Female Genital Cutting and the Slave Trade

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Abstract

We investigate the historical origins of female genital cutting (FGC), a harmful practice widespread across Africa. We test the hypothesis –substantiated by historical sources– that FGC was connected to the Red Sea slave trade route, where women were sold as concubines in the Middle East and infibulation was used to ensure chastity. We hypothesize that differential exposure of ethnic groups to the Red Sea route determined differential adoption of the practice. Combining individual level data from 28 African countries with novel historical data on slaves' shipments by country, ethnic group and trade routes from 1400 to 1900. We find that women belonging to ethnic groups whose ancestors were exposed to the Red Sea route are more likely to be infibulated or circumcised today and are more in favor of continuing the practice. The estimated effects are very similar when slave exports are instrumented by distance to the North-Eastern African coast. Finally, the effect is smaller for ethnic groups that historically freely permitted premarital sex – a proxy for low demand for chastity.

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1 Introduction

Social norms are an essential part of life in many developing countries and economists have underlined their relevance for economic development (e.g. Platteau, 2000). A substantial body of literature has investigated the benefits of social norms and informal institutions as a way to cope with missing or incomplete credit markets, for example, by supporting informal lending or the collective provision of public goods.[1] Another literature has recently emerged on the 'dark side' of social norms: inefficient behaviors due to pressure for risk sharing and solidarity (Baland, Guirkinger and Mali 2011; Jakiela and Ozier 2016) and harmful gender norms such as child marriage and marriage payments (Field and Ambrus, 2008; Anderson and Bidner, 2015; Corno, Hildebrandt and Voena, 2020; Bhalotra, Chakravarti and Gulesci, 2020).

This paper focuses on an extremely harmful norm, female genital cutting (FGC). According to the World Health Organization (WHO), FGC comprises all procedures involving "the partial or total removal of external female genitalia or other injury to the female genital organs for non-medical reasons".[2] UNICEF (2019) estimates that more than 200 million women are cut worldwide. The custom is present in 30 African and Middle Eastern countries with high variation in prevalence. In some areas, FGC is almost universal: 99 percent of women are cut in Somalia, 98 in Guinea, 96 in Djibouti, 91 in Eritrea and 90 percent in Sudan, Egypt and Sierra Leone. Unlike male circumcision, which has been shown to limit the transmission of HIV and other sexually transmitted diseases, FGC has serious negative health consequences. These materialize both at the moment of cutting (e.g., hemorrhage, infections and, in extreme cases, death) and in the longer run with possible obstetric and birth-related complications (Banks et al., 2006; Wagner, 2015). It can also have long term consequences on mental health (Mulongo, Martin and McAndrew, 2014).

While previous studies have mainly focused on the consequences of FGC and the role of coordination to 'bad' equilibria, we have very limited empirical evidence on the *origins* of this practice. This paper aims at filling this gap by studying how FGC originated and in particular by asking the question: Can current differences in FGC prevalence be traced back to the origins of the slave

[1] See, among others, Greif (1993), Udry (1994), and La Ferrara (2003).

[2] https://www.who.int/news-room/fact-sheets/detail/female-genital-mutilation

trade?

Our working hypothesis, substantiated by historical documentation and commentaries, is that FGC was connected to the Red Sea route of the African slave trade. Along this route, women were sold as concubines in the Middle East and infibulation was used to ensure chastity and avoid pregnancies (Dos Santos, 1609; Brown 1799; Burckhardt 1819). We conjecture that the differential exposure of ethnic groups to the Red Sea route determined differential adoption of the practice by these groups, and that this may translate into differences in contemporary prevalence of FGC.

To test this hypothesis, we examine a variety of historical sources and expand Nunn's (2008) estimates on the number of slaves exported across the Red Sea, thus assembling a more comprehensive dataset on the ethnicity and the number of slaves shipped across the Red Sea between 1400 and 1900. We rely on Nunn (2008) for estimates of slave exports along the other three African slave trade routes (trans-Saharan, trans-Atlantic and Indian Ocean), given that his original data already has broad coverage of these routes. We then match data on slavery by country, ethnic group and trade routes with individual level data from all the available Demographic and Health Surveys (DHS) and Multiple Indicator Cluster Surveys (MICS) in Africa eliciting information on female genital cutting. We test the relationship between exposure to the Red Sea slave route and contemporary prevalence of FGC separately for different types of FGC, focusing in particular on infibulation –the form most directly related to the practice performed on female slaves.

Using within-country variation across over 200,000 women in 28 African countries, we find that women belonging to ethnic groups whose ancestors were exposed to the Red Sea slave trade are significantly more likely to be infibulated (and in general, circumcised) today. According to our most conservative specification, on the intensive margin on average a doubling in the volume of the slave trade increases the probability of infibulation by 5.5 percentage points. We do not find any effect of having ancestors traded along the other African slave routes, which –differently from the Red Sea one– did not specialize in exporting concubines. These results are robust to the inclusion of a wide set of contemporary and historical controls.

We also detect significant effects on attitudes towards FGC: women whose ancestors were traded along the Red Sea route are more likely to be in favor of continuing the practice, compared to

women who had ancestors in other slave trade routes or not enslaved. This is a relevant finding from a policy perspective, as it suggests that efforts to eradicate FGC in Africa may face obstacles created by distant historical experiences whose long term effects on culture are still felt today.

To deal with potential endogeneity of the slave exports variable, we draw on the existing literature that uses distance from the Atlantic coast as an instrument for trans-Atlantic slave exports (e.g., Nunn and Wantchekon, 2011; Whatley and Gillezeau, 2011; Teso, 2019). We compute the distance between the historical location of the ethnic group's centroid and the North-East African coast and use it as an instrument for the exposure to the Red Sea slave trade, controlling for the distance to any African coast. We show that ethnic groups located closer to that coast are more likely to be traded in the Red Sea route. Our IV estimates are significant and very similar in magnitude to the OLS ones, suggesting that the association between infibulation and Red Sea slave trade is unlikely to be driven by selection or omitted variable bias.[3]

Finally, to uncover potential heterogeneity in the effects of exposure to the Red Sea slave trade, we test whether societies with a higher demand for chastity are differentially more likely to adopt the practice. The underlying idea is that, over time, cutting may have become a marker for virginity or purity, and hence it may have been adopted as a desirable trait by non-slave populations with a high demand for chastity. To test this hypothesis, we exploit variation across ethnic groups in the historical norms on premarital sexual behavior of girls, using data from Murdock (1967). We show that ethnic groups exposed to the Red Sea slave trade but historically characterized by liberal norms regarding premarital sex have a lower contemporary prevalence of infibulation compared to groups exposed to the same trade route but with historically restrictive norms.

Our work relates to three strands of literature. First, it contributes to the literature that studies the long term effects of history on contemporary gender attitudes and behavior. For example, Alesina, Giuliano and Nunn (2013) show that descendants of societies that practiced plough agriculture have less equal gender attitudes and lower female participation in the workplace today. Alesina, Brioschi and La Ferrara (2019) find that ethnic groups whose women were historically less involved in production activities have a higher incidence of domestic violence today, and a higher tolerance of it. The outcome we study in this paper –female genital cutting– is another important

[3]The Hausman test fails to reject the null of exogeneity of our Red Sea exports variable.

component of women's status, which entails significant health and psychological costs.

Second, our work is linked to the growing empirical literature on the effects of Africa's slave trade on economic development, which has shown long term impacts of this trade on economic performance (Nunn, 2008), trust (Nunn and Wantchekon, 2011), and female labor force participation (Teso, 2019). These papers focus on the trans-Atlantic slave trade and on different outcomes, while our emphasis is on the Red Sea slave trade (for which we expand the existing data coverage) and on an outcome previously not empirically associated with the slave trade, i.e., FGC.

Finally, our work relates to the literature on the drivers and persistence of female genital cutting. A first set of contributions studies coordination failures and the role of people's beliefs in sustaining the norm (Mackie, 1996; Bicchieri, 2006; Platteau et al., 2018), including recent tests on the relevance of coordination in field settings (Efferson et al. 2015; Novak, 2020; Gulesci et al., 2020b). Others stress the intrinsic value of cutting as a signal of sexual fidelity, on the presumption that men value cut women more on the marriage market (e.g., Chesnokova and Vaithianathan, 2010; Wagner, 2015). Until recently, the economic literature on FGC had not systematically investigated the historical roots of FGC, which is what we aim to do in our work. In a recent paper, Becker (2019) tests the anthropological theory that pre-industrial reliance on pastoralism, characterized by extended periods of male absence, made it desirable to control female sexuality and led to the adoption of restrictive norms and practices, including infibulation. Our work offers a complementary explanation of the origins of infibulation, that is based on historical accounts linking this practice to the Red Sea slave trade.

The remainder of the paper is organized as follows: section 2 provides background information on infibulation and on the slave trade, section 3 describes the data used in our analysis, section 4 illustrates the empirical strategy, section 5 presents our empirical results and section 6 concludes.

2 Historical background

2.1 The origins of infibulation

The practice of infibulation has very ancient roots but the exact origin and motives behind its adoption and persistence are still unknown and scarcely documented.

Infibulation appears to have been practiced in Ancient Egypt and among nomadic tribes around the Red Sea as a measure to control female sexuality (Ghalioungui 1963; Levy, 1962). The earliest evidence of female infibulation is in a Greek Papyrus from the II century BC, currently preserved in the London British Museum, which indicates that a certain Haramais of Sarapeum (Alexandria, Egypt) "gave money to the mother of a girl for dowry and the usual ceremony of circumcision" (Kenyon, 1893).[4] Two hundred years later, the Greek geographer and historian Strabo reported excision on Egyptian girls, after he visited Egypt in 25 BC, saying that the Koloboi group (a word that means mutilated) located in the West coast of the Red Sea, were people that "mutilated the sexual glands and excised their women in the Jewish manner" (Widstrand, 1964, Knight, 2001). During the same period, Philo of Alexandria, a Jewish philosopher who lived in Alexandria (20 BC-50 AD), also made reference to FGC as follows: "the Egyptians, by the custom of their country, circumcise the marriageable youth and maid in the fourteenth (year) of their age, when the male begins to get seed, and the female to have a menstrual flow" (Knight, 2001). Another mention is attributed to the Greek physician Galen (129 - 200 AD): "When [the clitoris] sticks out to a great extent in their young women, Egyptians consider it appropriate to cut it out." The reference to Egyptian origin also emerges from the fact that in some countries (e.g., Somalia, Sudan) infibulation is called 'Pharaonic circumcision'.[5]

In the 16th century Pietro Bembo, a Venetian historian, provides for the first time a detailed description of infibulation on the basis of the accounts of travelers to the Red Sea. He writes that "the private parts of the girls are sewn together immediately after their birth" since "an indubitable virginity at the marriage is held in such a high esteem" (Bembo, 1551).

At the beginning of the twentieth century, ethnographic studies document cases of infibulation around the contiguous areas of the Red Sea coast among the nomadic populations. Seligman (1913), a British physician and ethnologist, argues that the practice arose in the Hamito-Semitic areas by the Red Sea and maps a number of locations where it was documented. Widstrand (1964) combines all the early travelers' accounts and draws a map on the historical spatial distribution of

[4]Referring to the pathologist Grafton Elliot Smith, who examined hundreds of mummies in the early 20th century, Knight (2001) argues that the genital area may resemble what the WHO classifies as 'type 3' circumcision.

[5]Boyle (2002) recounts that during the Pharaonic era (3000 - 323 B.C.) the Egyptians believed in gods having bisexual features and that infibulation was considered a way to detach women from their masculine soul.

infibulation within Africa. In both maps, infibulation is shown to be present in clusters scattered in North-Eastern Africa, which extend along the Nile valley and the caravan routes westward.

Finally, the relation between FGC and religion is a complex one. The issue of whether the practice of female infibulation or circumcision is a requirement of Islam is debated. Historically, female circumcision has been mentioned in some Hadiths in the pre-Islamic period (before 600 AD).[6] For example it has been mentioned that "five practices are characteristics of the Fitra: circumcision, shaving the pubic hair, cutting the moustaches short, clipping the nails, and depilating the hair of the armpits. This Hadith does not point to a certain gender, so the hadits could be interpreted as being valid for both sexes" (Bukhari, 810-870) Sahih-Bukhari). Nowadays, we certainly observe infibulation and circumcision among women belonging to different religious groups.

2.2 The African slave trade

For a period of nearly 500 years, between 1400 and 1900, about 18 million slaves were exported from Africa. Compared to previous slave trades, this number was unprecedented. The slave trade was organized along four main routes (Mowafi, 1981; Lovejoy, 1989):

(i) the trans-Atlantic route was the most prominent and the most recent. Through this route, approximately 12 million slaves were taken from West Africa and West-Central Africa and shipped to the European colonies in North and South America. Approximately 6 million slaves were exported via the other three routes, which were much older and pre-dated the trans-Atlantic slave trade;

(ii) the Red Sea route, where slaves were taken from the inland of the Red Sea and shipped to the Middle East, in particular to the Arabian Peninsula and the Persian Gulf;

(iii) the trans-Saharan route, where slaves were taken from the south of the Sahara, travelled across the Saharan desert and reached the Northern part of Africa (Egypt, Morocco, Algeria, Libya); and

[6] Hadiths are records of the words, actions, and the silent approval of the Islamic prophet Muhammad. Hadith have been called "the backbone" of Islamic civilization, and the authority of hadith, as a source for religious law and moral guidance, ranks second only to that of the Quran.

(iv) the Indian Ocean route, where slaves were taken from Eastern Africa and shipped partly to the islands in the Indian Ocean (Reunion, Mauritius and Madagascar) and partly to the Arabian Peninsula.

