Imperial Fault Lines: Colonial Legacy and Fertility in Sub-Saharan Africa

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Abstract

Colonization has profoundly impacted the economic and financial development trajectory in the colonized countries. However, previous work has not yet explored the impact of colonization on present-day fertility outcomes in Sub-Saharan Africa (SSA). This paper investigates the influence of colonial legacy on fertility through colonial legal institutions and the identity of the colonizer. Europeans differed not just in the legal institutions they transplanted in their colonies but also in their colonial administrative policies. I use the random splitting of ethnic homelands by the colonizers in 21 SSA countries as a natural experiment to identify the causal effect of colonial institutions and policies on current fertility in SSA. I find that the colonizer's identity plays a major role in explaining current fertility outcomes. Countries colonized by Britain have nearly 19.3 percent lower fertility than those colonized by France. Lastly, I show that this differential persists through restrictive access to contraception in French colonies, a feature resulting from France's colonial 1920 law, which sought to deter contraception use and promote fertility.

1 Introduction

The importance of women's role in economic development, particularly in Sub Saharan Africa (SSA), is widely recognized by policymakers (Copley et al., 2021; Shetty, 2021). One of the biggest impediments to realizing this potential, however is the high fertility rates in the continent. In 2019, SSA recorded total fertility of 4.6 children per mother compared to 2.4 children per mother in the rest of the world.[1] High fertility keeps women from participating in labor markets and also poses high infant and maternal health risks (Bloom et al., 2009; Bank, 2010). This reduces not only female and household welfare but also impedes economic growth (Canning and Schofield, 2007; Ashraf et al., 2013). Therefore, understanding the determinants of high fertility in SSA is essential to realizing its growth potential.

An important stream of literature that studies economic outcomes in the continent attributes many present-day outcomes to historical events (Acemoglu et al., 2001; Glaeser and Shleifer, 2002; Nunn, 2008; La Porta et al., 2008; Michalopoulos and Papaioannou, 2016). Most of this work has focused on explaining the impact of historical events on economic growth, while gender norms and in particular, fertility have received little attention. This paper intends to fill this gap by analyzing the influence of one of the most prominent historical events, colonization, on current fertility outcomes in SSA. In particular, it investigates the impact colonization had on fertility through its influence on legal institutions and through the colonizer's identity.

The literature analyzing the influence of colonization on current outcomes adopts the lens of legal origins, i.e. the legal systems that colonizers transplanted in their colonies, or the lens of the identity of the colonizer, i.e. the policies that the colonizers implemented (Acemoglu et al., 2001; La Porta et al., 2008; Aldashev et al., 2016; Anderson, 2018; Dupraz, 2019). In terms of legal origins, it documents the differences in economic outcomes between countries that were colonized by Britain and adopted the English common law system, and those colonized by France and other European countries like Belgium and Portugal, which adopted the Roman civil law system (Glaeser and Shleifer, 2002; La Porta et al., 2008).

The two legal systems differ in formal features but also in how they regulate economic and civil life, thereby influencing present-day outcomes in these countries. For instance, the common law systems tend to provide better protection of property rights and contract enforcement compared to civil law systems. These differences thereby afford better economic and financial growth in common law countries (La Porta et al., 2008; Michalopoulos and Papaioannou, 2017). Similarly, these institutions also differ in their treatment of women's rights through marital property law. Civil law provides recognition of household work, joint ownership of all property within marriage, and the protection of women upon marriage dissolution, all of which are absent in the common law. Anderson (2018) shows that this explains the greater bargaining power of women in civil law

[1] https://data.worldbank.org/indicator/SP.DYN.TFRT.IN (Downloaded on November 2021)

countries compared to their counterparts in common law ones.

Regarding, the colonizer's identity, the literature has focused on the two largest colonizers, the British and the French. Like the legal systems which the colonizers bought to their colonies, these countries also differed in administrative styles, policies, and investments that they implemented in their colonies. While the British adopted an indirect administration policy, the French adopted a more centralized and direct rule. A growing share of the literature documents how the influence of colonizers through these differences continues to persist in the colonies and impact development outcomes (Iyer, 2010; Huillery, 2009; Lee and Schultz, 2011).

A key but lesser-known difference between the British and French colonizers is the demographic policies that they favored and implemented. Britain, influenced by the 18th-century philosopher and economist Thomas Malthus believed that unchecked population growth would ultimately lead to the demise of humanity. These views are reflected in their policy choices and growing propaganda around population reduction and family planning in both the home country and its colonies (Robinson, 2002). The French, on the other hand, motivated by their fear of losing supremacy and slow population growth within their own country, adopted the pro-natalist view, which favored population growth and restricted family planning. Indeed in 1920, France passed a pro-natalist law that encouraged childbirth and limited contraception use within its own country and in its colonies (Ogden and Huss, 1982). Overall, the colonization's influence on fertility could persist through both its legal institutions and through its policies.

To examine the causal impact, my empirical strategy relies on the natural experiment that led to arbitrary division of historical, ethnic homelands across colonial borders during the *Scramble for Africa*. Michalopoulos and Papaioannou (2016) show that in the process of drawing borders for modern-day African countries, European colonizers ended up randomly partitioning several ethnic homelands. At the time of colonial border drawing, the local chiefs saw this as a formality between European powers, and hence they did not raise any opposition. However, at the time of independence of African nations and the signing of the Charter of the African Union (OAU) in 1964, these borders came into force, due to which several ethnic groups were split between two or more countries (Herbst, 2014).

I use a spatial Regression Discontinuity (RD) design to identify the colonizer's influence on fertility outcomes. To implement this I treat country borders within a split ethnic-homeland as a discontinuity in space for household's exposure to historical colonial regime. I then compare households on either side of the the country boundary, which arbitrarily got exposed to two different colonial regimes, to causally identify the effect of colonial legacy on current fertility outcomes. However, there is the concern that unobservables that could be influencing both the fertility outcomes and the colonizers or their legal institutions. For instance, colonizers did not choose all their colonies randomly (Klerman et al., 2011). Another vital concern when estimating fertility is the role of pre-colonial culture in determining current outcomes. To address these concerns, I use ethnic-homeland fixed effects. This allows me to exploit the fact that households living within the same ethnic-homeland boundary (and therefore have the same pre-colonial cultural norms) but were arbitrarily exposed to different colonial regimes.

To estimate the empirical strategy, I use household-level data from the Demographic and Health Surveys (DHS) from 21 African countries. Using the geographical coordinates of the DHS clusters of the households and geo-located ethnic-homeland boundaries from Murdock's ethnographic atlas, I match DHS clusters to ethnic-homelands. As the DHS does not always collect ethnicity information of households in many African countries (due to its sensitivity), I assume that the household's cultural beliefs are the same as those associated with the ethnicity on whose homeland it currently resides.[2]

Since the legal origins of a country are closely linked with the identity of its colonizer, it is not obvious to disentangle the influence of the two. I address this by exploiting the imperfect overlap between legal origin and the identity of the colonizer in SSA. By comparing women residing in ethnic groups split between common or civil law countries, I identify the effect of legal institutions. This set of countries includes not only countries colonized by Britain and France but also those colonized by Belgium and Portugal, as well as those that were never colonized. Finally, by comparing women in ethnic groups split between British and French colonies only and by comparing women in the ethnic group split between British and other European colonies (but excluding the French), I can estimate the direct effect of the colonizer's identity on fertility.

The spatial RD design estimates show that colonial influence through legal origins does not explain current fertility outcomes in SSA. However, colonial influence through the identity of the colonizer plays a significant role. More specifically, spatial RD design estimates show that women that live within an ethnic homeland but on the side of the border (within the distance of 100 kms from the border) colonized by Britain have nearly 19.3 percent lower fertility levels than those that live on the French side. Comparing British colonies with those of other Europeans, I find no difference in the fertility levels. Further, the literature shows that countries with lower fertility rates also have lower child mortality rates (Doepke, 2005; Novignon et al., 2019). I test for this and find that lower fertility levels in British colonies are in fact supported by lower child mortality rates among these women. This result, therefore, points in the direction that colonial identity is an important factor that explains present-day fertility outcomes in SSA, and the effect of colonizer's population policies continues to persist.

