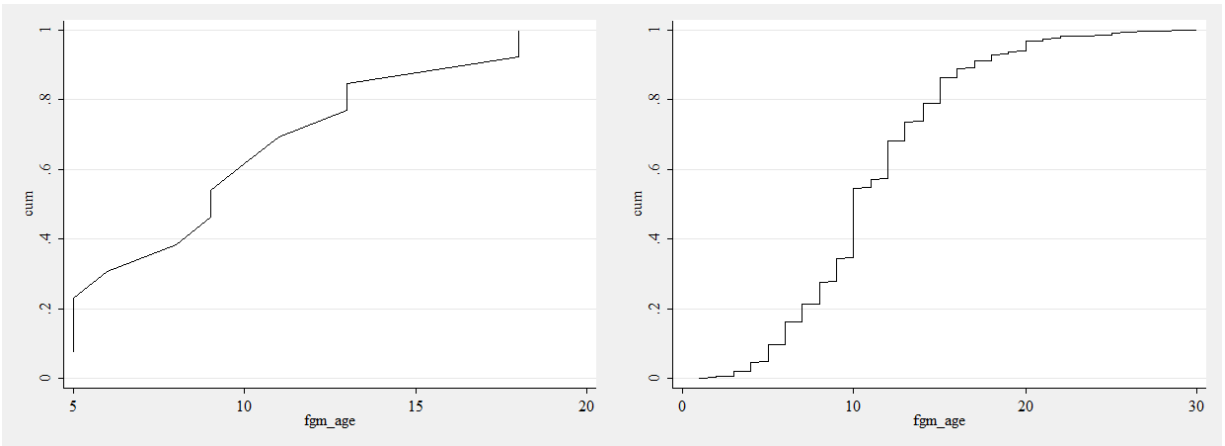
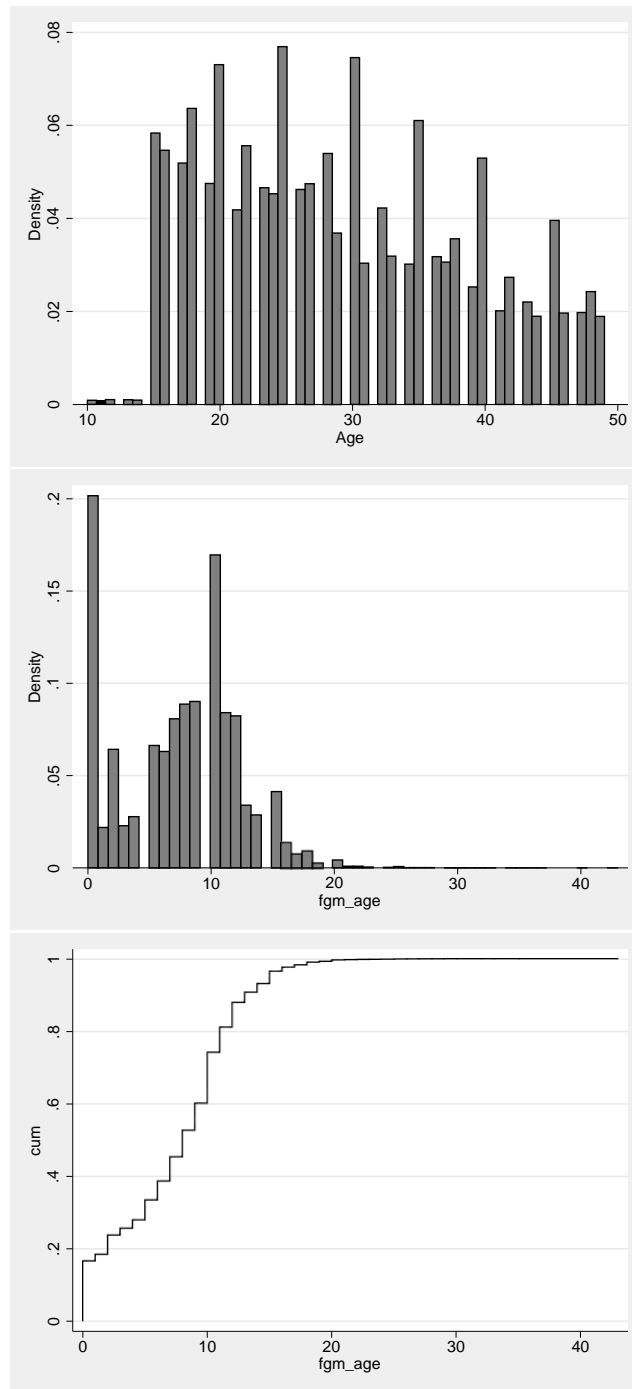


Figure A.8: Cumulative distribution of FGM age for *Akan* and *Guerze* ethnicities



Notes: Hazard and survival functions are estimated on a subsample of women who have undergone circumcision.

Figure A.9: Density and Cumulative Distribution of Age and FGM Age



Notes: Based on all surveys used in the paper (See Table 11).