[Insert Figure 1]

Figure 1 shows the four slave trade routes, using differently colored arrows for each of them: green for the trans-Atlantic route, orange for the trans-Saharan one, red for the Red Sea and blue for the Indian Ocean route. In the figure we also show the names and locations of the main ports of departure for African slaves, which we compiled assembling different historical sources.[7]

The diverse geographical destinations of slaves along the four routes generated variation in the type of slaves demanded by each destination. The slaves exported across the trans-Atlantic route were typically employed in cotton or sugar plantations in the New World. Given the physical strength necessary to perform work in the plantations, European traders had a preference for male slaves. Estimates by Lovejoy (1989) suggest that the ratio of male-to-female slaves involved in trans-Atlantic slave trade was about 181:100 between the 17th and the end of the 19th century. The trans-Atlantic slave trade route overlapped with the Trans-Saharan trade route to a considerable extent after the 18th century (Lovejoy, 1989).

On the other hand, slaves traded along the Red Sea route were mainly women, with a male-to-female ratio of 1:2 (Segal, 2001; Lovejoy and Richardson, 1995). This was due to the role of these slaves as concubines and domestic servants in the Oriental harems in the Middle East (Harris, 1971). Some of the female slaves served in the harems for sexual purposes, while others helped in the daily management of the house (cooks, cleaners, dressers etc.). Men were mainly used as harem guards, which is why the castration of male slaves was common practice. The hypothesis that female slaves traded along the Red Sea route were young and used for sexual purposes is substantiated by the historical records assembled by Miran (2013), who analyzes 67 manumission records from Massawa, one of the main ports of exit for the Red Sea route. As shown in Appendix Table A2, 41 percent of the women in Miran's sample were in the age range 13-15 years. Although not representative, this suggests that slaves crossing the Red Sea were fairly young.

[7] We report the full list of ports with the corresponding historical sources in Appendix Table A1.

The Indian Ocean trade was somewhat more complex. In the 1600s and early 1700s, slave exports were essentially an extension of the trade across the Red Sea and Sahara. In the 18th century, however, new currents affected this maritime trade. Slaves were taken to the Dutch settlement in Cape Town and the French established plantations on the Mascarene Islands in the Indian Ocean. Europeans were trying to establish a plantation economy similar to the one created in the New World. Valentine (2000) finds a ratio of 1.22 male slaves per female slave in a sample of more than 20,000 slaves, while Sheriff (1987) finds a nearly equal split between male and female slaves across 1,620 slaves in Zanzibar (the main hub of the Indian Ocean route) in 1860-61. Anyway, the Indian Ocean route was the one with the lowest number of slaves (the number of slaves taken via the trans-Atlantic route was 154 times as large as in the Indian Ocean route between 1400 and 1900).

Slavery recruitment happened in many different ways. Some slaves were kidnapped by organized raids and some taken as prisoners in the wars between rival clans, but most were bought as children from parents who sold them with the intention of bettering their condition (Mowafi, 1981). After recruitment, slaves were brought to the so called 'captive zones' where they were inspected and prepared to be shipped to their final destinations. For instance, male slaves destined to serve as eunuchs in Oriental harems underwent castration in these trading stations (Mowafi, 1981; Lovejoy, 1989). According to Renault (1988), the Arab slave trade differed from the European one because slave raiders ventured far deeper into the African inland and transported slaves over long distances, e.g. via canoes using the existing rivers. At a minimum, the journey *was* 13-weeks long. During the slaves' journey, sexual abuse of slaves, rape and other forms of violence were common aboard the slave ships.[8]

2.3 The historical link between infibulation and slavery

The analysis of historical sources suggests a relation between slavery and infibulation. According to descriptions by early travelers, infibulated female slaves had a higher price on the market because infibulation was thought to ensure chastity and loyalty to the owner and prevented undesired

[8] For example, the slave trader John Newton writes: "The men were packed together below deck and were secured by leg irons (...). Women and children were kept in separate quarters, sometimes on deck, allowing them limited freedom of movement, but this also exposed them to violence and sexual abuse from the crew" (Newton, 1962).

pregnancies (Browne, 1799; Larrey, 1803; Burckhardt, 1819; Cailliaud, 1826; Russenegger, 1843). In 1609 Joao Dos Santos, a Portuguese missionary, reports that "a group from Mogadishu (Somalia) has a custom to sew up their women, especially their slaves being young to make them unable to conception, which makes these slaves more valuable in the market both for their chastity, and for better confidence which their owner put in them" (Dos Santos, 1609). Johann Ludwig Burckhardt (1819), a Swiss traveller and geographer, writes that "infibulated girls ('virgins') received a higher price on the Egyptian slave market than non-infibulated ones". According to Russegger (1843) "infibulation was done to slave women to keep them virginal prior to selling them in the destination places" and Larrey (1803) indicates that the Turks infibulated female slaves prior to selling them. Finally, Lightfoot-Klein (1989) reports that " infibulation appears to have been reserved for slave girls, who were transported from Sudan and Nubia, (...) to prevent their getting pregnant. An infibulated virgin fetched a far higher price on the slave market".

Given the historical geographic distribution of infibulation and its role during slavery, more recently anthropologists and sociologists have hypothesized an association between infibulation and the Red Sea slave trade route, because slave women traded along the Red Sea route were used as concubines and domestic servants in the Oriental harems in the Arabic Peninsula (Mackie, 1996; De Meo, 1997). De Meo (1997) writes that "girls were once infibulated to ensure their virginity when presented for the Near Eastern harem slave trade. The regions that today practice infibulation were once primary 'capture zones' in the Turk and Arab slave trade for young African girls and boys. This fact suggests that some severe forms of genital mutilation may have originated with, or were at the very least intensified by, the institutions of slavery and the harem system".

Once the practice of infibulation consolidated through the slave trade and became associated with virginity and purity, the adoption of the practice started spreading among non-slave populations and also taking less severe forms than infibulation. Mackie (1996) writes that "the geographic distribution of FGC suggests that it originated on the western coast of the Red Sea, where infibulation is most intense, diminishing to clitoridectomy in westward and southward radiation" and that "a practice associated with shameful female slavery came to stand for honor". Abdalla (1982) also argues that in this context virginity became a 'trademark'.

In sum, the existing historical evidence and anthropological analysis points to a path whereby female genital cutting existed in ancient Egypt and strongly intensified during the African Slave trade in its most severe form (infibulation), as a way to preserve slaves' virginity. The practice then became associated with notions of purity and honor and started being adopted by local populations. We hypothesize that exposure of local groups to this practice was higher the closer the groups were to the Red Sea slave routes, and that this may have generated variation in adoption that persists to this day. In what follows, we empirically test this hypothesis.

3 Data sources and description

3.1 Female genital cutting

Data on female genital cutting (FGC) comes from the Demographic and Health Survey (DHS) and the Multiple Indicator Cluster Surveys (MICS). DHS are nationally-representative, individual-level surveys carried out in several countries around the world. We assembled all DHS datasets publicly available for Africa between 1994 and 2018 which elicit information on FGC and on respondents' ethnicity. The latter information is important to merge the DHS data with historical data on slavery. In DHS surveys, the information on FGC is collected retrospectively during the woman's interview. Typically, women are asked two questions: (i) "In some countries, there is a practice in which a girl may have part of her genitals cut. Have you ever heard about this practice?"; and (ii) "Have you yourself ever been circumcised?". In most of the countries in our sample, the DHS also elicits information on the type of circumcision by asking "Now I would like to ask you what was done to you at that time: (a) Was any flesh removed from the genital area?" (type 1-2 circumcision under WHO's definition); (b) "Was your genital area sewn closed?" (infibulation, or type 3 circumcision under WHO's definition).[9] In our analysis we consider two main dependent variables; a dummy for whether the woman is circumcised (comprising all types of FGC) and a dummy for whether she is infibulated (type 3 circumcision). The latter is most closely related to the practice originally performed on female slaves, hence it will be our primary outcome of interest.

[9]The DHS includes another question related to FGC: "Was the genital area just nicked without removing any flesh?" that we do not use because it does not correspond to the main types of circumcision classified by the WHO. Furthermore, the DHS does not distinguish between type 1 and type 2 circumcision as defined by the WHO.

For some countries, information on respondents' ethnic group (Egypt, Swaziland), or on FGC (Djibouti, Guinea-Bissau, Mauritania, Somalia and Sudan) was not recorded in the DHS. Therefore, we completed our sample using available data from the Multiple Indicator Cluster Surveys (MICS), a nationally-representative dataset collected by UNICEF that elicits information on FGC as well as on respondents' ethnicity for a subset of countries. Importantly, the questions related to female genital cutting asked in the MICS are identical to the ones used in the DHS.

[Insert Figure 2]

Figure 2 shows variation in the prevalence of infibulation in our sample, by country (panel A) and by ethnic group (panel B). Infibulation is practiced both in East and in West Africa, with higher prevalence in the North-eastern part of the continent. Importantly, panel B shows that there is significant within-country variation across ethnic groups, which is the variation we exploit since all our specifications include country fixed effects.

In Appendix Table A3 we report the fraction of infibulated and circumcised women by country and the average age at cutting. In the overall sample, 17 percent of the women are infibulated, while approximately 60 percent have any type of FGC. Djibouti, Somalia and Sudan have a prevalence of infibulation higher than 70 percent. Looking at circumcision in general, the highest prevalence is in Somalia (99 percent), Djibouti (96.4), Eritrea (91.2), Sudan (90), Sierra Leone (90), and Egypt (89.7 percent). The countries with the lowest prevalence are Uganda (0.1 percent), Swaziland (1.4), Togo (5) and Niger (5.1 percent). There is significant variation in the average age of cutting, from a minimum of about 4 years in Gambia to a maximum of 12 years in Sierra Leone.

3.2 Slave exports and ethnicity

Data on the ethnicity and number of slaves exported across different routes were originally assembled by Nunn (2008) and have been used in a number of papers (e.g., Nunn and Wantchekon, 2011 and Teso, 2019). While Nunn (2008) draws on a wide array of different sources and has large samples available for the trans-Atlantic, trans-Saharan and Indian Ocean routes, the sample of slaves used in his estimates for the Red Sea route is substantially smaller. For our purposes it is crucial to increase the representativeness of the data for the Red Sea route because this was the route

with the greatest exposure to the use of slaves as concubines. We therefore complement Nunn's database of the trans-Atlantic, Indian Ocean and trans-Saharan routes with newly collected data for the Red Sea route.

Red-Sea Slave Trade. To expand the representativeness of Nunn's (2008) data for the Red Sea route we rely on a number of sources. Data on the total number of slaves across the Red Sea route from 1400 to 1900 mainly come from Austen (1979, 1988, 1992). Besides estimating the total volume of slaves, Austen (1988) describes in detail the route of the Red Sea slave trade from the origin to the destination countries. Slaves were mainly taken from Sawakin (Sudan), Zayla (Somalia), Tajura (Gibuti), and Massawa (Eritrea), and shipped to the Arabian Peninsula and Middle East, mainly in Hijaz in western Arabia, in Yemen and in the Arabian/Persian Gulf, with re-exports to Egypt, Anatolia and the Levant. Starting from this information and following the procedure adopted by Nunn (2008) and Harris (1971), we conducted a detailed search for manumission acts in each port of origin.

One of the most relevant data sources we found is 'From Bondage to Freedom on the Red Sea Coast: Manumitted Slaves in Egyptian Massawa, 1873 - 1885' by Jonathan Miran (2013). Miran (2013) studied 239 manumission acts registered in the Massawa Islamic Court Records and compiled individual ethnic information on slaves who may have been captured before their shipment across the Red Sea. For 85 percent of the slaves freed, Miran was able to retrieve the individual's ethnicity or geographic provenance.

We also examined documentation for the Arabian peninsula and its destination ports of the slave trade and came across another particularly useful source: 'Slavery in the Gulf in the First Half of the 20th Century' by Jerzy Zdanowski (2008). Zdanowski (2008) lists a large number of statements –either applications or acts of manumission– recorded at British Agencies, Consulates and Residencies in Arabia. Between 1906 and 1949 a total of 949 statements were made by slaves.

We add these two data sources to Harris (1971) and League of Nations (1936, 1937), which were already used by Nunn (2008), and cross-check all sources against each other to avoid double counting the same individual. Appendix Table A4 shows the final sample by data source. To compute the number of slaves in each ethnic group we follow the same procedure as Nunn (2008):

we first calculate the share of each ethnic group in the total Red Sea slave trade (assumed to be constant across time periods) and then multiply these shares by the total number of slaves in the Red Sea route assembled by Austen (1988). With this computation, we obtain the total number of slaves by ethnic group and across slave routes, covering 66 different ethnicities.

Trans-Atlantic, Indian Ocean and Trans-Saharan Slave Trade. For the remaining three slave trade routes we take the number and ethnicity of slaves from Nunn (2008).[10] It is important to stress that our procedure and type of sources are fully consistent with those of Nunn (2008), hence the data are comparable.

For all the slave routes, we create a normalized measure to be used in the empirical analysis, dividing the total number of slaves by the land area historically inhabited by the ethnic group. Land area is measured in millions of square kilometers and is from Parker (1997). Appendix Figure A1 shows the spatial distribution of this normalized measure across the four different slave trade routes.

3.3 Ancestral characteristics

Ancestral characteristics of each ethnic group come from the Ethnographic Atlas, a worldwide ethnicity level database assembled by George Peter Murdock (Murdock, 1967) containing ethnographic information for 1,265 ethnic groups prior to industrialization. We rely on this source for some of our control variables, in particular for four characteristics potentially correlated with a group's historical propensity to practice FGC.

First, given the potentially high correlation between female and male circumcision, we create a dummy for whether male genital mutilation was historically a common practice for the ethnic group. Second, we construct a variable capturing norms on premarital sexual behavior of girls. Third, following Becker (2019), we construct an indicator capturing the historical dependence on herding animals/pastoralism. Fourth, we take into account any past form of slavery by constructing a variable equal to one if the ethnic group was exposed to the presence of historical slavery. This variable would, for instance, capture if the ethnic group was involved in slavery in Ancient Egypt, well before the African slave trade.

[10] We refer the reader to Nunn (2008) for details about the construction of his database.

Finally, following Nunn and Wantchekon (2011) we also include two proxies for the initial level of prosperity of the ethnic group, which may simultaneously influence slave trading strategies and female genital cutting. One measure comes from Murdock (1967) and identifies the precolonial settlement patterns of ethnic groups, ranging from fully nomadic to permanent or complex settlements. We construct an indicator for nomadic and seminomadic ethnic groups. The other variable measures the historical population density of each ethnic group and is constructed as the ratio of historical population data from Murdock (1959) to the land area occupied by the ethnic group, from Parker (1997). A more detailed description of the historical controls used in the empirical analysis is provided in Section 4.