To further confirm that the result is driven through colonizers' identity and particularly through their population policy, I hypothesize that France's colonial 1920 pro-natalist law that encouraged child birth and deterred contraception use, impacts fertility through family planning. To test for

[2] Only a very limited number of countries in my sample report ethnicity information and within those that report I am only able to match a limited number of reported ethnicities with those in Murdock's atlas. This does not permit me to have sufficient observations for estimation.

this, I create a measure for the demand for contraception and one for measuring the unmet need for contraception. Demand for contraception is the sum of all met and unmet needs for contraception among women that express a desire for family planning.[3] I find that while demand for contraception is significantly higher in common law countries, there is no difference between British and French colonies. However, I find no difference in the unmet need for contraception between common law and civil law countries but significantly lower unmet needs between British and French colonies. This suggests that the effect of the 1920 law that France imposed on its colonies may have a lasting impact on fertility outcomes in its colonies. This means that while demand or need for family planning is similar for women from British and French colonies, the latter cannot meet its family planning needs through contraceptives. This result is further confirmed when I compare British colonies with those of other Europeans and find no difference in the unmet need for contraception.

This paper contributes mainly to the literature on gender and fertility in SSA (Fafchamps and Quisumbing, 2007; Bongaarts and Casterline, 2013; Fenske, 2015; Guirkinger et al., 2021). It provides empirical evidence on determinants of current fertility in the region, an area that is still not well supported empirically. Further, it adds to the large literature on historical determinants of economic development (Acemoglu et al., 2001; Glaeser and Shleifer, 2002; Nunn, 2008; Michalopoulos and Papaioannou, 2013; Fenske and Kala, 2017). It adds mainly to the part of this literature that explores the colonizer's identity in explaining current economic development outcomes.

This paper also contributes to the recent and growing literature, which combines the two large streams of literature discussed above, and analyzes the historical origins or determinants of gender outcomes (Anderson, 2018; Canning et al., 2020; Brodeur et al., 2020). This paper is closest to the part of this literature which also relies on the same natural experiment *Scramble for Africa* for identification. Anderson (2018) shows that women of civil law countries have higher bargaining power and hence have lower HIV rates. Canning et al. (2020) on the other hand, investigate the role population policies of Britain and France have on fertility and how access to markets can mitigate any negative consequences. The paper contributes to this literature by exploring the impact of colonization through both these channels i.e. legal origins and the colonizer's identity.

The next section provides a background on differences between colonial policies and institutions and the channels through which they can impact fertility. Section 3 discusses the data used for estimating the results, and section 4 provides the empirical framework for the analysis. Section 5 provides a detailed discussion of the results, and section 6 concludes the paper along with discussing the policy relevance of the results.

[3] DHS defines met needs as sum of all the women who report undertaking or a desire for some form of family planning for wither limiting the number of births or for birth spacing and are also using contraception to do so. Unmet needs are defined as sum of women who report undertaking or a desire for some form of family planning for either limiting the number of births or for birth spacing but are not using any form of contraception.

2 Colonization and Fertility

Colonization has profoundly impacted the culture and institutions of the countries it affected. Colonizers transplanted in their colonies, their language, institutions, administrative styles, and even their preference for sports. Through these different dimensions of influence, the legacy of colonization continues to influence present-day economic and social outcomes in the colonized countries (Michalopoulos and Papaioannou, 2017, 2020). Only recently, the empirical literature has started investigating the influence of colonization on current social and gender outcomes.

In this section, I provide a brief overview of the two channels of influence through which the colonization of SSA could explain the present-day fertility outcomes. It starts with discussing the impact that colonization has through legal institutions. It then discusses the channel of the colonizer's identity through different population policies pursued by the two main colonizers, Britain and France. It finally explains the natural experiment, i.e. the *Scramble for Africa*, that I exploit for identification in this paper.

2.1 Colonial Institutions

Colonial institutions, broadly referred to as the legal systems that colonizers bought with them at the time of colonization, have profoundly impacted the colonies' current economic and financial outcomes. As already mentioned, countries colonized by Britain adopted the British common law, and those colonized by other European countries like France, Belgium, or Portugal adopted the Roman civil law. The literature extensively documents the differences between these two legal systems (La Porta et al., 2008; Michalopoulos and Papaioannou, 2017). On a formal level, the common law is established by appellate judges who resolve specific legal disputes and set precedents for future dispute resolution. While in civil law, statutes and comprehensive codes serve as primary sources of legal information. Legal scholars are heavily relied upon within this system to maintain and formulate rules. Further, in common law, dispute resolution is not inquisitive but rather adversarial, and it is the opposite for civil law. Lastly, fully independent judiciaries are essential to common law but not civil law. Besides these main formal differences, common law tends to be more supportive of private economic arrangements.[4]

A lot has been discussed in the literature about the impact of these legal systems on economic growth and financial development (North, 1989; La Porta et al., 2008). Researchers exploit the divergent features of the two law systems to investigate the role of legal origins in economic growth and financial development. Evidence indicates that countries with common law do better in terms of economic growth and have better functioning financial institutions (Porta et al., 1998; Glaeser

[4]For more details see https://european.economicblogs.org/voxeu/2019/porta-lopez-de-silanes-shleifer-vishny-origins

and Shleifer, 2002; Beck et al., 2003). Improved economic well-being has knock on effects on social well-being. One way economic development impacts social change is by increasing economic opportunities for women, which increases the opportunity cost for them to bear children and hence leads to a reduction in their fertility. Brodeur et al. (2020) show that women from common law countries are more likely to work in a professional sector, be higher educated, and are less likely to marry at a young age. Therefore, if the economic progress channel dominates, women from common law countries should have lower fertility than women from civil law countries.

Further, the differences between the two law systems not just impacts the economic aspects of life but also the social, and cultural aspects. Anderson (2018) explores another critical difference in the two legal systems that are most relevant to women and relate to marital property laws. The two systems differ in how they treat a household unit. Under common law, a married woman has no legal rights, and her husband is the sole owner of all marital property. This is in contrast to civil law, which presumes joint ownership of all property between husbands and wives and explicitly protects women by mandating equal sharing of marital property upon dissolution of the marriage (Hallward-Driemeier and Hasan, 2012). Recent work shows that this difference results in women from civil law countries having higher bargaining power than their counterparts in common law countries (Anderson, 2018). The higher bargaining power of women is often reflected in lower fertility levels (Novignon et al., 2019). Therefore, if the channel of bargaining power dominates, then women from civil law countries should have lower fertility than their counterparts in common law countries.

If the economic development channel dominates, I expect to find lower fertility among women in common law countries and if marital property rights channel dominates then I expect to find lower fertility among women in civil law countries. If both channels exert equal influence on fertility, then I should not find any significant difference between fertility levels of women in common and civil law countries. The reduction in fertility in common law countries due to higher economic growth would then be matched by similar reduction in civil law countries due to higher bargaining rights of women. Given how these two law systems can impact fertility outcomes differently, it is hard to predict which direction the relationship will go.

2.2 Colonizer Identity

Differences in legal institutions of the colonizers are potent in explaining the economic and social outcomes in colonized countries. Still, they are not the only source of difference between the colonizers. They also differed in their administrative styles, policies, and investments they made in their colonized countries. Differences between the colonizers on these dimensions can broadly be categorized as differences arising due to the colonizer's identity. A growing share of literature evaluates how these differences across colonizers explain current economic development outcomes in colonized countries. For instance, Iyer (2010); Lee and Schultz (2011) show that the British governance style of indirect rule versus French direct rule in its colonies or protectorates has resulted in better access to public goods compared with French colonies or protectorates. Like their governance policies, the two colonizers differed in their population policies. Towards the late 19th early 20th century, both nations witnessed different population growth, with France growing by a mere 10 million compared to 25 million by Britain (Ariès, 1971). These differing population growth rates propelled the countries to adopt two contrasting philosophies on demography.