3.4 Final sample

Our final dataset is obtained by matching historical ethnic groups in Murdock's Atlas (on which the slave trade data are based) with the ethnic groups reported in the DHS and in the MICS. The procedure we use for the matching is described in Online Appendix A.1. We were able to match 180 ethnic groups out of the 298 originally listed in the DHS. Our final sample comprises 28 countries and approximately 200,000 women born between 1942 and 2002. The list of African countries and survey waves included in the analysis is reported in Appendix Table A5.[11]

[Insert Table 1]

Table 1 reports summary statistics for key variables of interest. On average, 14.2 percent of the women are infibulated and 58.3 percent have some form of female circumcision; 19.8 percent belong to an ethnic group that was affected by the Red Sea slave trade, about 50 percent by the Atlantic trade, 15 percent by the trans-Saharan trade and 8.8 percent by the Indian Ocean route. If we take into account the number of slaves exported along the various routes from the ethnic groups to which our respondents belong (and normalize by the land area inhabited by the group), we confirm that the trans-Atlantic route was by far the most important, followed by the Red Sea one: the trans-Saharan and Indian routes were comparatively less important. Summary statistics for the remaining variables we use in our analysis are reported in Appendix Table A6.

[11] Given that the number of survey waves varies for each country, in *our* analysis we consider the last available survey wave to avoid giving more weight to countries with a higher number of waves.

4 Empirical strategy

We exploit heterogeneity across ethnicities and within country to test whether ethnic groups historically more exposed to the Red Sea slave route have a higher prevalence of infibulation and female circumcision today, compared to ethnic groups that were exposed to other routes or that were not at all exposed to the African slave trade. We estimate the following linear probability model:

$$FGC_{iec} = \alpha + \beta_1 RedSea_e + \beta_2 Saharan_e + \beta_3 Atlantic_e + \beta_4 Indian_e + \gamma X_{iec} + \lambda_c + \epsilon_{iec} \quad (1)$$

where i denotes a respondent (woman), e the ethnic group to which she belongs to, and c the country where she lives. FGC is an indicator taking value 1 if the respondent is infibulated (or circumcised, depending on the specification) as self-reported in the DHS, and 0 otherwise. The variables $RedSea_e$, $TransSaharan_e$, $TransAtlantic_e$ and $Indian_e$ capture the intensity of slave trade across different slave routes, measured as the ratio between the number of slaves taken from ethnic group e and shipped through a given route from 1400 to 1900 and the area of land inhabited by the ethnic group e in the 19th century.[12] X_{iec} is a vector of individual (contemporaneous) controls including: age, age squared, a indicator for residing in an urban area, religion (dummies for Muslim, Catholic, traditional religion), educational attainment (dummies for primary, secondary or higher) and wealth (measured as the first principal component from a set of durable goods owned by the household); λ_c are country fixed effects.[13]

Our main coefficient of interest is β_1: if our conjecture is correct, we should expect $\beta_1 > 0$. As for the other coefficients, β_2, β_3 and β_4, we expect that there should not be any association between slave trade along the other routes and FGC –except possibly for the Indian Ocean route, given that some of the slaves along this route were exported to the Middle East. We cluster standard errors at the ethnic group level.

In interpreting the β_1 coefficient in equation (1), we make the following considerations. The

[12] Land area is measured in square kilometers and is from Parker (1997). By dividing the number of slave exports by land area, we take into account differences in the size of ethnic groups.

[13] The wealth index is constructed from the following assets: cars, computer, fridge, tv, mobile phone, moto, bicycles, telephone, bakkies, electric gas, kettles, geysers.

variables related to slave exports are pre-determined, so endogeneity problems due to reverse causation are not an issue in our case. A possible concern may then be the presence of unobserved variables that are correlated with a woman's probability to be infibulated or circumcised today and with her ancestors' exposure to the slave trade.

A first thing to notice is that we control for slave exports along all four slave trade routes. This implies that any unobserved factor that affects the propensity to enslave certain groups, without being specific to the Red Sea route, would generate a spurious correlation for other routes as well as for the Red Sea one. For example, if the concern was that ethnic groups more prone to violence towards women –and therefore more likely to practice FGC– may have been the ones that supplied a higher number of slaves, this argument should apply regardless of the particular route taken by the slaves.

Any threat to identification should therefore come from unobserved factors that are specific to ethnic groups historically located along the Red Sea route, and not to the others. For example, a potential counfouder may be that slave traders may have chosen women from ethnic groups that had a greater focus on chastity or beauty to be sent on the Red Sea route to become concubines. While we cannot rule out the existence of such unobserved factors, we follow two strategies to address this concern.

First, we gauge the extent to which unobserved ethnicity-specific factors may be a problem by augmenting the benchmark specification (1) with historical characteristics of ethnic groups potentially correlated with both FGC and with the Red Sea slave trade. In particular, we include five variables taken from Murdock's (1967) Ethnographic Atlas:

(i) an indicator for whether the ethnic group historically practiced male circumcision – a practice adopted by about 33 percent of the groups in our sample;

(ii) a variable capturing norms on premarital sexual behaviors. This variable includes information on whether ethnic groups practiced early marriage of females, insisted on virginity, prohibited premarital sex but weakly censured it, allowed premarital sex but censured it in case of pregnancy, prohibited trial marriage and promiscuous relations; or freely permitted premarital sex even if pregnancy results. We construct a dummy taking value 1 if the ethnic group historically freely

permitted premarital sexual behavior and 0 otherwise. 31 percent of the groups in our sample freely allowed for premarital sexual behavior.

(iii) a variable measuring the extent to which the ethnic group was historically dependent on animal husbandry/pastoralism;[14]

(iv) an indicator for whether the ethnic group was historically exposed to slavery. This includes any past form of slavery, including those that preceded the African slave trade (e.g., slavery in Ancient Egypt, etc.);

(v) an indicator for whether the ethnic group had a nomadic or semi-nomadic precolonial settlement pattern, as opposed to sedentary ones.

We also include two additional historical controls taken from other sources:

(vi) Given that it was actually the most developed areas of Africa that tended to select into the slave trades (Nunn, 2008), we also control for the initial level of prosperity of the ethnic group proxied by population density (historical population divided by the land area inhabited by the ethnic group);[15]

(vii) Given historical accounts that FGC may have originated in Ancient Egypt, we control for the distance of an ethnic group's centroid to Cairo.[16]

The final specification we estimate is therefore an augmented version of (1), which includes the set of ethnic-level controls W_e described above:

$$FGC_{iec} = \alpha + \beta_1 RedSea_e + \beta_2 Saharan_e + \beta_3 Atlantic_e + \beta_4 Indian_e + \gamma X_{iec} + \delta W_e + \lambda_c + \epsilon_{iec}. \quad (2)$$

As we will show, our estimates of the effect of Red Sea slave exports are not significantly affected

[14]The Ethnographic Atlas contains information on the degree to which a society depends on animal husbandry, measured on a 10-point scale (variable *v4*), and on the predominant animal in a society (variable *v40*). Following Becker (2019), we generate an indicator that takes value 1 if the predominant type of animal is a herding animal (e.g. sheep, goats, donkeys, horses, reindeer, cattle, or camels/camelids), and 0 if it is an animal that is not herded (e.g., pigs, bees, dogs, poultry, or guinea pigs) and multiply this indicator with an indicator for the degree of dependence on animal husbandry (going from 0 to 100) to measure the historical dependence on pastoralism.

[15]Historical data on population come from Parker (1997) and data on land area historically inhabited by the ethnic group come from Murdock (1959).

[16]Data of ethnographic regions for Africa come Murdock (1959) and were later digitized by Nathan Nunn and Suzanne Biler. Each historic African ethnic group's location is represented by a polygon in a vector shapefile; the various polygons of the different ethnic groups are non-overlapping. These data are available at https://worldmap.harvard.edu/data/geonode:murdock_ea_2010_3

by the inclusion of the controls W_e, which increases our confidence in the fact that unobserved ethnic-specific factors should not play a big role.

The second strategy we adopt to deal with potential endogeneity is to use instrumental variables. This requires an instrument that is correlated with the number of slaves shipped across the Red Sea route but uncorrelated with characteristics of ethnic groups that may affect the adoption of FGC by their descendants. Slave traders purchased slaves at the ports in Africa to ship them to the relevant destinations, making groups located in areas closer to the coast more likely to be traded. The existing economics literature on the slave trade has used distance to the Atlantic coast as an instrument for slave exports along the trans-Atlantic route (e.g. Nunn and Wantchekon, 2011; Whatley and Gillezeau, 2011; Teso, 2019). Since we are interested in the Red Sea route, we rely on the distance to the North-Eastern African coast (delimited by the Suez Canal to the north and by the tip of Somalia to the south), which is the relevant one for slave exports to the Middle East. As we will show, Red Sea slave exports have a highly non-linear relationship with the distance to the North-Eastern coast, plausibly due to topographical features. Hence we will control for distance to the closest coast and use as instrument an indicator for whether a group was historically located within a certain distance from the North-Eastern coast. The identifying assumption is that, after controlling for a wide set of historical variables and for the distance to *any* African coast, this measure of historical distance is uncorrelated with other factors that affected FGC of the groups' descendants.

5 Results

Before presenting our main findings, it is useful to explore the potential differences between women belonging to ethnic groups exposed to the slave trade and other women in our sample. In Appendix Table A7 we report the coefficients of a regression where the dependent variable measures exposure to the Red Sea route and the independent variables are socioeconomic characteristics at the individual level and historical controls at the ethnic group level.[17] We do not observe a systematic correlation between Red Sea slave trade and individual and ethnic group covariates,

[17] Columns 1-2 use as dependent variable the slave exports normalized by land area, while columnd 3-4 apply the inverse hyperbolic sine transformation.

except for traditional and Muslim religion (positively associated with Red Sea slave exports) and for the historical presence of male circumcision (negatively associated with it).

5.1 FGC prevalence

[Insert Table 2]

Table 2 contains our main results. In this table we estimate equation (2) using as dependent variable a dummy taking value 1 if the respondent reports that she is infibulated (type 3 circumcision) and 0 otherwise (nothing or any other type of circumcision). In columns 1 to 4 we measure exposure to the slave trade as the number of slaves exported along a given slave route divided by the area of land inhabited by the ethnic group during the 19th century. In columns 5 to 8 we use the inverse hyperbolic sine of the exports/area variable, to account for the fact that the distribution of exports is highly skewed to the left, with a relatively small number of observations taking on large values.

In both cases we estimate four specifications: first only with country fixed effects, then adding individual socioeconomic controls, then adding also historical controls at the ethnicity level, and finally controlling for the distance between the centroid of the ethnic group and Cairo. In table 2 we display the coefficients on the main variables of interest, i.e., slave exports along the various routes, but Appendix Table A8 also reports coefficients on individual and ethnic group controls.

Starting from column 1 of table 2, the coefficient on *Red Sea Exports/Area* represents the effect of a unit increase in this variable on the probability of infibulation for respondents who had slave ancestors traded along the Red Sea route, compared to respondents who did not. This coefficient is positive and statistically significant, as predicted by the historical hypothesis at the core of this paper. Furthermore, the estimated coefficient remains similar in magnitude and significance level when we add additional controls (columns 2-4).

Interestingly, slave exports along other routes are uncorrelated with the probability of infibulation. The small and marginally significant negative coefficient on the trans-Atlantic route in column 1 does not survive the inclusion of additional controls, nor does the small positive coefficient on Indian slave exports. This is consistent with the fact that, although historical sources

report that some of the slaves traded across the Indian Ocean route were sent to the Middle East, the scale of these flows was much inferior to that of the Red Sea route.

The most comprehensive specification is the one in column 4, where we control for the distance between the centroid of each ethnic group and the city of Cairo to account for the possibility that the effect may be driven by ethnic groups who historically lived close to Egypt, where FGC has been hypothesized to originate. We find that it is not, as the estimated coefficient remains virtually unchanged. In terms of magnitude, based on this specification a one standard deviation increase in *Red Sea Exports/Area* increases the probability of infibulation by 4.1 percentage points (or 29 percent of the mean).

When we account for the skewness in the distribution of slave exports by using the inverse hyperbolic sine transformation (columns 5-8), the results are qualitatively similar to those in columns 1-4, and even more significant: in all four specifications the coefficient on the IHS-Red Sea exports variable is significant at the 1 percent level. In terms of magnitude, based on the estimates in column 8, on the intensive margin on average a doubling in the volume of the slave trade increases the probability of infibulation by 5.5 percentage points.[18]

Among the individual -level controls included in the regression (and displayed in Appendix Table A8), it is interesting to note that education, wealth and urban residence are negatively correlated with the probability of infibulation, and religion also plays a significant role.[19]

In Appendix Table A9, we re-estimate columns 5-8 excluding countries where the match between slave data and DHS/MICS data was done at the regional level, namely Egypt, Swaziland, Somalia, and Sudan. For compactness, we report the IHS transformation as our benchmark from now on, but the results also hold with the original ratio of exports to land area. The coefficient on Red Sea slave exports remains positive and significant at the 1 percent level and, if anything, larger in magnitude.

[18] We calculate this number using the expression for the elasticity in case of IHS-transformed regressors recommended by Bellemare and Wichman (2020). In particular, we compute the semi-elasticity $\widehat{\beta} \cdot \frac{x}{\sqrt{x^2+1}}$, where x is the *Red Sea Exports/Area* variable, averaged over the sample with positive exports.

[19] For education, having achieved primary education is negatively correlated with the dependent variable (compared to the omitted category of No education). For religion, compared to the omitted category of non-Catholic Christian, both Catholics and Muslims have a higher probability of infibulation, with the latter group displaying a larger and more significant coefficient.

Next, we move to investigate the relationship between having ancestors in the Red Sea slave trade and the probability of being circumcised, that is, on all forms of FGC (and not only infibulation as in the previous analysis). While the historical accounts on female slaves mostly describe practices that can be classified as infibulation, it is possible that different variants of the practice (including milder forms of female circumcision) may have developed over time among populations initially exposed to infibulation.[20]

[Insert Table 3]

In table 3, we use as dependent variable a dummy taking value 1 if the woman is circumcised (with any type of FGC) and 0 if she is not. Similarly to table 2, we find a positive and significant relation between having ancestors traded across the Red Sea route and being circumcised today, with very similar coefficients across specifications. The magnitude of the effect is somewhat smaller than for infibulation: based on the estimates in column 4, on average, on the intensive margin, a doubling in the volume of Red Sea slave exports increases the probability of female circumcision by 2.3 percentage points. Similar to what we found in table 2, slave exports along trade routes other than the Red Sea one are not associated with contemporary prevalence of FGC.

[Insert Table 4]

Given the geographic concentration of Red Sea slave exports in the eastern part of the continent, one may be concerned that the positive coefficient on the Red Sea route merely captures a difference between East and West Africa, rather than the effect of slave exports. This concern is attenuated by the inclusion of country fixed effects. Furthermore, in table 4, we restrict our sample to countries located in East Africa, namely Egypt, Sudan, Ethiopia, Somalia, Djibouti and Eritrea. We report results for our main outcome of interest, infibulation, but the pattern is similar (positive and significant) if we use as dependent variable a dummy for any type of FGC. It is reassuring to observe that our results hold in this restricted sample and remain significant at the 5 percent level in three out of four specifications despite the smaller sample size (in the remaining case, the

[20] For example, Gulesci et al. (2020a) show evidence of transition from type-3 to type-1 and type-2 circumcision in Somalia.

coefficient is significant at the 10 percent level). Based on the estimates in column 4, on average a doubling of our measure for Red Sea slave trade increases the probability of infibulation within East Africa by 1.4 percentage points. This finding suggests that differences in exposure to the Red Sea slave trade across ethnic groups within the Eastern part of Africa explain part of the variation in the prevalence of infibulation across these groups today.

5.2 Attitudes towards FGC

In addition to studying the relation between the slave trade and the practice of FGC, we are interested in understanding how the historical experience of slavery shaped culture in a way that translates into contemporary attitudes. The DHS elicits information on attitudes towards FGC, asking respondents the following question: "Do you think female genital cutting should continue, stop, or it depends?" We construct a dummy taking value 1 if the respondent answers that FGC should be continued and 0 if she says that it depends or that it should be stopped. Support for FGC is quite widespread in our sample: on average, 36.6 percent of the women interviewed say that FGC should continue.

[Insert Figure 3]

Figure 3 shows the average share of respondents who support FGC at the country level (panel A), and at the ethnic group level (panel B). Support for the practice is widespread in East Africa but also in West-African countries such as Mali, Sierra Leone and Guinea. These are countries where the prevalence of circumcision (all types) is above 90 percent (see Appendix table A3). As we have seen for FGC prevalence, there is a fairly high amount of within-country variation across ethnic groups (figure 3, panel B).

[Insert Table 5]

In table 5, we estimate equation (2) using as an outcome the dummy for whether the respondent is in favor of continuing FGC. We find a positive and significant coefficient on the IHS-Red Sea variable, indicating the significance of historical exposure of one's ethnic group to the Red Sea slave route. Women whose ancestors were traded along the Red Sea route are more in favor of

continuing the practice compared to women who had ancestors in other slave trade routes or not enslaved. Based on the estimates in column 4, on the intensive margin on average doubling our measure for Red Sea slave exports increases the probability of supporting FGC by 2 percentage points.

The above results suggest that efforts to eradicate FGC in Africa may face obstacles created by distant historical experiences with long-term effects on contemporaneous culture.

5.3 Instrumental variable estimates

One potential confounder in the interpretation of our results so far is that ethnic groups that were exposed to the Red Sea slave trade may differ from other groups in some unobserved characteristic that correlates with the practice of FGC. For example, slave traders may have chosen to target ethnic groups in which women were more secluded, or potentially even already practicing FGC, if these characteristics were considered more desirable at the destination. While we are not aware of any argument in this direction in the historical literature, in what follows we address these endogeneity concerns.

Following the literature on the effects of the trans-Atlantic slave trade, which uses distance from the Atlantic coast as an instrument for exposure to the slave trade (Nunn and Wantchekon, 2011; Teso, 2019), we compute the distance between the centroid of each ethnic group in the Murdock Map and each one of the main African coasts associated with the different slave trade routes. The first approach could then be to regress the IHS-Red Sea variable on the distance to the North-Eastern African coast (in levels or in natural logarithm). When we do this, we do not find a significant relationship. This could be due to the more limited scale of the Red Sea route, which involved a much smaller number of slaves than the trans-Atlantic one, as well as to the different geophysical characteristics of the two coasts. In particular, while in West Africa the territory leading to the Atlantic coast is relatively flat, in East Africa the region around the main ports (such as Massawa) is mountainous (see figure 1). It is therefore plausible that Red Sea slave exports may have a highly non-linear relationship with the distance to the North-Eastern African coast.

To explore this hypothesis, we construct a vector of dummies that take value one if the distance

from the North-Eastern African coast is smaller than a given threshold, and we estimate a first-stage relationship between our IHS - Red Sea variable and each of these dummies separately, controlling for the distance from any African coast. The latter term picks up generic effects coming from proximity to the sea, but not specifically linked to the Red Sea slave trade. The coefficients are reported in figure 4, under each of the four specifications that we use in our regressions.

[Insert Figure 4]

We find that ethnic groups that were historically located less than 80 km, 100 km, 120 km, 140 km and 160 km from the North-Eastern African coast were significantly more likely to be traded across the Red Sea route. As expected, the first stage coefficient is higher (and more precisely estimated) for distance cutoffs close to the coast and then gradually decreases and becomes less precise. The effect dies off once we reach 180 km or more from the coast.

[Insert Table 6]

In table 6, we report our two-stage-least squares estimates (top panel) as well as the first stage (bottom panel), using as an instrument for IHS - Red Sea exports/Area an indicator for whether the ethnic group was historically located within 120 km of the North-Eastern coast. The first stage is strong, with an F-statistic ranging from 17 to 18.2, depending on the specification (columns 5-8). The identifying assumption is that, conditional on distance to any coast, proximity to the North-Eastern one only affects FGC through its effect on the Red Sea slave trade. Under this assumption, the estimated causal effect of the Red Sea trade on infibulation (columns 1-4) remains positive, statistically significant and very similar in magnitude than the one estimated with OLS. In fact, the Durbin-Wu-Hausman test does not reject the null hypothesis of exogeneity of our Red Sea exports variable, as can be seen from the p-values reported in the table.

As an additional piece of evidence, in Appendix Figure A2 we report the coefficients of a reduced-form specification with infibulation as the dependent variable and two independent variables of interest (plus all individual, historical, and distance controls). The first regressor, whose coefficient is reported as a blue dot, is a dummy for the distance from the North-Eastern African coast being smaller than the threshold reported on the horizontal axis. The second regressor (with

a coefficient represented by a red square) is a dummy for the distance from any African coast being smaller than the threshold reported on the horizontal axis. The figure also shows the 95 percent confidence intervals associated with the estimates. In support of our hypothesis, we find that close proximity to generic African coasts has no relationship with infibulation, except when the proximity is to the coast involved in the Red Sea trade –the North-Eastern one– which shows a strong positive relationship.

5.4 Heterogeneous effects: norms around premarital sex

The previous analysis has established a robust positive relationship between the historical exposure of a woman's ethnic group to the Red Sea slave trade and her likelihood of being cut (or her support for FGC). In what follows we investigate a possible channel through which the practice of infibulation, historically used for female slaves, may have spread to the rest of the population: the demand for chastity. As discussed in Section 2.3, some scholars have argued that over time cutting became a marker for virginity or purity, and hence may have been adopted as a desirable trait by non-slave populations. The extent to which this may have occurred is plausibly related to a group's demand for chastity and to its norms regarding premarital sex. In particular, we hypothesize that societies with historically more restrictive norms on premarital sex and with a stronger demand for chastity may have been more likely to adopt FGC when exposed to the slave trade.

To test this hypothesis, we exploit heterogeneity across ethnic groups in the historical norms on premarital sexual behavior of girls, using data from Murdock (1967). In our sample, 1.3 percent of the ethnic groups historically practiced early marriage of females, 38.2 percent insisted on virginity, 23.4 percent forbid premarital sex, 2.5 percent allowed it and censured it only in case of pregnancy, none of the ethnic groups prohibited trial marriage and promiscuous relationships, and in 34.6 percent of the groups premarital sex was freely permitted even in case of pregnancy. Appendix figure A3 shows the distribution of the various options across the ethnic groups in our sample.

Based on these data, we create a dummy taking value 1 if premarital sex was historically freely permitted in the respondent's ethnic group, and 0 otherwise. We take this indicator as a proxy for

a relatively low historical demand for chastity, and we expect that exposure to the 'technology' of infibulation among groups with such lower demand should have led to a relatively lower take-up by local populations.

[Insert Table 7]

In table 7 we estimate an augmented version of equation (2) that includes the interaction between *IHS - Red Sea Exports/Area* and the dummy *Premarital sex freely permitted*. Based on the rationale above, we expect a negative coefficient on this interaction term if relatively liberal norms around sex made the adoption of infibulation less appealing. We find that, while the coefficient on the standalone IHS-Red Sea exports variable remains positive and significant at the 1 percent level, the coefficient on its interaction with the premarital sex variable is negative and significant in all specifications. In fact, for ethnic groups that historically had liberal norms around premarital sex, the effect of Red Sea slave exports on contemporary prevalence if FGC is not statistically different from zero.[21] This suggests that the results we found in the previous analysis reflect the experience of societies historically characterized by a relatively high demand for chastity.

6 Conclusions

Our paper has proposed a novel test of the historical origins of female genital cutting (FGC) and a potential explanation for the variation in its prevalence that we observe today in Africa. We provide empirical evidence that female genital cutting can be traced back to the legacy of the African slave trade. In particular, contemporary FGC rates are higher among women belonging to ethnic groups whose ancestors were heavily affected by the Red Sea slave route. Along this route, women were employed as concubines in the Middle East and infibulation was used to ensure chastity and avoid pregnancy. We do not find any correlation between contemporary prevalence of FGC and other slave trade routes. These results are consistent with the different roles female slaves had across different routes – as workers as opposed to concubines.

[21] Note that the coefficient on the standalone variable *Premarital sex freely permitted* is zero.

In addition to their scientific significance, we believe our findings have relevant policy implications and could help design effective policies aimed at reducing FGC in two main directions. First, they highlight the importance of 'inherited culture' in the perpetuation of this harmful practice. Previous work has indicated signalling on the marriage market and coordination failures as key drivers of FGC. Our paper shows that FGC has ancient roots and over time it may have become part of certain groups' cultural identity. Maintaining an 'identity' component while designing policies to reduce the practice could then be a way to change people's demand for it. For example, in ongoing work in Sierra Leone (Corno and La Ferrara, 2020) we sensitize communities to adopt an alternative initiation ritual for girls, which preserves identity but removes the harmful element of cutting.

Second, we know that narratives are important and have been used in the past to understand people's decisions (Glaeser, 2005; Hoff and Stiglitz, 2010). For example, Akerlof and Snower (2015) write: "Standard economics omits the role of narratives (the stories that people tell themselves and others) when they make all kinds of decisions. Narratives play a role in understanding the environment; focusing attention; predicting events; motivating action; assigning social roles and identities; defining power relations; and establishing and conveying social norms." Interventions that change the narrative around FGC, for example by informing communities that FGC was introduced as a means to enslave members of a group, might make this practice less appealing and thus contribute to reducing its prevalence.

References

[1] Abdalla, R.H.D. (1982), "Sisters in afflictions: Circumcision and Infibulation of women in Africa", Zed Press.

[2] Akerlof, G. A., Snower D.J. (2016), "Bread and bullets", *Journal of Economic Behavior & Organization*, 126, 58-71.

[3] Alesina, A., Giuliano, P. and Nunn, N. (2013), "On the Origins of Gender Roles: Women and the Plough", *Quarterly Journal of Economics*, 128(2):469-530.

[4] Alesina, A., Brioschi, B. and La Ferrara, E. (2020), "Violence Against Women: A

Cross■cultural Analysis for Africa", *Economica* doi:10.1111/ecca.12343.

[5] Anderson, S., Bidner, C. (2015), "Property rights over marital transfers", *Quarterly Journal of Economics*, Vol. 130 (3), pp. 1421-1484.

[6] Austen, R. A. (1979),"The Trans Saharan Slave Trade: A tentative census" *in the Uncommon Market: Essays in the economic history of the Atlantic slave trade*, Henry A.Gemery and Jan S. Hogendon eds., New York Academic Press.

[7] Austen, R. A. (1988) "The 19th Century Islamic Slave Trade from East Africa (Swahili and Red Sea Coast): A tentative Census", *Slavery and Abolition* , 9, 21-44.

[8] Austen, R. A. (1992). "The Mediterranean Isalmic Slave Trade out of Africa: A Tentative census", *Slavery and Abolition* , 13, 214-248.

[9] Baland, J.-M., Guirkinger C., Mali C. (2011),"Pretending to Be Poor: Borrowing to Escape Forced Solidarity in Cameroon", *Economic Development and Cultural Change*, 60(1), 1-16.

[10] Banks, E., Meirik, O., Farley, T., Akande, O. (2006), "Female genital mutilation and obstetric outcome: WHO collaborative prospective study in six African countries", *The Lancet*, 367(9525), 1835-1841.

[11] Becker, A. (2019), "On the Economic Origins of Restrictions on Women's Sexuality", mimeo, Harvard Business School.

[12] Bellemare, M. F., and C. J. Wichman (2020), "Elasticities and the Inverse Hyperbolic Sine Transformation," *Oxford Bulletin of Economics and Statistics,* 82(1): 50-61.