Worried about the population expansion at home, Britain adopted the Malthusian view that excessive procreation leads to higher population growth which is a major problem for mankind. This view became increasingly popular in Victorian Britain, leading to significant changes within the country from dismantling of Poor Laws, to the export of surplus population to new colonies, to the emergence of a literature promoting anti-natalist ideas and contraception use (Robinson, 2002).[5] Further, Beach and Hanlon (2019) discuss the famous Bradlaugh-Besant trial of 1877, which led to the persecution of two activists who published a book on moral rights to promote family planning and provided information on contraceptive techniques. This trial became widely popular in Britain and in its colonies, leading to increased awareness about family planning. Authors also show that this trial consequently resulted in a decline in fertility not just in Britain but also in its colonies.

On the French side, the ongoing fertility decline coupled with massive loss of life in the First World War and the growing need to regain superiority that it had before the war pushed France to adopt the pro-natalist views, which encourage procreation and population growth. Similar to Britain, the adoption of opinions on demography led to increased publication of articles, books, and even postcards promoting pro-natalist views (Sauvy, 1973; Ogden and Huss, 1982). On July 31, 1920, it passed a pro-natalist law which was also extended to its colonies. This law severely repressed abortion and the use of contraception and encouraged women to have more children (Canning et al., 2020).

Even though the British never formally exported their population policies in the colonies, their propaganda around it made it easier for their colonies to adopt family planning sooner than colonies of France and other European nations (James and Finlay, 2017). Unlike Britain and France, other European colonists did not have a strong preference for demographic policies. Available shreds of evidence point to if any, support for pro-natalist views by other European colonizers (Caldwell and Sai, 2007). Liberalization of family planning policies in French colonies started with the 'World Population Plan of Action' of 1974, which was drafted and signed by 139 nations (Nations, 2003). This encouraged French colonies to revoke the 1920 law, and by 1990 almost all former French colonies had repealed it (Canning et al., 2020).

[5] Poor Laws were put in place to provide relief to disadvantaged families. A Royal Commission on reforming the Poor Laws was created in 1832 to report on these laws. This commission found that these laws encourage early marriage and large families among the poor, leading to over-population (Robinson, 2002).

Another policy differential between Britain and France through which colonization could indirectly impact fertility is through their education policies. The literature shows that both colonizers had different approaches to education and hence made different investments in their colonies. The British, who were driven by indirect rule policy, heavily invested in building schools and promoting education through the missionaries. These investments explain the higher educational outcome levels for both men and women from British colonized countries (Huillery, 2009; Dupraz, 2019). It is well accepted that higher education reduces fertility in women (Ainsworth et al., 1996). Given the overlap of education policies with other policies of the colonizers, I do not specifically test for this channel but I control for the respondent's and her husband's education level in all my estimations.

If the colonial influence through population policies persists, women from British colonies should have lower fertility than their French colonies counterparts. In this paper, I also test for differences in fertility outcomes between British colonies and colonies of Belgium and Portugal in SSA. I do this to disentangle the differences arising due to colonizer's identity and those due to legal institutions. Finally, I cannot compare French colonies with those of other European colonies as I do not have DHS data for countries sharing borders between French colonies and colonies of other European colonizers, an aspect that is essential for my identification of the colonization effect. To identify the influence colonial institutions and identity have on current fertility outcomes, this paper exploits the *Scramble for Africa*, a historical event connected with colonization that led to the partitioning of several ethnic homelands in SSA between two or more countries once Africa regained its independence from the colonizers.

2.3 Scramble for Africa

The Scramble for Africa, i.e. the historical event where colonizers divided the African continent among themselves, started in 1884-85 with the Berlin conference. Though this conference pertained only to the boundaries of Central Africa and how to divide it between the colonial powers, it laid down principles that were used by Europeans to divide the rest of the continent among themselves. These principles for division relied on the minimal information that Europeans had at that time about Africa (Michalopoulos and Papaioannou, 2016). As a result, in the majority of cases, European powers drew borders without taking into account local conditions, and this led to the partitioning of many ethnic groups between two or more countries (Herbst, 2014).

The literature shows that these borders were randomly drawn, as besides knowing some parts of coastal areas, Europeans had no knowledge of the local geography and communities that lived in Africa. Further, the Europeans were not drawing borders of prospective states but of colonies and protectorates, and at that time, their independence was not foreseen. Once these borders were drawn, Europeans were unwilling to change them, despite the arrival of new information. Lastly, there was no opposition to these borders at the local level as demarcations were poor since these borders were seen as a formality between European powers. Local people could freely move across these borders and continue with their activities as before Herbst (2014); Michalopoulos and Papaioannou (2016).

All this changed at the time of Independence. Leaders of the newly minted African states believed that nation-building and industrialization would win over any ethnic divisions in their countries. They also feared that border re-alignment would threaten their position. Therefore, almost all African countries accepted the colonial borders when signing the charter of the organization of the African Union (OAU) in 1964. This freezing of borders by OAU then creates a quasi-experimental setting as these borders were more or less exogenous to local conditions and arbitrarily divided some ethnic-homelands (Michalopoulos and Papaioannou, 2016).[6] The random nature of African border drawing is further confirmed by Alesina et al. (2011) who show that 80% of African borders follow latitudinal and longitudinal lines, more than in any other part of the world.

Following Anderson (2018) and Canning et al. (2020) I use the key consequence of this event which is the splitting of the ethnic groups across two or more countries. Assuming that all cultural factors or influences would be constant within the ethnic homeland, any differences in outcomes between households living across the borders in these split homelands will capture the effect of historical colonial policies implemented through their current country of residence. My identification strategy, which I discuss in the empirical strategy section, relies on this natural experiment.

[6] Michalopoulos and Papaioannou (2016) provide detailed empirical evidence to show that communities that got split due to colonial border and not systematically different from those that did no get split.

3 Data

To estimate the influence of colonization on current fertility in SSA, I use individual level information of mothers from the Demographic and Health Surveys (DHS) from 21 countries. I combine this with the geo-coded boundaries of ancestral ethnic homelands in Africa from Murdock's ethnographic atlas and geographical information about the region at the 0.5×0.5 decimal degrees grid-cell level from Prio-grid (Murdock, 1967; Tollefsen et al., 2012). Below, I provide details about each data set.

3.1 Individual-level data

I use fertility outcomes reported in recent rounds of DHS surveys for 21 SSA countries. DHS are nationally representative household surveys that cover women aged 15- 49 years old from randomly selected households and gather information on their birth histories, family planning choices, preferences for children along with details about their demographic and socio-economic characteristics. The analysis is restricted to households for which DHS provides geo-location of its DHS cluster.[7] To protect the confidentiality of the households, DHS randomly displaces the geo-location of the clusters to contain a minimum of 0 and a maximum of 5 kms of error. However, this displacement is done in a way the the cluster remains within the DHS survey region and country of the survey.[8] The final sample for this study consists of 119,972 women from 21 countries.

The main indicator for fertility outcome is the number of children ever born to a women. In the survey, women are asked to report details of all births they have ever had (whether the child is currently alive, living with them, or dead). The number of births that the women reports provides the indicator of her current fertility. The second indicator that I use for fertility outcome is child mortality. Literature shows that fertility and child mortality are directly related, so if child mortality falls, fertility is likely to fall as well (Becker and Barro, 1988; Novignon et al., 2019). These two indicators together provide a good understanding about the fertility level and its prospective trend.

Besides the two indicators discussed above, to understand the drivers of fertility outcomes I also create two indicators that estimate family planning needs. The first is demand for contraception and the second is unmet need for contraception. Demand for contraception measures the overall need for family planning in the sample. It is the sum of all women who report undertaking family planning either through practicing limiting or birth spacing. these women may or may not be using contraception. Unmet need for contraception is a variable that takes the value of one, if a women reports that she would like to limit her fertility or increase birth spacing but is not using

[7] DHS clusters are the groupings of households that participated in the survey within close geographic proximity.
[8] For more details see https://dhsprogram.com/methodology/gps-data-collection.cfm

any form of modern or traditional contraception. Therefore, the first variable helps ascertain the overall demand for family planning and the second shows how much of this total demand is being met through contraception. I also include respondent's year of birth as a fixed effect which allows me to compare outcomes across women born in the same year and avoid any temporal influences in fertility outcomes. I additionally use women's age of birth, her and her husband's education level, their wealth index, and her religion as individual level controls for the estimations. Descriptive statistics of the individual level variables are provided in table 1 in appendix B.

3.2 Ethnic-homeland level data

To identify which ancestral ethnic-homeland a household resides in, I combine the geo-coordinates of the DHS cluster of the household with geo-coded polygons of ancestral homelands from George Peter Murdock's ethnographic map of Africa (Murdock, 1967). Figure 1 shows the overlay of African country boundaries over the ancestral homeland boundaries. The map contains roughly 826 ethnic homelands. By overlaying the country maps over the ethnic homelands, I am able to identify the ethnic homelands that due to colonial borders got split between countries, similar to the approach of Michalopoulos and Papaioannou (2016). Figure 2 shows the ethnic homelands that are split between current African countries.

The estimation uses ethnic homeland fixed effects to control for ancestral norms surrounding gender and fertility outcomes. This allows me to control for cultural factors and estimate the effect of colonization on fertility. Further, Canning et al. (2020) argue that former British and French colonies that ended up adopting common and civil law institutions might have different pre-colonial characteristics which may determine fertility outcomes in these countries. Therefore, controlling for ethnic-homeland fixed effects also helps control for this potential source of endogeneity.

3.3 Grid-cell level data

The spatial nature of the estimation strategy necessitates the use of geographic level controls. Following the approach of Michalopoulos and Papaioannou (2013, 2014) and Anderson (2018) I match the geo-coordinates of DHS clusters with geographical data at a fine spatial resolution of 0.5 $\times$ 0.5 decimal degrees from Prio-Grid data set by Tollefsen et al. (2012).[9] The geographic controls varying at the grid-cell level used for the analysis includes: agricultural land coverage, forest cover, urban area, irrigation coverage, total area covered by the grid-cell, mean elevation, indicators for diamond mine, gold mine and petroleum/oil field, annual precipitation, yearly mean temperature, population, and average infant mortality rate.

[9] 0.5 $\times$ 0.5 decimal degrees cell resolution corresponds to roughly 55 $\times$ 55 kilometers at the equator (3025 square kilometers area).

This extensive set of spatially dis-aggregated socio-geographic data allows to control for physical and economic environment surrounding the DHS clusters in our estimation. Lastly, to estimate the spatial RD design model, the running variable used is the distance from centroid of the grid-cell to its nearest country boundary. Using distance of the grid-cell to the country boundary is widely used papers that use cross-country spatial RD design analysis (Michalopoulos and Papaioannou, 2013; Anderson, 2018; Canning et al., 2020; Brodeur et al., 2020).

3.4 Country level data

The key identifying variables of interest are whether the country was colonized by Britain, France or other European countries (Portugal and Belgium) and whether the country adopted common or civil law. Data on colonizer identity comes from Nunn and Puga (2012) and that on legal institutions comes from La Porta et al. (2008). Further, since the estimation relies on cross-country variation, the analysis therefore controls for important country level variation through use of GDP per capita, latitude and longitude of the country and region fixed effects that include Southern, East, West and Central Africa.

4 Estimation Strategy

This section discusses the empirical strategy used in this paper, its identifying assumptions and the estimation model. The estimation relies on the use of spatial RD design approach which is composed of two main components i.e. a running variable that measures the distance of the household from the country border, and a cutoff or shared country borders that arbitrarily divides some ethnic homelands between two or more countries. As mentioned in the previous section, the *Scramble for Africa* resulted in European drawing borders for which they had little understanding of the placement of ethnicities. This mainly resulted in a natural experiment where some ethnic groups randomly got divided between two or more countries. Comparing households, who belong to the same ethnicity but ended up on the other side of the border allows to estimate the colonial influence on current fertility outcomes. Further, comparing households that reside within the same ethnic homeland but across countries also allows to control for any cultural factors that could also influence beliefs and preferences for fertility.

4.1 Empirical Framework

The estimation strategy exploits the discontinuity in exposure to colonial regime within an ethnic homeland in SSA due to the quasi-random nature of the colonial border drawing. Following the approach of Anderson (2018), this paper uses a spatial RD design to estimate the influence of colonizers on fertility outcomes in SSA today. The main empirical specification used is:

$$Y_{idgec} = \alpha_0 + \alpha_1 Colonizer_c + \alpha_2 X_c + \alpha_3 X_{gec} + \alpha_4 X_{idgec} + f(BD_{gec}) + \delta_e + \gamma_r + \eta_b + \epsilon_{idgec} \quad (1)$$

where Y_{idgec} is the outcome variable of interest for woman i, from DHS cluster d, residing in country c, ethnic homeland e, and grid cell g. The indicator $Colonizer_c$ is equal to 1 if the household is on the treatment side of the border and 0 if it is on the control side of the border. More specifically, in the sample that compares common law countries with civil law countries $Colonizer_c$ is equal to 1 for women residing in common law countries and 0 for those in civil law countries. Similarly it is equal to 1 for women in British colonized country and 0 for those in and French colonized country (when comparing British colonies with French colonies) or 0 for those in a country colonized by other Europeans (when comparing British colonies with other European colonies).

The variable X_c is a vector of country-level controls reflecting GDP per capita and geographic controls. X_{gec} is a vector of grid cell level controls; X_{idgec} represents a set of individual level controls. δ_e, γ_r, and η_b are ethnic homeland, region and mother's year of birth fixed effects. The fixed effects imply that the average estimates compare women born in the same year living in split ancestral ethnic homeland and region. The function $f(BD_{gec})$ represents a second-order RD polynomial of the distance from the centroid of each grid cell to the nearest country border and controls for smooth function of geographic distance. All estimations use multi-way clustering on standard errors at the country and ethnic homeland level to account for spatial correlation using method developed by Cameron et al. (2011). Additionally, to account for the multidimensional nature of the geographic boundary, results using the latitude and longitude of the grid cells are provided in appendix D (Dell, 2010).

An important concern in the empirical estimation is to disentangle the colonial influence through colonial institutions from the identity of the colonizer as both are highly correlated. To identify the aspect of colonial influence on fertility through either institutions or identity, I exploit the imperfect overlap between the two. While countries colonized by Britain and France adopted common law and civil law respectively, countries colonized by other European colonizers like Portugal and Belgium also adopted Roman civil law. Besides these, Ethiopia and Liberia, which had never been colonized ended up adopting civil law and common law system respectively.[10] The heterogeneity of colonizers (and non-colonized) within groups of countries adopting common law and civil law systems allows to disentangle the effect of legal institutions from the colonizer identity on fertility outcomes. Lastly, comparing across countries colonized by different groups of colonizers further helps in identifying the effect of colonizer identity.[11]

Another reason why comparing British and French colonies is relevant is due to their different colonial population policies. However, the set of countries in the second comparison group is congruent with the common law and civil law countries of the first comparison group. Though this does not hold the other way around as the first group also has countries colonized by other European colonizers who did not have any specific population policy for their colonies. I therefore, run the estimation for a third group which compares British colonies with colonies of other European colonizers in SSA like Belgium and Portugal. If I find significant differences in this group and the results are in line with those from the first and second comparison groups, then I can safely attribute this to the legal institution channel. If the results are different between the second and third comparison group then I can attribute that this difference is due to the identity of the colonizer that I am comparing.

4.2 Identifying Assumptions

The identifying assumption of the causal relationship between the estimator of interest (α_1 in equation 1) and the outcome variable is that all relevant factors besides those directly impacted by

[10] Liberia, through never colonized was under the influence of United States of America till 1847 (Foster, 1953) and Ethiopia was briefly colonized by Italy, however, there were no lasting administrative changes made to have any lasting effect (Pankhurst, 1969)

[11] I prefer to keep both Ethiopia and Liberia in my main sample of legal origin countries (even though they were never colonized) as they add additional variation to disentangle the effect of legal origins and colonial identity. In table 11 in appendix, I show the main result for legal origin by excluding these two countries. My results are robust to their exclusion.

the treatment vary smoothly at the boundary within each ethnic homeland. More formally, if c_1 and c_0 denote potential outcomes under treatment and control, and x denotes the distance from the border, then the identification requires that $E[c_1|x]$ and $E[c_0|x]$ are continuous at the discontinuity threshold (Keele and Titiunik, 2015). This assumption is needed for households at both sides of the boundary to be appropriate counterfactual for one another. To test the validity of this assumption in my RD design setup, I follow the approach of Anderson (2018) and Dell (2010) and examine the continuity (or the lack of discontinuity) for the following important characteristics: agricultural cover, grid-cell area, elevation, gold deposits, water bodies, population density, night lights and annual precipitation. Results of this balance test are reported in tables 2 and 3. Besides a few variables like gold deposits and annual precipitation (which are significant at only 10 percent), there are no significant difference in characteristics across the border.