[13] Bembo, P. (2007) , "History of Venice (1551)", *the I Tatti Renaissance Library*, ed. R. W. Ulery, Harvard University Press.

[14] Bhalotra S., Chakravarty A., Gulesci S. (2020), "The Price of Gold: Dowry and Death in India", *Journal of Development Economics* , 143: 102413.

[15] Bicchieri, C. (2006), *The Grammar of Society: The Nature and Dynamics of Social Norms.* Cambridge University Press.

[16] Browne, W.G. (1799), "Travels in Africa, Egypt and Syria from the year 1792 to 1798", London.

[17] Burckhardt, J. L.(1835), "Travels in Nubia, 1819", *North American Review* , 40.87: 477-510.

[18] Bukhari M. (810-870), "*Sahih*".

[19] Cailliaud, F.(1826), "Voyage à Méroé: au fleuve Blanc, au-delà de Fâzoql dans le midi du royaume de Sennâr, à Syouah et dans cinq autres oasis; fait dans les années 1819, 1820, 1821 et 1822", *Par autorisation du roi, à l'Imprimerie royale* , Vol 1.

[20] Chesnokova, T. and Vaithianathan, R. (2010), "The economics of female genital cutting", *The BE Journal of Economic Analysis & Policy*, 10(1), 1935-1682.

[21] Corno, L., Hildebrandt N., Voena A. (2020), "Weather Shocks, Age of Marriage and the Direction of Marriage Payments", *Econometrica*, Volume 88, Issue 3.

[22] Corno, L. and E. La Ferrara (2020), "Norms Replacement: An experiment on Female Genital Cutting in Sierra Leone", mimeo, Bocconi University.

[23] De Meo, J. (1997), "The geography of male and female genital mutilations", *Sexual Mutilations*, Springer US, 1-15.

[24] Dos Santos, J.D. (1999), "1609. Ethiopia Oriental e Varia Historia de Cousas Notaveis do Oriente" , *Euora: de Lira.*

[25] Efferson, C., Vogt, S., Elhadi, A., Ahmed, H., Fehr, E. (2015), "Female genital cutting is not a social coordination norm", *Science*, 349(6255), 1446-1447.

[26] Field, E., Ambrus A., (2008), "Early Marriage, Age of Menarche and Female Schooling Attainment in Bangladesh", *Journal of Political Economy,* 116(5): 881–930.

[27] Ghalioungui, P. (1963), "Magic and Medical Science in Ancient Egypt", *Hodder and Stoughton*, London.

[28] Glaeser ,E.L.(2005), "The Political Economy of Hatred", *The Quarterly Journal of Economics*, Volume 120, Issue 1,Pages 45–86, https://doi.org/10.1162/0033553053327434

[29] Greif, A.(1993), "Contract enforceability and economic institutions in early trade: The Maghribi traders'coalitions", *American Economic Review*, 83(3), 525-48.

[30] Gulesci, S., Jindani, S., La Ferrara, E., Smerdon, D., Sulaiman, M. and Young, P. (2020a), "A Stepping Stone Approcah to Understanding Harmful Norms: Theory and Evidence", mimeo, Bocconi University.

[31] Gulesci, S., La Ferrara, E., Smerdon, D. and Sulaiman, M. (2020b), "Changing Harmful Norms through Information and Coordination: Experimental Evidence from Somalia", mimeo, Bocconi University.

[32] Harris, J. E. (1971), "The African Presence in Asia: Consequences of the East African Slave Trade", Northwestern University Press.

[33] Hoff, K.,Stiglitz, J.E. (2010), "Equilibrium Fictions : A Cognitive Approach To Societal Rigidity", Policy Research Working Papers.

[34] Jakiela P., Ozier O. (2016), "Does Africa Need a Rotten Kin Theorem? Experimental Evidence from Village Economies " , *Review of Economic Studies* , 83 (1): 231-268.

[35] Kenyon, F.G. (1893), "Greek papyri in the British Museum", ed. F. G. Kenyon, nr. 24. p. 32, London.

[36] Knight, M.(2001), "Curing Cut or Ritual Mutilation?: Some Remarks on the Practice of Female and Male Circumcision in Graeco-Roman Egypt. Isis; an international review devoted to the history of science and its cultural influences", 92, 317-38. 10.1086/385184.

[37] La Ferrara E., (2003), "Kin Groups and Reciprocity: A Model of Credit Transactions in Ghana", *American Economic Review*, 93(5), 1730-1751.

[38] Larrey, D. J. (1803), "Relation historique et chirurgicale de l'expédition de l'armée d'orient, en Egypte et en Syrie", Demonville, Paris.

[39] Levy, J.E. (1962), "Community organization of the Western Navajo", *American Anthropologi*st, 64: 781-802.

[40] Lightfoot-Klein, H. (1989), "Prisoners of Ritual: An Odyssey into Female Circumcision in Africa", Harrington Park Press.

[41] Lovejoy, P. E. (1989), "The impact of the Atlantic slave trade on Africa: a review of the literature", *The Journal of African History*, 30(03), 365-394.

[42] Lovejoy, P. E. and Richardson D., (1995), "Competing Markets for Male and Female Slaves: Prices in the Interior of West Africa, 1780-1850", *The International Journal of African Historical Studies*, vol. 28, no. 2, pp. 261–293.

[43] Mackie, G. (1996), "Ending footbinding and infibulation: A convention account", *American sociological review*, 999-1017.

[44] Miran, J. (2013), "From Bondage to Freedom on the Red Sea Coast: Manumitted Slaves in Egyptian Massawa, 1873–1885", in *Slavery & Abolition: A Journal of Slave and Post-Slave Studies*, 34:1, 135-157, DOI: 10.1080/0144039X.2012.693302

[45] Mowafi, R. (1981), "Slavery, slave trade, and abolition attempts in Egypt and the Sudan, 1820-1882", Esselte Studium , Stockholm.

[46] Mulongo P., Martin C. H, McAndrew S. (2014) "The psychological impact of Female Genital Mutilation/Cutting (FGM/C) on girls/women's mental health: a narrative literature review", *Journal of Reproductive and Infant Psychology*, 32:5, 469-485.

[47] Murdock, G. P. (1959), "Africa: its peoples and their culture history", McGraw-Hill, New York.

[48] Murdock, G. P. (1967), "Ethnographic Atlas", University of Pittsburgh Press, Pittsburgh.

[49] Newton, J. (1962), "The Journal of a Slave Trader: (John Newton) 1750-1754 ", Epworth Press.

[50] Novak, L. (2020), "Persistent Norms and Tipping Points: The Case of Female Genital Cutting", *Journal of Economic Behavior and Organization*, 177, 433-474.

[51] Nunn, N. (2008), "The Long Term Effects of Africa's Slave Trades" , *The Quarterly Journal of Economics*, 123 (1), 139-176.

[52] Nunn, N., Wantchekon, L. (2011), "The slave trade and the origins of mistrust in Africa", *The American Economic Review*, 101(7), 3221-3252.

[53] Parker, P. (1997), "National Cultures of the World: A Statistical Reference", London: Greenwood Press.

[54] Platteau, J. P. (2000), "Institutions, Social Norms and Economic Development", *Harwood Academic Publishers.*

[55] Platteau, J.P., Camilotti,G. and Auriol,E. (2018), "Eradicating Women-Hurting Customs: What Role for Social Engineering ?", in S. Anderson, L. Beaman and J.-P. Platteau (eds.), *Towards Gender Equity in Development*, ch. 15.

[56] Renault, F. (1988), "The structures of the slave trade in central africa in the 19th century", *Slavery & Abolition* , 9:3, 146-165, DOI: 10.1080/01440398808574967.

[57] Russegger, J. (1843), "Reisen in Europa, Asien und Afrika: mit besonderer Rücksicht auf die naturwissenschaftlichen Verhältnisse der betreffenden Länder ; unternommen in den Jahren 1835 bis 1841 " , Schweizerbart'sche Verlagshandlung, Vol. 2.

[58] Segal, R. (2001), "Islam's Black Slaves: The Other Black Diaspora; Black Slavery in the Twenty-First Century", *The Journal of Blacks in Higher Education*, (31) 138.

[59] Seligman,C.G. (1913), "Some Aspects of the Hamitic Problem in the Anglo-Egyptian Sudan", *The Journal of the Royal Anthropological Institute of Great Britain and Ireland* , Vol. 43 (Jul. - Dec.), pp. 593-705.

[60] Sheriff, A. (1987), "Slaves, Spices and Ivory in Zanzibar: Integration of an East African Commercial Empire into the World Economy, 1770–1873" , Ohio University Press.

[61] Teso, E. (2019), "The long-term effect of demographic shocks on the evolution of gender roles: evidence from the trans-Atlantic slave trade", *Journal of the Eureopean Economic Association*, 17 (2), 497-534.

[62] Udry, C. (1994), "Risk and Insurance in a Rural Credit Market: An Empirical Investigation in Northern Nigeria", *Review of Economic Studies*, 61(3), 495-526.

[63] UNICEF (2019), Updated data on Female genital mutilation/cutting on the UNICEF website at: https://data.unicef.org/topic/child-protection/female-genital-mutilation.

[64] Valentine, B. (2000), "The Dark Soul of the People: Slaves in Mauritius", Data 0102, South African Data Archive.

[65] Wagner, N. (2015), "Female genital cutting and long-term health consequences-nationally representative estimates across 13 countries", *The Journal of Development Studies*, 51(3), 226-246.

[66] Whatley, W., Gillezeau R. (2011), "The impact of the transatlantic slave trade on ethnic stratification in Africa" *American Economic Review*, 101.3: 571-76.

[67] Widstrand, C. (1964), "Female Infibulation", *Studia Ethnographica Upsaliensia*, 20, 95-122.

[68] Zdanowski J. (2008), "A Slavery in the Gulf in the First Half of the 20th Century A Study Based on Records from the British Archives", Polish Ministry of Science and Higher Education.

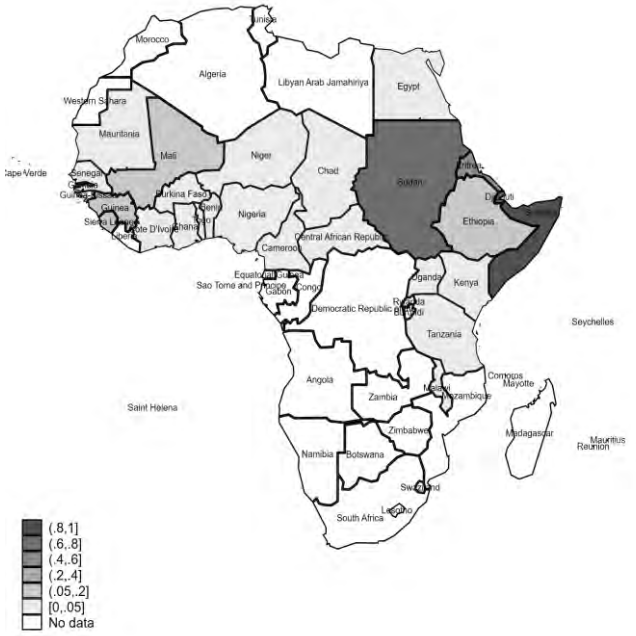
Figures and Tables

Figure 1: African slave trade routes

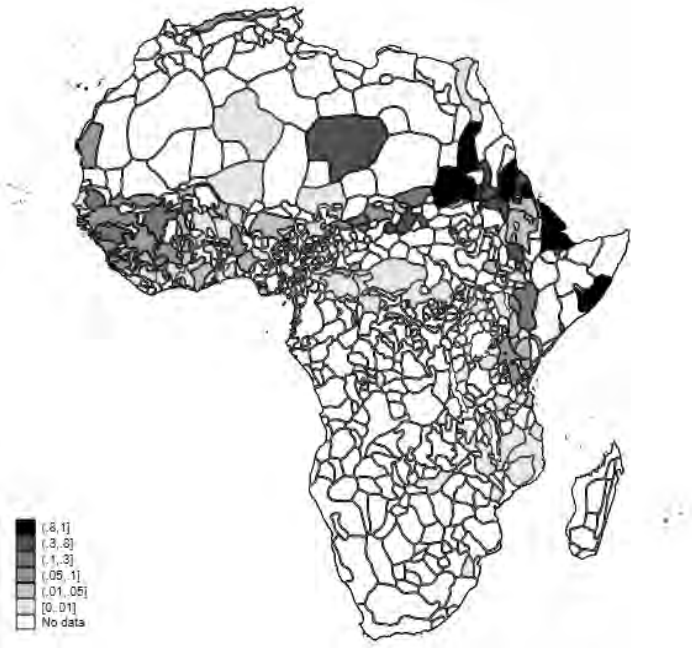
Source: Authors' elaboration based on historical accounts

Figure 2: Prevalence of infibulation

Panel A: by country



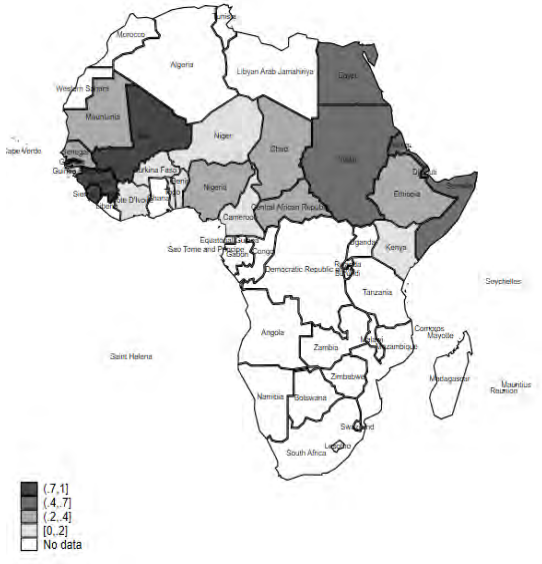
Panel B: by ethnic group



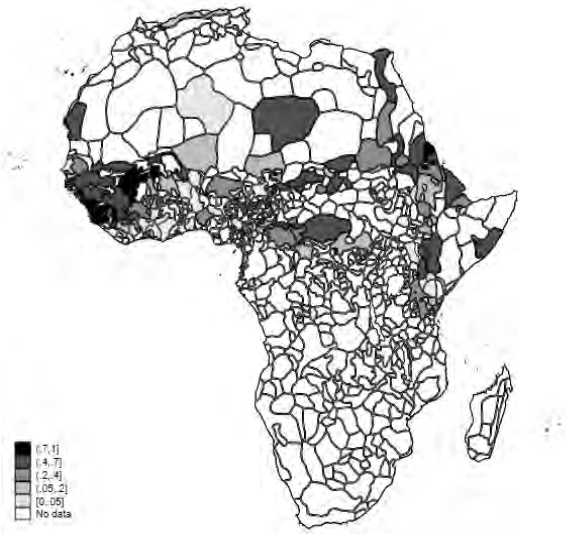
Notes: Infibulation corresponds to type-3 circumcision in the WHO classification. Source: Authors' calculation based on DHS and MICS data.