5 Results and Discussion

This section presents the results estimated using equation 1 for four key outcome variables that measure current fertility outcomes and family planning in SSA. The main outcome of interest, fertility is measured through total children ever born to a woman. This indicator is created from the birth histories of the women surveyed in the DHS survey. It includes all births the women ever had in her lifetime (or till the time of the survey) irrespective of whether the child is still alive or not or living with the woman. All estimations include all of the controls, as well as ethnic-homeland, year of mother's birth and region fixed effect, and a second-order polynomial of the distance from the centroid of each grid-cell to the national border. Before presenting the estimation results, I first provide graphical representation of the spatial RD design estimates. I use data driven RD plots, using evenly spaced partitioning of sample means. These plots include quadratic (polynomial of order 2) to approximate the distance to the border for both, control and treated units. I allow for data-driven bandwidth selection using uniform kernel function. Uniform kernel function is preferred as it gives equal weighting to all observations (see Calonico et al. (2015) for detailed discussion on optimal data-driven RD plots). The plots use sample means and not estimates from equation 1. These plots help identify if descriptively there is discontinuity at the border for fertility outcomes for colonized countries.

Figure 3 shows the RD plots for total children ever born to a women. Left hand plot shows discontinuity in fertility for women residing in common law and civil law countries and the right hand plot shows the same for British and French colonies. From this descriptive plot it appears that there is no discontinuity in fertility between common and civil law countries. However, there appears to be some discontinuity between British and French colonies. It appears that women from British colonies do have lower fertility compared to their counterparts from French colonies. Figure 4 shows RD plots for child mortality. There appears to be again small discontinuity between British and French colonies with British colonies having lower child mortality. I now turn to explore the results from the estimation strategy discussed in the empirical framework section.

5.1 Fertility Outcomes

The first panel of table 4 reports the results from the estimation for total children ever born to the surveyed woman. Panel A shows the RD design estimates for common law and civil law countries. Panel B shows the RD design estimates for British and French colonies and panel C for British and other European colonies, excluding French. First four columns of table 4 report RD design estimates for total children ever born for different bandwidths.

Estimates from panel A show that the total number of children ever born to a women from split ethnic groups living on the side of the border of common law country is similar to their counterparts who ended up on the civil law country side. This result is consistent for distances from the border ranging from 50 kms to 200 kms. In other words, there is no fertility differential arising from the colonial influence through legal institutions. However, when I compare women from British colonies with their counterparts in French colonies, I do find that they have significantly lower fertility. This implies women who now live within 100 kms from the border in a country colonized by Britain have almost 19.3 percent lower fertility than their counterparts who live in countries that were colonized by France.[12] Looking at the last panel, which compares women from British colonies with those from other European colonies but excluding French colonies, I again find no significant fertility differential.

Since the results between panel B and panel C differ, this indicates that identity of the colonizer matters. The fertility differential exists when I compare British and French colonies but not when I compare British and other European colonies, which implies that French pro-natal policies continue to have an impact on current fertility levels. Women from French colonies continue to have more children than their counterparts from British colonies. Further, though the results for legal institutions is insignificant, one cannot conclude that legal origins have no effect on current fertility outcomes. For one, we know from previous work that countries that adopted common law are witnessing higher economic progress which should have a negative impact on the fertility. Further, civil law provides better legal protection to married women thereby increasing their bargaining power and consequently might have a negative impact on fertility. If both these channels dominate, they may cancel each other out giving a non-significant effect. It is beyond the scope of this paper to identify the channels that cause insignificant effect for common and civil law countries.

Columns 5 to 8 of table 4 show spatial RD design estimates for child mortality, i.e. children dying before the reaching the age of 5 years. Again from panel A, we see that there is no significant difference in child mortality for mothers living within the same ethnic homeland but in countries of different legal origins. The non-significant result again confirms that colonial legal institutions do not explain the differences in fertility outcomes. In panel B we see that child mortality is significantly lower for women living in British colonies. More specifically, women who now live within 100 kms from the border in a country colonized by Britain have nearly 63.57 percent lower child mortality than their counterparts who live in countries that were colonized by France. Since the result of total children ever born and child mortality go in the same direction, this confirms the findings in the literature that lower fertility is positively correlated with child mortality (Westoff et al., 1990; Becker, 1960; Becker and Barro, 1988; Doepke, 2005; Novignon et al., 2019)

The next set of results explore the plausible reasons for observing the fertility differential between British and French colonies. From the literature discussed in the background section, we know that French were pro-natalist, they encouraged child birth and deterred use of contraception

[12] My preferred specification for interpreting the results is the one with bandwidth of 100 kms as this is the most stable in all robustness checks.

or any form of family planning. Their formal law of 1920 seems to still impact fertility outcomes in their colonies. So, a clear channel for higher fertility in French colonies should be through restrictive family planning.

5.2 Family Planning

Family planning is broadly defined as an approach that couples adopt to consciously manage their family size. This could be realized through formal channels like use of modern contraception or through informal channels like absenting from sexual activity or use of informal or traditional contraceptive methods. I create two variables that reflect the use of family planning. The first is the demand for contraception which is total number of women that have a met or unmet need for contraception for family planning purpose. Met needs are measured if women express that they are undertaking family planning for either birth spacing or limiting the number of children and are doing so through the use of contraception. Similarly, unmet needs are the number of women who report undertaking family planning but are not using any form of contraception. The second indicator that I use only looks at unmet need for contraception.

Given the formal push through France's 1920 law restricting family planning, I hypothesize that this would persist mostly through limited use or access to contraception. Table 5, reports spatial RD design estimates for these two variables. Like in the previous case, I continue to estimate the results for my 3 comparison groups. Panel A reports the results for comparison between common law and civil law countries. I find that common law countries have a significantly higher demand for contraception (measured through met and unmet need for contraception). However, there seems to be no significant difference for unmet need. This shows that for common law countries a significantly higher number of women are undertaking family planning through the use of contraceptives, as unmet contraceptive needs are not different between them.

Panel B presents the results for comparison between British and French colonies. Here, I find the opposite result. There is no significant difference in demand for contraception use in these countries but there is significantly lower unmet needs for contraception in British colonies. Results from comparing British and other European colonies is in line with that from common law and civil law countries, indicating that the legal institutions play an important role in determining the demand for family planning. However, the significant result for unmet needs indicates that the identity of the colonizer maybe important for access to contraception. This is further, supported by the results in panel C which is in line with that of panel A.

These evidence therefore, support the hypothesis that formal deterrence for the use of contraception in French colonies imposed through the 1920 law might still persist. Women from these colonies who want to exercise family planning are unable to do so through modern contraception use. Since comparison between panel A countries and panel C countries provides similar results, this implies that differences in demand for contraception is not specific to Britain and its colonies as I fail to pick up any significant British influence in Panel B countries.

5.3 Robustness

In this sub-section, I detail a few robustness checks to insure the validity of the results discussed above. Firstly, the main identifying assumption for spatial RD design estimates is that there is no discontinuity for relevant factors around the threshold. In tables 2 and 3 I show the balance for all geographic variables and find that except for annual mean temperature and the presence of gold deposits (which are mildly significant), all other variables are perfectly balanced. Further in the summary statistics (table 1), the balance also holds for most individual level variables except for level of education and religion. This is to be expected as these are the two other factors which were heavily influenced by the colonization. I control for these variables in all my estimations.

The second test that I run is the same estimation but allowing the distance or the running variable to be of a higher polynomial order and of a lower order polynomial. Though in a polynomial of order 2 is the commonly used in the literature, I show in table 7 and table 8 that my results do not change with using higher or lower order polynomials. This assures that it is not the fit of the polynomial that is driving the result.