Figure 3: Support for FGC

Panel A: by country

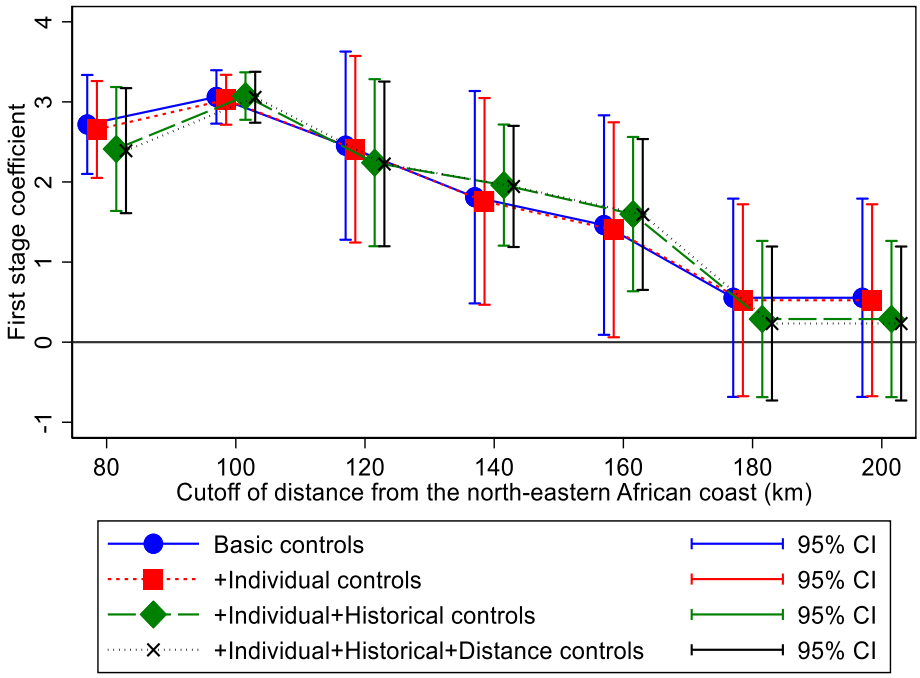


Panel B: by ethnic group



Notes: The figures represent the share of respondents by country (Panel A) and by ethnic group (Panel B) supporting the continuation of female genital cutting. Source: Authors' calculculation on DHS data.

Figure 4: Red Sea slave exports and distance from the North-Eastern African coast



Note: the figure reports estimated coefficients from a series of regressions of IHS - Red Sea slave exports/Area on a dummy for whether the centroid of the ethnic group is within X km from the North-Eastern African coast, with X taking the values indicated on the horizontal axis. The different set of controls are those reported in table 2.

Table 1: Descriptive Statistics

	Obs	Mean	Std. Dev.	Min	Max
Infibulated	200,074	0.142	0.349	0	1
Any female circumcision	249,081	0.583	0.493	0	1
1 if exposed to Red Sea Exports	249,081	0.198	0.399	0	1
1 if exposed to trans-Saharan Exports	249,081	0.149	0.356	0	1
1 if exposed to trans-Atlantic Exports	249,081	0.499	0.500	0	1
1 if exposed to Indian Ocean Exports	249,081	0.088	0.283	0	1
Red Sea Exports /Area	249,081	0.306	1.882	0	21.660
Trans-Saharan Exports/Area	249,081	0.071	0.571	0	9.829
Trans-Atlantic Exports/Area	249,081	1.866	5.855	0	37.703
Indian Exports/Area	249,081	0.017	0.199	0	4.224

Source: Authors' calculations on DHS, MICS and Murdock (1964).

Table 2: Infibulation and slave exports

Dep. variable = 1 if infibulated								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Red Sea Exports / Area	0.031***	0.028***	0.022**	0.022**				
	(0.011)	(0.010)	(0.010)	(0.010)				
Trans-Saharan Exports / Area	-0.001	-0.006	-0.002	-0.001				
	(0.003)	(0.004)	(0.004)	(0.005)				
Trans-Atlantic Exports / Area	-0.001*	0.001	0.001	0.001				
	(0.000)	(0.001)	(0.001)	(0.001)				
Indian Exports / Area	0.006*	0.001	0.003	0.002				
	(0.003)	(0.005)	(0.005)	(0.007)				
IHS - Red Sea Exports/ Area					0.145***	0.131***	0.113***	0.114***
					(0.045)	(0.041)	(0.042)	(0.041)
IHS - Trans-Saharan Exports/ Area					-0.014	-0.032*	-0.014	-0.011
					(0.011)	(0.018)	(0.015)	(0.017)
IHS - Trans-Atlantic Exports / Area					-0.006	0.001	0.007	0.005
					(0.004)	(0.005)	(0.006)	(0.006)
IHS - Indian Exports / Area					0.002	-0.005	0.004	0.002
					(0.005)	(0.008)	(0.009)	(0.012)
Mean of the dep. var.	0.142	0.142	0.142	0.142	0.209	0.209	0.209	0.209
Country FE	YES	YES	YES	YES	YES	YES	YES	YES
Individual Controls	NO	YES	YES	YES	NO	YES	YES	YES
Historical Controls	NO	NO	YES	YES	NO	NO	YES	YES
Dist. Cairo	NO	NO	NO	YES	NO	NO	NO	YES
R^2	0.531	0.540	0.547	0.548	0.536	0.543	0.551	0.551
N. of ethnic groups	180	180	180	180	180	180	180	180
N. of observations	200,074	200,074	200,074	200,074	200,074	200,074	200,074	200,074

Notes: The table reports OLS estimates. The unit of observation is an individual. Standard errors clustered at the ethnic group level in parentheses. *** p<.01, ** p<.05, * p<.10. Individual controls include age, age squared, a dummy for living in an urban area, a dummy for primary, secondary and higher education, dummies for Muslim, Catholic and traditional religion, and a wealth index. Ethnic-level historical controls include an indicator for whether premarital sex is freely permitted, a dummy for male circumcision, a dummy for the presence of slavery in the past, population density, dependence on animal husbandry, a dummy indicating if the pre-colonial settlement patterns is nomadic or seminomadic, and distance between the centroid of the ethnic group and Cairo. Source: Demographic and Health Surveys and Multiple Indicator Cluster Surveys for socio-demographic characteristics, Murdock (1964) for historical controls.

Table 3: Circumcision and slave exports

Dep. variable = 1 if circumcised				
	(1)	(2)	(3)	(4)
IHS - Red Sea Exports/ Area	0.070**	0.044**	0.070*	0.068*
	(0.028)	(0.022)	(0.042)	(0.041)
IHS - Trans-Saharan Exports/ Area	0.015	-0.025	0.002	-0.001
	(0.080)	(0.089)	(0.068)	(0.067)
IHS - Trans-Atlantic Exports / Area	-0.011	0.008	0.027	0.031
	(0.035)	(0.035)	(0.027)	(0.026)
IHS - Indian Exports / Area	0.077	0.063	0.031	0.036
	(0.058)	(0.061)	(0.069)	(0.069)
Mean dep. Variable	0.583	0.583	0.583	0.583
Country FE	YES	YES	YES	YES
Individual Controls	NO	YES	YES	YES
Historical Controls	NO	NO	YES	YES
Dist. Cairo	NO	NO	NO	YES
R^2	0.429	0.452	0.475	0.475
No. of ethnic groups	180	180	180	180
No. of observations	249,081	249,081	249,081	249,081

Notes: OLS estimates with standard errors clustered at the ethnic group level in parentheses. *** p<.01, ** p<.05, * p<.10. Individual and historical controls as in Table 2.

Table 4: Infibulation and slave exports in East Africa

Dep. variable = 1 if infibulated				
	(1)	(2)	(3)	(4)
IHS - Red Sea Exports/ Area	0.141***	0.070*	0.080**	0.079**
	(0.049)	(0.035)	(0.031)	(0.031)
IHS - Trans-Saharan Exports/ Area	-0.047	-0.135	0.020	0.345
	(0.151)	(0.133)	(0.316)	(0.324)
IHS - Indian Ocean Exports / Area	4.349	-5.782	-1.978	2.746
	(7.344)	(7.663)	(3.983)	(5.449)
Mean of the dep. var.	0.565	0.565	0.565	0.565
Country FE	YES	YES	YES	YES
Individual Controls	NO	YES	YES	YES
Historical Controls	NO	NO	YES	YES
Dist. Cairo	NO	NO	NO	YES
R^2	0.382	0.463	0.482	0.483
N. of ethnic groups	28	28	28	28
Number of observations	40,358	40,358	40,358	40,358

Notes: OLS estimates with standard errors clustered at the ethnic group level in parentheses. *** p<.01, ** p<.05, * p<.10. Individual and historical controls as in Table 2.

Table 5: Attitudes towards FGC

Dep. variable = 1 if respondent says FGC should continue				
	(1)	(2)	(3)	(4)
IHS - Red Sea Exports / Area	0.098***	0.062***	0.061*	0.059*
	(0.029)	(0.020)	(0.033)	(0.032)
IHS - Trans-Saharan Exports / Area	0.074*	0.016	0.050	0.047
	(0.041)	(0.045)	(0.033)	(0.033)
IHS - Trans-Atlantic Ocean Exports / Area	-0.019	0.005	0.019	0.025**
	(0.018)	(0.020)	(0.013)	(0.012)
IHS - Indian Ocean Exports / Area	-0.298	-0.264	-0.242	-0.158
	(0.224)	(0.161)	(0.175)	(0.190)
Mean of the dep. Variable	0.366	0.366	0.366	0.366
Country FE	YES	YES	YES	YES
Individual Controls	NO	YES	YES	YES
Historical Controls	NO	NO	YES	YES
Dist. Cairo	NO	NO	NO	YES
R^2	0.261	0.299	0.311	0.311
N. of ethnic groups	146	146	146	146
Number of observations	214,992	214,992	214,992	214,992

Notes: OLS estimates with standard errors clustered at the ethnic group level in parentheses. *** p<.01, ** p<.05, * p<.10. Individual and historical controls as in Table 2.

Table 6: Instrumental variable estimates

Second Stage - Dep. variable = 1 if infibulated				
	(1)	(2)	(3)	(4)
IHS - Red Sea Exports / Area	0.143***	0.127***	0.085*	0.086*
	(0.050)	(0.049)	(0.051)	(0.051)
IHS - Trans-Saharan Exports / Area	-0.010	-0.024	-0.008	-0.006
	(0.012)	(0.016)	(0.016)	(0.016)
IHS - Trans-Atlantic Exports / Area	-0.007	-0.002	0.003	0.003
	(0.006)	(0.006)	(0.008)	(0.008)
IHS - Indian Ocean Exports / Area	-0.000	-0.012	0.018	0.017
	(0.009)	(0.011)	(0.019)	(0.019)
Distance to the African coast (in km)	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Hausman test (p-value)	0.946	0.965	0.827	0.349
R^2	0.063	0.078	0.096	0.096

First Stage - Dep. variable = IHS - Red Sea Exports/Area				
	(5)	(6)	(7)	(8)
Distance to the Nord-East Coast	2.453***	2.408***	2.241***	2.225**
	(0.596)	(0.590)	(0.528)	(0.521)
First Stage - F- Stat	16.99	16.66	17.98	18.24
Mean of the dep. var.	0.142	0.142	0.142	0.142
Country FE	YES	YES	YES	YES
Individual Controls	NO	YES	YES	YES
Historical Controls	NO	NO	YES	YES
Dist. Cairo	NO	NO	NO	YES
N. of ethnic groups	28	28	28	28
Number of observations	200,074	200,074	200,074	200,074

Notes: Two-stage-least-squares estimates (top panel) and OLS estimates (bottom panel). Standard errors clustered at the ethnic group level in parentheses. *** p<.01, ** p<.05, * p<.10. Individual and historical controls as in Table 2.

Table 7: FGC, slavery and norms on premarital sex

Dep. Var.= 1 if infibulated				
	(1)	(2)	(3)	(4)
IHS - Red Sea Exports	0.217***	0.193***	0.257***	0.256***
	(0.067)	(0.056)	(0.072)	(0.071)
IHS - Red Sea Exports * Premarital Sex Freely Permitted	-0.210**	-0.199**	-0.200**	-0.194**
	(0.105)	(0.094)	(0.082)	(0.085)
Premarital Sex Freely Permitted	0.005	0.025	0.021	0.018
	(0.024)	(0.020)	(0.019)	(0.023)
IHS - Saharan Exports / Area	-0.023	-0.036	-0.014	-0.012
	(0.020)	(0.023)	(0.015)	(0.017)
IHS - Atlantic Ocean Exports / Area	-0.006	0.003	0.010*	0.009
	(0.005)	(0.004)	(0.006)	(0.006)
IHS - Indian Ocean Exports / Area	0.001	-0.002	0.011	0.009
	(0.009)	(0.009)	(0.010)	(0.012)
Mean of Dep. Var.	0.142	0.142	0.142	0.142
Country FE	YES	YES	YES	YES
Individual Controls	NO	YES	YES	YES
Historical Controls	NO	NO	YES	YES
Dist.Cairo	NO	NO	NO	YES
N, of Ethnic Group	180	180	180	180
R^2	0.538	0.545	0.553	0.553
No. of observations	200,074	200,074	200,074	200,074

Notes: The table reports OLS estimates. The unit of observation is an individual. Standard errors clustered at the ethnic group level in parentheses. *** p<.01, ** p<.05, * p<.10. Individual and historical controls as in table 2. Source: Demographic and Health Surveys and Multiple Indicator Cluster Surveys for socio-demographic characteristics, Murdock (1964) for historical controls.

Online Appendix - Not for publication
Female Genital Cutting and the Slave Trade

Lucia Corno, Eliana La Ferrara, Alessandra Voena

December 2020

0.1 A.1 Matching historical and contemporaneous data

This section describes our procedure for matching historical ethnic groups in Murdock's Ethnographic Atlas (on which the slave trade data are based) with the ethnic groups reported in the DHS or in the MICS.

The easiest case is the one in which the name of the ethnicity in the DHS or in the MICS is exactly the same as the one used by Murdock. However, the name of the ethnic groups in the contemporaneous and historical datasets do not always coincide. In order to reconcile the ethnic affiliation in the DHS/MICS with the one in the slave dataset, we consider several possible methods following Alesina, Brioschi, La Ferrara (2020).

When direct matching is impossible, we use the dataset constructed by Nunn and Wantchekon (2011), which provides a concordance between the ethnicities in the Afrobarometer, a research network that conducts surveys in more than 35 countries in Africa, and those in the Murdock Atlas. For example, the DHS ethnicity *Adja* of Benin is included in Nunn and Wantchekon's (2011) ethnic group's correspondence as *Fon*, which was appearing among one of the ethnicities in the DHS, suggesting that *Adja* is a sub-group of *Fon*.

The third method relies on the book "*Africa: its peoples and their culture history*" written by Murdock (1959) before the construction of the Atlas. For example, let's consider the ethnic group of *Boulala* living in Chad (as reported in the DHS). By looking at Murdock's book, we found that

Boulala was part of the biggest group of Lisi as follows " *Lisi, embracing the Bulala (Boulala, Maga), Kuka (Kouka), Midogo (Medogo, Mudogo) and Semen (Abu Semen). These peoples, who are also found in Kanem, are Central Sudanic in speech, indifferent Moslems in religion and considerably mixed with Caucasoid elements*". We, therefore, matched the contemporaneous ethnic group of *Boulala* with the historical group of *Lisi*.

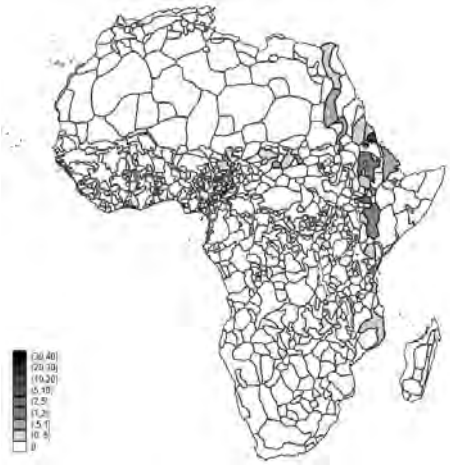
For countries for which the information on ethnicity was not available neither in the DHS nor in the MICS (Egypt, Somalia, Sudan and Swaziland), we use information on respondent's region/sub-region/district of residence and exploit the Joshua Project, a research initiative constantly updating the location of ethnic groups, to match current residence with ethnic groups. For each country and region (or sub-region and district), the Joshua Project website provides information on the ethnic groups living there. We matched current ethnic groups with the respective historical ethnic groups in Murdock (1959) and associated to each respondent the average number of slaves across the ethnic groups (if more than one) in her region of residence. Where more than one ethnicity was recorded for each region, we took the most representative.

Using the above procedures we were able to match 245 ethnic groups out of the 298 originally listed in the DHS.

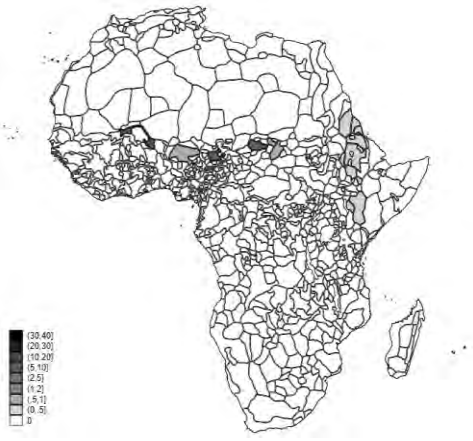
Appendix Figures and Tables

Figure A1: Ethnic Groups exposure to the slave trade by Route

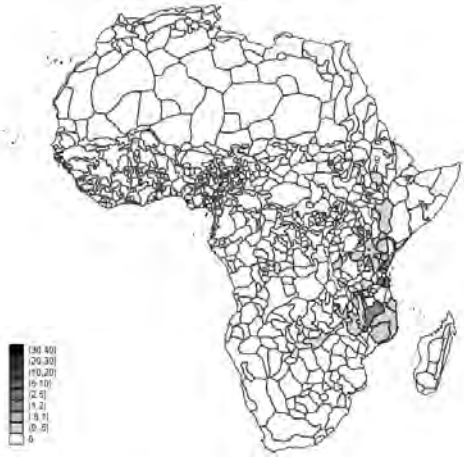
(A) Red Sea Slave Trade



(B) Trans-Saharan Slave Trade



(C) Indian Ocean Slave Trade



(D) Transatlantic Slave Trade

Notes: The variables used for the graphs represent the normalized variable of slaves exports by routes in our sample.

Figure A2: Reduced form: infibulation and distance from coasts

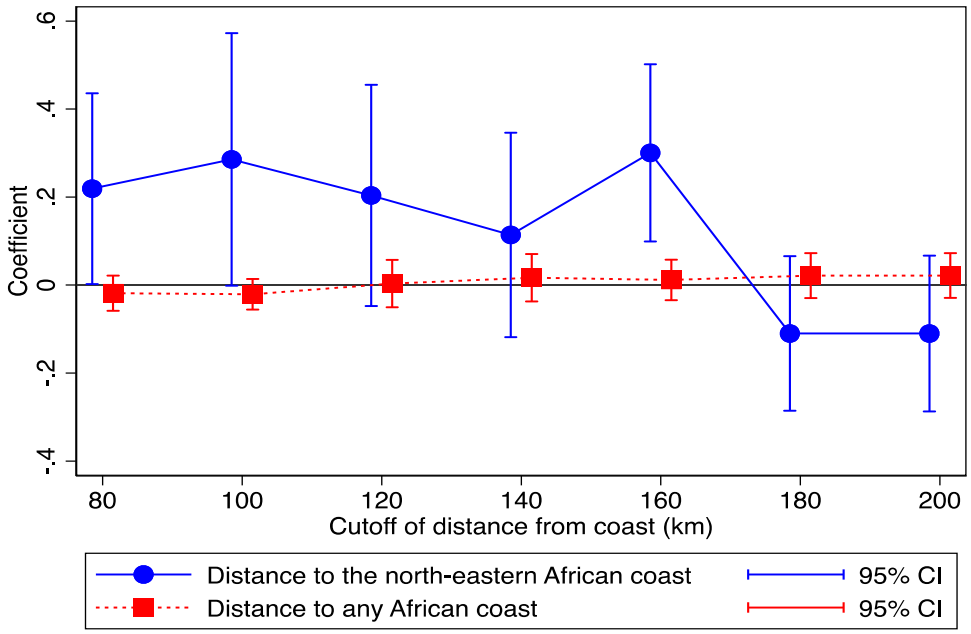
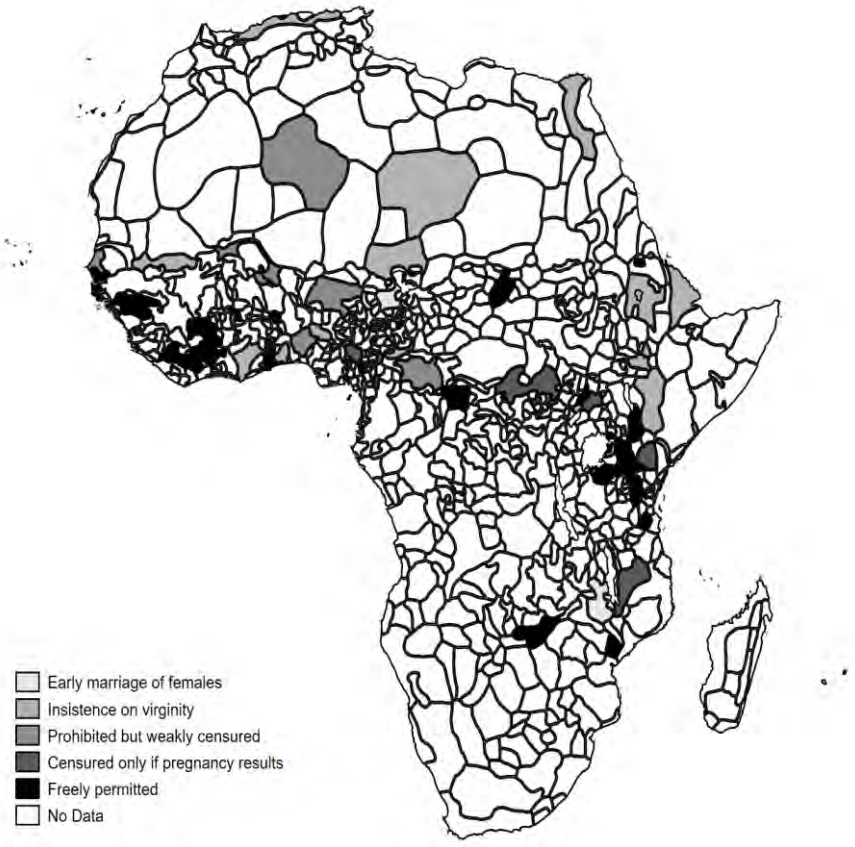


Figure A3: Historical norms about pre-marital sex across ethnic groups



Source: Authors' calculculation based on Murdock (1964), variable used v78: "Norms of Premarital Sexual Behavior of Girls".

Table A1: Slave ports of exit and destination

Route	Main Ports/countries of Exit	Destination	Source
Red Sea Route	Sawakin (Sudan), Massawa (Eritrea), Assab (Eriterea) Zayla (Somalia), Tajura (Gibuti), Assiout (Egypt), Cairo (Egypt), Berbera (Somalia), Abyssinia (Ethiopia), Mombasa (Kenya), Zanzibar (Tanzania), Darfur (Sudan)	Gedda (South Arabia), Hodeida (Yemen), Dubai (United Arab Emirates), Dammam (Saudi Arabia), Abu Dhabi (United Arab Emirates), Qatar, Ras al-Khaima (United Arab Emirates), Sharjah (United Arab Emirates), Kuwait, Umm al-Quwain (United Arab Emirates)	Lovejoy (1989), Miege (1981), Zdanowski (2008)
Trans-Saharan Route	Dar Fur (Sudan), Sinnar (Sudan), Sawakin (Sudan), Massawa (Eritrea), Zayla (Somalia), Tajura (Gibuti), Fezzan, Kufra, Bengashi (Libya), Timbuktu (Mali), Niger Valley, Hausa towns (Niger), Lake Chad (Chad), Blue and White Nile confluence (Sudan), Wadai (Chad/Central African Republic), Cyrenaique (Libya), Essaouira (Marocco)	Asyut/Cairo (Egypt), Kurusko (Egypt), Daraw (Egpyt), Isna (Egypt), Aswan (Egypt), Port of Suez (Egypt), Morocco, Tuwat (Algeria), Ghat (Libya), Gadames (Libya), Murzuk (Libya), Tripoli (Libya), Berbera (Somalia)	Mowafi (1981), Lovejoy (1989), Miege (1981)
Indian Ocean Route	Zambesi Valley (Zambia, Mozambico), Lake Malawi (Malawi, Mozambico, Tanzania) Zambesi Valley (Zambia, Mozambico)	Madagascar, Quelimane, Mozambique Island (Mozambique), Mascarenes Islands (Mauritius)	Lovejoy (1989)
Trans-Atlantic Route	Malembo Pool, Stanley Pool (Congo), Luanda (Zambia, DRC, Angola), Kazembe (Zambia), Oyo Kingdom (Nigeria), Dahomey kingdom (Benin), Ashanti Empire (Ghana), Gaboe, Aboh (Nigeria), Niger Delta, Senegal and Gambia Valleys, Futa Jallon highlands (Guinea), kola forests (Liberia), Loango Coast (Congo), Cabinde (Angola), Luanda (Angola), Ardrah, Whydah, Porto Novo (Benin), and Badagry and Lagos (Nigeria), Grand Lauh, Grand Bassam (Ivory Coast), Bonny, Elem Kalabari, Guinea and Senegambia ports (Nigeria), Costa da Mina (Guinea), Whyda (Benin)	Boston (United States), Newport (United States), New York (United States), Annapolis (United States), Charleston (United States), St. Helena (United States), Savannah (United States), New Orleans (United States), Biloxi (United States), Amsterdam (Netherlands), Bahia (Brazil), Barbados, Bordeaux (France), Bristol (United Kingdom), Bristol (United States), Cadiz (Spain), Canary Islands (Spain), Dunkerque (France), Havana (Cuba), Honfleur (France), Copenhagen (Denmark), Kingston (Jamaica), La Rochelle (France), Le Havre (France), Lisbon (Portugal), Liverpool (United Kingdom), London (United Kingdom), Lorient (France), Maranhao (Brazil), Marseille (France), Montevideo (Uruguay), Nantes (France), Pernambuco (Brazil), Rio de Janeiro (Brazil), Rotterdam (Netherlands), Rhode Island (United States), Saint-Malo (France), Southern Brazil, Texel (Netherlands), Vlissingen (Netherlands), Zeeland (Netherlands)	Lovejoy (1989), trans-Atlantic Slave Trade Database[1]

Notes: [1] https://www.slavevoyages.org/voyage/database#results

Table A2: Average age of slaves in the Red Sea route

Age	Female	Male	Total	% of female	% of male
Under 10	0	2	2	0	0.03
10-12	5	7	12	0.12	0.27
13-15	17	7	24	0.41	0.27
16-18	5	1	6	0.12	0.04
19-21	7	3	10	0.17	0.12
22-24	1	3	4	0.02	0.12
25-30	5	3	8	0.12	0.12
Over 30	1	0	1	0.02	0.00
Total	41	26	67		
Average Age	23.73				

Note: The midpoint values (and 30 for the "Over 30" category) are taken to calculate average age. Source: Miran (2013).