Third, an important concern for the validity of the results is that households do not cross-over borders. If there are households living close to borders who regularly cross-over, these households would end up being treated by both regimes and thus create bias in the estimates. To check for this (Keele and Titiunik, 2015; Canning et al., 2020) suggest to add a buffer around the country boundary and then run the estimation. I add a buffer of 5 kms on each side of the border, so essentially I drop observations that are within the 5 kms range from the border and run the estimations. The result for this is shown in tables 9. Besides some loss in significance at around 50 kms from the thick border, rest of the estimates are consistent with the main results. this assures me that the results are not impacted by cross border movements.

Lastly, all the results assume that the geographical border is one dimensional by using distance from border as the running variable. However, geographical borders are multidimensional as they consist of both latitude and longitude. By assuming them to be one-dimensional could bias the estimates as they compare women living in the north of the treatment country at a distance x from the border is to the women living in the south of the control country but also at a distance x from the border. Therefore, to account for multidimensional nature of geographic boundary, results using latitude and longitude of the DHS clusters following the approach of Dell (2010) and a brief discussion of this approach are provided in appendix D. The results remain consistent with my main estimation results. I lose significance for DHS clusters at 50 kms from the border.

6 Conclusion

Historical events have a profound impact on economic and social functioning of countries. This paper examines the effect of one of the biggest historical events, colonization on fertility outcomes in SSA. It exploits the natural experiment created by *Scramble for Africa* which arbitrarily divided ethnic-homelands between two or more countries to identify the the effect of colonization. Using this I investigate the colonial influence on fertility in SSA through (i) their legal institutions; and (ii) their identity.

Results show that legal institutions do not significantly explain current fertility outcomes in SSA. However, I find that the differential in fertility is driven through the identity of the colonizer. In particular, results indicate that the colonial French law of 1920 which was pro-natal and deterred the use of contraception might still persist in its influence on current fertility. Women from French colonies have significantly higher fertility and consequently also face higher child mortality compared to their counterparts from British colonies. Further, investigation on family planning shows that the demand for contraception for family planning is similar for women from British and French colonies. However, women from French colonies that have family planning objects are unlikely to do it through modern contraception methods.

This result is of consequence for two reasons, First, it shows that colonizer's identity matters and their policies continue to determine current outcomes and hence socio-economic well-being in colonized countries. Second, by identifying the historical source of persistent influence on fertility, it allows to identify policy actions to remedy unfavourable outcomes. Since the results show that high fertility is mostly driven through colonial policies which limited the use of contraception, an obvious solution is to formally institute policies that enables easy access to contraception for those who seek it.

References

Acemoglu, D., S. Johnson, and J. A. Robinson (2001). The colonial origins of comparative development: An empirical investigation. *American economic review 91*(5), 1369–1401.

Ainsworth, M., K. Beegle, and A. Nyamete (1996). The impact of women's schooling on fertility and contraceptive use: A study of fourteen sub-saharan african countries. *The World Bank Economic Review 10*(1), 85–122.

Aldashev, G., C. Guirkinger, et al. (2016). Colonization and changing social structure: Kazakhstan 1896-1910. *ECARES Working Papers*.

Alesina, A., W. Easterly, and J. Matuszeski (2011). Artificial states. *Journal of the European Economic Association 9*(2), 246–277.

Anderson, S. (2018). Legal origins and female hiv. *American Economic Review 108*(6), 1407–39.

Ariès, P. (1971). *Histoire des populations françaises.* Ed. du Seuil.

Ashraf, Q. H., D. N. Weil, and J. Wilde (2013). The effect of fertility reduction on economic growth. *Population and development review 39*(1), 97–130.

Bank, W. (2010). *Determinants and consequences of high fertility: a synopsis of the evidence.* World Bank.

Beach, B. and W. W. Hanlon (2019). Censorship, family planning, and the historical fertility transition. Technical report, National Bureau of Economic Research.

Beck, T., A. Demirgüç-Kunt, and R. Levine (2003). Law, endowments, and finance. *Journal of financial Economics 70*(2), 137–181.

Becker, G. S. (1960). An economic analysis of fertility. In *Demographic and economic change in developed countries*, pp. 209–240. Columbia University Press.

Becker, G. S. and R. J. Barro (1988). A reformulation of the economic theory of fertility. *The quarterly journal of economics 103*(1), 1–25.

Bloom, D. E., D. Canning, G. Fink, and J. E. Finlay (2009). Fertility, female labor force participation, and the demographic dividend. *Journal of Economic growth 14*(2), 79–101.

Bongaarts, J. and J. Casterline (2013). Fertility transition: is sub-saharan africa different? *Population and development review 38*(Suppl 1), 153.

Brodeur, A., M. C. Mabeu, and R. Pongou (2020). Ancestral norms, legal origins, and female empowerment.

Caldwell, J. C. and F. T. Sai (2007). Family planning in ghana. *The global family planning revolution*, 379.

Calonico, S., M. D. Cattaneo, and R. Titiunik (2015). Optimal data-driven regression discontinuity plots. *Journal of the American Statistical Association 110*(512), 1753–1769.

Cameron, A. C., J. B. Gelbach, and D. L. Miller (2011). Robust inference with multiway clustering. *Journal of Business & Economic Statistics 29*(2), 238–249.

Canning, D., M. C. Mabeu, and R. Pongou (2020). Colonial origins and fertility: Can the market overcome history. *Unpublished Manuscript*.

Canning, D. and H. Schofield (2007). The effect of fertility on female labor supply and household poverty in indonesia. *Boston, MA: Harvard School of Public Health*.

Copley, A., B. Gokalp, D. Kirkwood, et al. (2021). Unlocking the potential of women entrepreneurs in uganda. *World Bank Publications*.

Dell, M. (2010). The persistent effects of peru's mining mita. *Econometrica 78*(6), 1863–1903.

Doepke, M. (2005). Child mortality and fertility decline: Does the barro-becker model fit the facts? *Journal of population Economics 18*(2), 337–366.

Dupraz, Y. (2019). French and british colonial legacies in education: Evidence from the partition of cameroon. *The Journal of Economic History 79*(3), 628–668.

Fafchamps, M. and A. R. Quisumbing (2007). Household formation and marriage markets in rural areas. *Handbook of development economics 4*, 3187–3247.

Fenske, J. (2015). African polygamy: Past and present. *Journal of Development Economics 117*, 58–73.

Fenske, J. and N. Kala (2017). 1807: Economic shocks, conflict and the slave trade. *Journal of Development Economics 126*, 66–76.

Foster, C. I. (1953). The colonization of free negroes, in liberia, 1816-1835. *The Journal of Negro History 38*(1), 41–66.

Glaeser, E. L. and A. Shleifer (2002). Legal origins. *The Quarterly Journal of Economics 117*(4), 1193–1229.

Guirkinger, C., J. Gross, and J.-P. Platteau (2021). Are women emancipating? evidence from marriage, divorce and remarriage in rural northern burkina faso. *World Development 146*, 105512.

Hallward-Driemeier, M. and T. Hasan (2012). *Empowering women: Legal rights and economic opportunities in Africa.* World Bank Publications.

Herbst, J. (2014). *States and power in Africa*. Princeton University Press.

Huillery, E. (2009). History matters: The long-term impact of colonial public investments in french west africa. *American economic journal: applied economics 1*(2), 176–215.

Iyer, L. (2010). Direct versus indirect colonial rule in india: Long-term consequences. *The Review of Economics and Statistics 92*(4), 693–713.

James, E. and J. Finlay (2017). Barriers to contraceptive use: Examination of contraceptive laws and contraceptive use in sub-saharan africa. In *PAA 2017 Annual Meeting*. PAA.

Keele, L. J. and R. Titiunik (2015). Geographic boundaries as regression discontinuities. *Political Analysis 23*(1), 127–155.

Klerman, D. M., P. G. Mahoney, H. Spamann, and M. I. Weinstein (2011). Legal origin or colonial history? *Journal of Legal Analysis 3*(2), 379–409.

La Porta, R., F. Lopez-de Silanes, and A. Shleifer (2008). The economic consequences of legal origins. *Journal of economic literature 46*(2), 285–332.