Table A3: FGC prevalence and age at cutting, by FGC type

	Infibulation	*Circumcision (All types)*	*Age at cutting*
Benin	0.014	0.103	9.63
Burkina Faso	0.007	0.757	6.70
Cameroon	0.000	0.004	8.50
CAR	0.000	0.443	10.44
Chad	0.040	0.450	9.17
Cote d'Ivoire	0.024	0.374	9.54
Djibouti	0.701	0.964	--
Egypt	0.000	0.897	9.56
Eritrea	0.470	0.912	--
Ethiopia	0.156	0.711	7.81
Gambia	0.027	0.731	4.18
Ghana	0.000	0.077	--
Guinea	0.072	0.981	8.72
Guinea-Bissau	0.042	0.542	4.31
Kenya	0.039	0.338	11.46
Malawi	0.000	0.009	--
Mali	0.123	0.925	5.46
Mauritania	0.058	0.688	0.10
Niger	0.008	0.051	7.47
Nigeria	0.022	0.428	10.50
Senegal	0.047	0.348	5.07
Sierra Leone	0.091	0.900	12.49
Somalia	0.873	0.990	8.57
Sudan	0.721	0.900	6.82
Swaziland	0.000	0.014	--
Tanzania	0.009	0.124	11.81
Togo	0.013	0.065	10.75
Uganda	0.000	0.001	--
All	*0.171*	*0.596*	*8*

Source: Authors' calculations on DHS and MICS data.

Table A4: Summary of the Red Sea slave trade ethnicity data

Region	*Years*	*No. Ethnic group*	*Num. Obs.*	*Type*	*Source*
Bombay, India	1837-1882	2	5	Manumission requests	Harris (1971)
Jedda, Saudi Arabia	1892-1924	32	62	Refugee records	League of Nations (1936, 1937)
Massawa, Eritrea	1873-1885	13	204	Destination port traffic estimates	Miran (2013)
Arabian Peninsula (multiple locations)*	1907-1942	19	46	Manumission requests	Zdanowski (2008)
Total		*66*	*317*		

Notes: * The manumission requests were recorded at the British Agencies at the following locations: Bahrain; Bandar Abbas; Basidu; Bushire; Dubai; Kuwait; Lingah; HMS Fowey; HMS Lupin; Muscat; and Sharjah.

Table A5: Individual survey data by country

Country	Source	Waves
Benin	DHS	2011-12
Burkina Faso	DHS	2010
Cameroon	DHS	2004
CAR	DHS	1994-95
Chad	DHS	2014-15
Cote D'Ivoire	DHS	2011-12
Djibouti	MICS	2006
Egypt	DHS	2014
Eritrea	DHS	2002
Ethiopia	DHS	2016
Gambia	DHS	2013
Ghana	DHS	2003
Guinea	DHS	2012
Guinea-Bissau	MICS	2014
Kenya	DHS	2014
Malawi	DHS	1996
Mali	DHS	2012-13
Mauritania	MICS	2015
Niger	DHS	2006
Nigeria	DHS	2013
Senegal	DHS	2017
Sierra Leone	DHS	2013
Somalia	MICS	2011
Sudan	MICS	2014
Swaziland	DHS	2006
Tanzania	DHS	1996
Togo	DHS	2013-14
Uganda	DHS	2016

Table A6: Summary statistics

	Obs	Mean	Std. Dev.	Min	Max
Panel A: Socio-Demographic Characteristics					
Infibulated	200,074	0.142	0.349	0	1
Any female circumcision	249,081	0.583	0.493	0	1
FGC should be continued	214,992	0.369	0.484	0	1
Age	249,081	29.111	9.392	15	49
Age squared	249,081	935.657	583.531	225	2401
Urban	249,081	0.405	0.491	0	1
Primary Education	249,081	0.269	0.437	0	1
Secondary Education	249,081	0.280	0.443	0	1
Higher Education	249,081	0.070	0.251	0	1
Muslim	249,081	0.584	0.452	0	1
Catholic	249,081	0.122	0.302	0	1
Traditional Religion	249,081	0.027	0.147	0	1
Wealth	249,081	0.064	1.517	-1.355	21.043
Panel B: Historical Controls					
Premarital Sex Freely Permitted	249,081	0.308	0.305	0	1
Male Circumcision	249,081	0.886	0.297	0	1
Historical Slavery	249,081	0.927	0.242	0	1
Population density	249,081	34.904	36.345	0.003	159.338
Herding	249,081	31.058	19.008	0	93
Nomadic or seminomadic	249,081	0.155	0.332	0	1
Distance to Cairo (in m)	249,081	3,845,392	1,523,804	258,448	6,578,117
Panel C: Slavery					
Red Sea Exports /Area	249,081	0.306	1.882	0	21.660
Trans-Saharan Exports/Area	249,081	0.071	0.571	0	9.829
Trans-Atlantic Exports/Area	249,081	1.866	5.855	0	37.703
Indian Exports/Area	249,081	0.017	0.199	0	4.224
IHS - Red Sea Exports / Area	249,081	0.112	0.475	0	3.769
IHS - Trans-Saharan Exports / Area	249,081	0.044	0.225	0	2.981
IHS - Trans-Atlantic Exports / Area	249,081	0.580	1.020	0	4.323
IHS - Indian Exports/ Area	249,081	0.012	0.120	0	2.148

Source: Demographic and Health Surveys and Multiple Indicator Cluster Surveys for socio-demographic characteristics, Murdock (1964) for historical controls.

Table A7: Correlates of exposure to Red Sea slave trade

Dep. Var.	*Red Sea Exports / Area*		*IHS - Red Sea Exports / Area*	
	(1)	(2)	(3)	(4)
Age	0.007	0.005	0.002	0.002
	(0.005)	(0.004)	(0.001)	(0.001)
Age squared	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)
1 if urban area	-0.095	0.029	-0.023	0.004
	(0.060)	(0.038)	(0.014)	(0.011)
Primary education	-0.086	-0.011	-0.030*	-0.008
	(0.061)	(0.053)	(0.016)	(0.013)
Secondary education	-0.051	-0.026	-0.019	-0.006
	(0.039)	(0.050)	(0.013)	(0.013)
Higher education	-0.066	-0.017	-0.020	-0.001
	(0.090)	(0.082)	(0.025)	(0.024)
Muslim	0.787	0.442	0.229*	0.139*
	(0.511)	(0.292)	(0.131)	(0.075)
Catholic	0.482	0.205	0.117*	0.059
	(0.310)	(0.146)	(0.069)	(0.036)
Traditional Religion	0.466	0.400*	0.136*	0.125**
	(0.313)	(0.205)	(0.081)	(0.056)
Wealth	-0.019	-0.023*	-0.005	-0.005
	(0.013)	(0.013)	(0.003)	(0.003)
Premarital Sex Freely		-0.700		-0.159
		(0.518)		(0.109)
Male Circumcision		-0.800**		-0.175**
		(0.387)		(0.087)
Historical Slavery		-0.245		-0.029
		(0.453)		(0.110)
Population density		0.017*		0.003
		(0.009)		(0.002)
Herding		0.017		0.001
		(0.018)		(0.004)
Nomadic or seminomadic		1.964		0.556
		(1.362)		(0.376)
Distance to Cairo (in m)		-0.000		-0.000
		(0.000)		(0.000)
Constant	-0.423	0.023	-0.111	0.141
	(0.292)	(1.668)	(0.076)	(0.434)
Country FE	YES	YES	YES	YES
R^2	0.282	0.485	0.370	0.531
Number of observations	249,081	249,081	249,081	249,081

Notes: OLS estimates with standard errors clustered at the ethnic group level in parentheses. *** p<.01, ** p<.05, * p<.10.

Table A8: Infibulation and slave exports, full set of controls

Dep. variable =	*1 if infibulated*							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Red Sea Exports / Area	0.031***	0.028***	0.022**	0.022**				
	(0.011)	(0.010)	(0.010)	(0.010)				
Transaharan Exports / Area	-0.001	-0.006	-0.001	0.001				
	(0.003)	(0.004)	(0.004)	(0.005)				
Transatlantic Exports / Area	-0.001*	0.001	0.001	0.001				
	(0.000)	(0.001)	(0.001)	(0.001)				
Indian Exports / Area	0.006*	0.002	0.003	0.001				
	(0.003)	(0.005)	(0.005)	(0.007)				
IHS - Red Sea Exports / Area					0.142***	0.128***	0.108**	0.110***
					(0.045)	(0.041)	(0.042)	(0.040)
IHS - Saharan Exports / Area					-0.010	-0.029	-0.009	-0.003
					(0.011)	(0.018)	(0.014)	(0.016)
IHS - Atlantic Exports / Area					-0.005	0.001	0.007	0.003
					(0.004)	(0.005)	(0.006)	(0.006)
IHS - Indian Exports / Area					0.002	-0.005	0.005	-0.001
					(0.005)	(0.008)	(0.010)	(0.012)
Age of respondent		0.004***	0.004***	0.004***		0.004***	0.004***	0.004***
		(0.001)	(0.002)	(0.001)		(0.001)	(0.002)	(0.001)
Age squared		-0.000**	-0.000**	-0.000**		-0.000**	-0.000**	-0.000**
		(0.000)	(0.000)	(0.000)		(0.000)	(0.000)	(0.000)
1 if urban area		-0.012**	-0.010**	-0.010*		-0.012**	-0.010**	-0.010*
		(0.006)	(0.005)	(0.005)		(0.006)	(0.005)	(0.005)
Primary Education		-0.021**	-0.014*	-0.016*		-0.020**	-0.014*	-0.015*
		(0.010)	(0.008)	(0.008)		(0.010)	(0.008)	(0.008)
Secondary Education		-0.002	0.004	0.002		-0.001	0.004	0.002
		(0.008)	(0.007)	(0.008)		(0.008)	(0.007)	(0.007)
Higher Education		0.008	0.015	0.014		0.008	0.014	0.013
		(0.016)	(0.015)	(0.016)		(0.016)	(0.015)	(0.015)
Muslim		0.083**	0.074**	0.076**		0.076**	0.069**	0.070**
		(0.036)	(0.029)	(0.029)		(0.035)	(0.028)	(0.028)
Catholic		0.027*	0.022*	0.023*		0.026*	0.021*	0.021*
		(0.016)	(0.012)	(0.012)		(0.015)	(0.011)	(0.011)
Traditional religion		0.015	0.013	0.012		0.012	0.010	0.008
		(0.020)	(0.018)	(0.017)		(0.019)	(0.017)	(0.016)
Wealth		-0.003**	-0.003*	-0.003**		-0.003*	-0.003**	-0.003**
		(0.002)	(0.002)	(0.002)		(0.002)	(0.002)	(0.002)
Premarital Sex Freely Permitted			0.003	-0.001			0.007	0.001
			(0.027)	(0.029)			(0.024)	(0.028)
Male circumcision			-0.014	-0.015			-0.009	-0.011
			(0.015)	(0.015)			(0.012)	(0.013)
Historical Slavery			0.046*	0.045*			0.041	0.041
			(0.025)	(0.025)			(0.025)	(0.025)
Herding			0.001	0.001			0.002	0.002*
			(0.001)	(0.001)			(0.001)	(0.001)
Nomadic or seminomadic			0.092	0.092			0.069	0.070
			(0.075)	(0.073)			(0.070)	(0.069)
Population Density			-0.000	0.000			-0.000	0.000
			(0.000)	(0.001)			(0.000)	(0.000)
Dist. Cairo				0.000				0.000
				(0.000)				(0.000)
Mean of the dep. var.	0.142	0.142	0.142	0.142	0.209	0.209	0.209	0.209
Country FE	YES	YES	YES	YES	YES	YES	YES	YES
R^2	0.531	0.540	0.547	0.548	0.536	0.543	0.551	0.551
N. of ethnic groups	180	180	180	180	180	180	180	180
N. of observations	200,074	200,074	200,074	200,074	200,074	200,074	200,074	200,074

Notes: OLS estimates with standard errors clustered at the ethnic group level in parentheses. *** p<.01, ** p<.05, * p<.10. Individual and historical controls as in Table 2. Source: Demographic and Health Surveys and Multiple Indicator Cluster Surveys for socio-demographic characteristics, Murdock (1964) for historical controls.

Table A9: Infibulation and slavery (excluding Egypt, Somalia, Swatziland, Sudan)

Dep. variable =	*1 if infibulated*			
	(1)	(2)	(3)	(4)
IHS - Red Sea Exports / Area	0.209***	0.192***	0.150***	0.153***
	(0.051)	(0.052)	(0.054)	(0.052)
IHS - Trans-Saharan Exports / Area	-0.024**	-0.040**	-0.016	-0.007
	(0.010)	(0.019)	(0.015)	(0.015)
IHS - Trans-Atlantic Exports / Area	-0.006	-0.000	0.002	-0.002
	(0.004)	(0.005)	(0.004)	(0.004)
IHS - Indian Ocean Exports / Area	-0.001	-0.006	-0.006	-0.014
	(0.004)	(0.006)	(0.009)	(0.011)
Mean of the dep. var.	0.096	0.096	0.096	0.096
Country FE	YES	YES	YES	YES
Individual Controls	NO	YES	YES	YES
Historical Controls	NO	NO	YES	YES
Dist. Cairo	NO	NO	NO	YES
N. of ethnic groups	165	165	165	165
R^2	0.311	0.321	0.346	0.349
Number of observations	175,009	175,009	175,009	175,009

Notes: OLS estimates with standard errors clustered at the ethnic group level in parentheses. *** p<.01, ** p<.05, * p<.10. Individual and historical controls as in Table 2.