Lee, A. and K. A. Schultz (2011). Comparing british and french colonial legacies: A discontinuity analysis of cameroon. In *APSA 2011 Annual Meeting Paper*.

Michalopoulos, S. and E. Papaioannou (2013). Pre-colonial ethnic institutions and contemporary african development. *Econometrica 81*(1), 113–152.

Michalopoulos, S. and E. Papaioannou (2014). National institutions and subnational development in africa. *The Quarterly journal of economics 129*(1), 151–213.

Michalopoulos, S. and E. Papaioannou (2016). The long-run effects of the scramble for africa. *American Economic Review 106*(7), 1802–48.

Michalopoulos, S. and E. Papaioannou (2017). *The Long Economic and Political Shadow of History Volume I. A Global View*. Centre for Economic Policy Research.

Michalopoulos, S. and E. Papaioannou (2020). Historical legacies and african development. *Journal of Economic Literature 58*(1), 53–128.

Murdock, G. P. (1967). Ethnographic atlas.

Nations, U. (2003). *Fertility, Contraception and Population Policies*. United Nations Secretariat.

North, D. C. (1989). Institutions and economic growth: An historical introduction. *World development 17*(9), 1319–1332.

Novignon, J., N. G. Djossou, and U. Enemark (2019). Childhood mortality, intra-household bargaining power and fertility preferences among women in ghana. *Reproductive health 16*(1), 1–12.

Nunn, N. (2008). The long-term effects of africa's slave trades. *The Quarterly Journal of Economics 123*(1), 139–176.

Nunn, N. and D. Puga (2012). Ruggedness: The blessing of bad geography in africa. *Review of Economics and Statistics 94*(1), 20–36.

Ogden, P. E. and M.-M. Huss (1982). Demography and pronatalism in france in the nineteenth and twentieth centuries. *Journal of Historical Geography 8*(3), 283–298.

Pankhurst, R. (1969). Fascist racial policies in ethiopia: 1922-1941. *Ethiopia Observer 12*(4), 270–286.

Porta, R. L., F. Lopez-de Silanes, A. Shleifer, and R. W. Vishny (1998). Law and finance. *Journal of political economy 106*(6), 1113–1155.

Robinson, W. C. (2002). Population policy in early victorian england. *European Journal of Population/Revue Européenne de Démographie 18*(2), 153–173.

Sauvy, A. (1973). Population growth and policy in france. *International Journal of Health Services 3*(4), 863–868.

Shetty, S. (2021). Fostering inclusive development in sub-saharan africa through gender equality. *SAIS Review of International Affairs 41*(1), 33–48.

Tollefsen, A. F., H. Strand, and H. Buhaug (2012). Prio-grid: A unified spatial data structure. *Journal of Peace Research 49*(2), 363–374.

Westoff, C. F. et al. (1990). *Age at marriage, age at first birth, and fertility in Africa.* Number 169.

A Figures

Figure 1: Map of ancestral ethnic homelands and current country boundaries

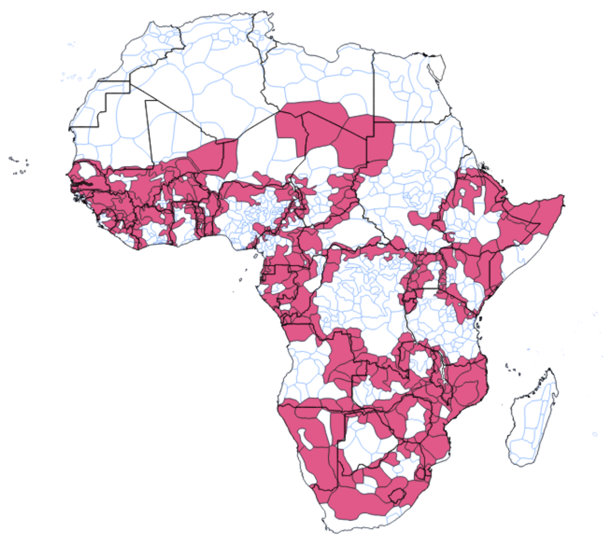

Figure 2: Map of ancestral homelands split between current African countries

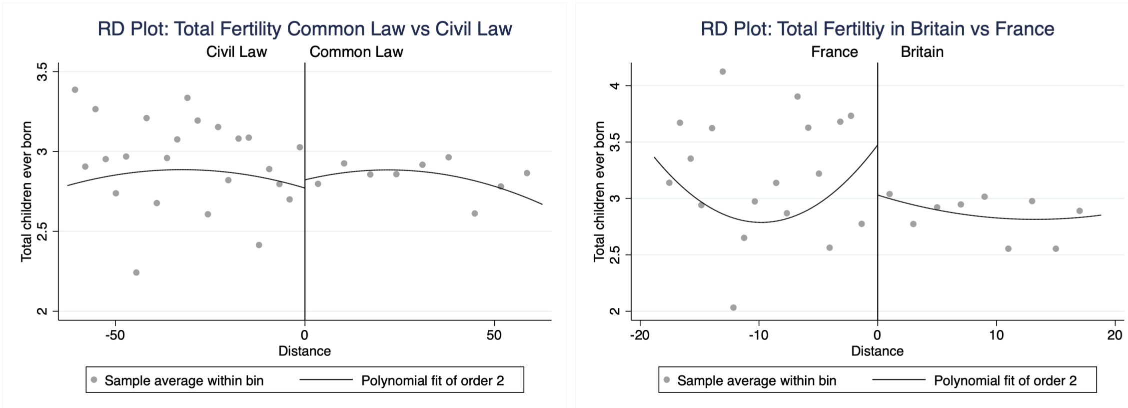

Figure 3: RDD Plots of total children ever born

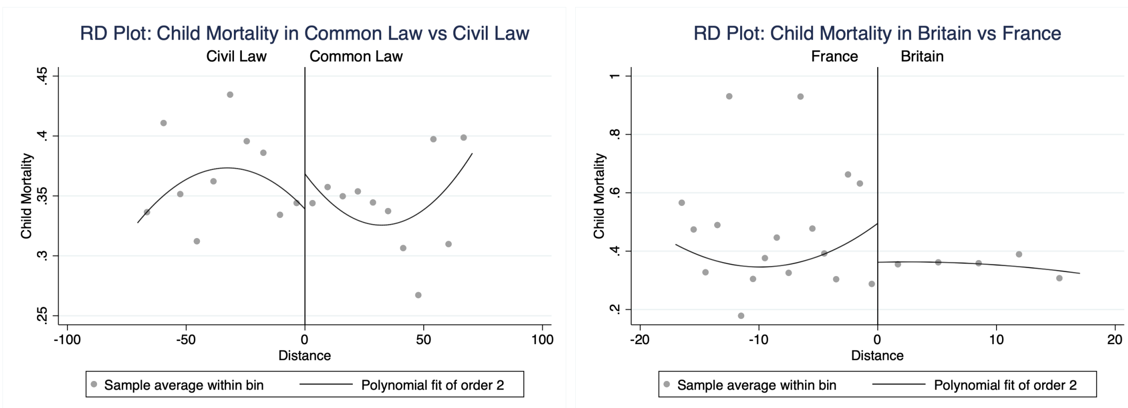

Figure 4: RDD Plots of child mortality

B Tables

Table 1: Table of descriptive statistics

	Common Law		Civil Law		Britain		France	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Individual variables								
Total Children	2.713	2.547	2.557	2.595	2.521	2.385	2.637	2.557
Child Mortality	0.293	0.733	0.303	0.761	0.291	0.716	0.301	0.749
Mother's age	28.56	9.49	28.35	9.47	29.211	9.647	28.545	9.409
Residence: Urban	0.313	0.464	0.351	0.477	0.394	0.489	0.488	0.5
Residence: Rural	0.688	0.464	0.649	0.477	0.606	0.489	0.512	0.5
Wealth index	-14764.69	225423.1	17458.46	108745.4	-2114.257	149782	21276.21	108022.2
Mother's Education: None	0.159	0.366	0.333	0.471	0.05	0.216	0.375	0.484
Mother's Education: Primary	0.459	0.498	0.397	0.489	0.458	0.498	0.157	0.364
Mother's Education: Secondary	0.332	0.471	0.245	0.430	0.441	0.497	0.406	0.491
Mother's Education: Higher	0.049	0.216	0.026	0.159	0.052	0.223	0.062	0.241
Father's Education: None	0.162	0.368	0.340	0.474	0.427	0.495	0.5	0.5
Father's Education: Primary	0.391	0.488	0.399	0.490	0.106	0.307	0.171	0.377
Father's Education: Secondary	0.350	0.477	0.184	0.387	0.348	0.477	0.233	0.423
Father's Education: Higher	0.078	0.269	0.045	0.208	0.105	0.306	0.063	0.244
Christian	0.678	0.467	0.683	0.465	0.514	0.5	0.41	0.492
Muslim	0.127	0.333	0.182	0.386	0.438	0.496	0.463	0.499
Grid-cell variables								
Infant Mortality per 10,000	1064.119	320.02	1100.4	193.53	1063.83	416.611	916.074	152.407
Agricultural cover (% of area)	38.171	27.710	42.39	25.225	33.771	24.679	30.612	26.477
Forest cover (% of area)	28.198	22.746	31.261	19.701	32.834	23.635	26.709	19.092
Mean elevation	0.276	0.279	0.423	0.384	0.076	0.144	0.062	0.132
Population Density	218.295	355.402	364.091	326.221	329.892	722.4	288.033	375.371
Night Lights (mean)	1.168	2.580	1.406	2.275	2.311	5.504	2.09	2.753
Annual precipitation (mean)	293.223	127.052	311.201	119.454	384.619	173.362	366.928	189.79
Annual temperature (mean)	22.32	3.035	22.27	3.36	25.981	1.715	26.492	1.026
N	58,778	58,778	61,194	61,194	8,878	8,878	16,722	16,722

Table 2: Validity of identification design: Common Law vs Civil Law

	Agricultural cover				Grid-cell area			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Common Law	3.086	4.108	4.358	4.351	23.33	19.41	18.79	18.16
	(0.84)	(1.15)	(1.23)	(1.23)	(0.61)	(0.68)	(0.67)	(0.65)
	Mean Elevation				Presence of Gold Deposits			
Common Law	-0.00456	0.00958	0.00878	0.00860	0.0253*	0.0197	0.0192	0.0189
	(-0.21)	(0.36)	(0.33)	(0.33)	(2.44)	(1.24)	(1.22)	(1.20)
	Presence of Water Bodies				Population Density			
Common Law	0.870	0.776	0.859	0.866	96.69	78.10	78.11	77.69
	(0.67)	(0.72)	(0.79)	(0.80)	(0.67)	(0.73)	(0.74)	(0.74)
	Mean Night Lights				Mean Annual Precipitation			
Common Law	0.796	0.632	0.623	0.618	10.11	10.87	11.12	10.70
	(0.72)	(0.76)	(0.76)	(0.76)	(0.97)	(0.94)	(0.96)	(0.93)
N	94018	114464	117028	118120	94018	114464	117028	118120
Distance (bandwidth)	50	100	150	200	50	100	150	200
Countries	21	21	21	21	21	21	21	21
Ethnic Groups	83	83	83	83	83	83	83	83
Ethnic Homeland FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note: OLS spatial RD estimates for grid-cell level variables across common law and civil law countries. Agriculture cover is defined as the percentage of the grid-cell with agriculture cover. Grid-cell area is the total area of the bordering grid-cells in kilometers. Mean elevation is the average elevation of the mountainous areas. Presence of gold deposits is an indicator variable that takes the value 1 if gold deposits were found in the grid-cell. Presence of water bodies is the percentage of grid-cell covered with water. Population density is the total population living on the grid-cell divided by the total area of the grid-cell. Mean night lights measures the average intensity of the night lights in the grid-cell from 1992-2013. Mean annual precipitation from 1946 to 2013.

Table 3: Validity of identification design: Britain vs France

	Agricultural cover				Grid-cell area			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Britain	5.848	5.728	6.280	6.280	3.542	3.395	3.069	3.069
	(0.70)	(0.72)	(0.80)	(0.80)	(0.04)	(0.04)	(0.04)	(0.04)
	Mean Elevation				Presence of Gold Deposits			
Britain	0.00724	0.00573	0.00671	0.00671	0.0275	0.0369	0.0368	0.0368
	(0.63)	(0.53)	(0.57)	(0.57)	(1.28)	(1.24)	(1.24)	(1.24)
	Presence of Water Bodies				Population Density			
Britain	2.930	3.072	3.140	3.140	291.9	240.8	238.1	238.1
	(1.14)	(1.38)	(1.41)	(1.41)	(0.73)	(0.73)	(0.73)	(0.73)
	Mean Night Lights				Mean Annual Precipitation			
Britain	2.022	1.727	1.710	1.710	31.56*	33.32*	33.79*	33.79*
	(0.65)	(0.66)	(0.67)	(0.67)	(2.70)	(3.30)	(3.28)	(3.28)
N	21070	23940	24591	24591	21070	23940	24591	24591
Distance (bandwidth)	50	100	150	200	50	100	150	200
Countries	9	9	9	9	9	9	9	9
Ethnic Groups	26	26	26	26	26	26	26	26
Ethnic Homeland FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note: OLS spatial RD estimates for grid-cell level variables across British and French colonies. Agriculture cover is defined as the percentage of the grid-cell with agriculture cover. Grid-cell area is the total area of the bordering grid-cells in kilometers. Mean elevation is the average elevation of the mountainous areas. Presence of gold deposits is an indicator variable that takes the value 1 if gold deposits were found in the grid-cell. Presence of water bodies is the percentage of grid-cell covered with water. Population density is the total population living on the grid-cell divided by the total area of the grid-cell. Mean night lights measures the average intensity of the night lights in the grid-cell from 1992-2013. Mean annual precipitation from 1946 to 2013.

Table 4: RDD estimation: Colonizer influence on Fertility and Child Mortality

	Total Children				Child Mortality			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Legal Institutions								
Common Law	-0.0261	-0.0283	-0.0483	-0.0484	-0.0506	-0.0462	-0.0526	-0.0538
(vs Civil Law)	(0.1236)	(0.1138)	(0.1055)	(0.1034)	(0.0358)	(0.0364)	(0.0354)	(0.0355)
N	50351	62790	64920	65666	50351	62790	64920	65666
r2	0.5435	0.5426	0.5402	0.5397	0.1656	0.1607	0.1594	0.1585
Panel B: Colonizer Identity								
Britain (vs France)	-0.3845*	-0.4874**	-0.5092**	-0.5131**	-0.1441*	-0.1850**	-0.1916**	-0.1915**
	(0.1991)	(0.1990)	(0.2022)	(0.2028)	(0.0763)	(0.0777)	(0.0788)	(0.0787)
N	12815	15580	15948	15961	12815	15580	15948	15961
r2	0.5133	0.5165	0.5149	0.5149	0.1595	0.1549	0.1555	0.1556
Panel C: Colonizer Identity (ex. France)								
Britain	0.1873	0.1789	0.1431	0.1321	-0.0366	-0.0030	-0.0215	-0.0261
(vs other European)	(0.1848)	(0.1513)	(0.1653)	(0.1725)	(0.0474)	(0.0425)	(0.0453)	(0.0466)
N	59667	79263	85918	88967	59667	79263	85918	88967
r2	0.5636	0.5641	0.5611	0.5592	0.1854	0.1937	0.1915	0.1903
Distance (bandwidth)	50 kms	100 kms	150 kms	200 kms	50 kms	100 kms	150 kms	200 kms
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ethnic Homeland FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Birth year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note: OLS Spatial RD design estimates for the effect of colonization on fertility and child mortality. Total children is the total number of births a woman has at the time of the survey. Child mortality is the number of children that were born to a woman who did not survive till the age of 5 years. Columns 1 to 4 show estimates for total children for women living within 50 kms to 200 kms from the border. Similarly columns 5 to 8 show estimates for child mortality for women living within 50 kms to 200 kms from the border. Panel A compares common law countries with civil law countries and panel B compares estimates for British and French colonies. Panel C compares estimates for Britain and other European colonies excluding French. Estimates include all individual, grid-cell and country level controls. All standard errors are clustered at ethnic-homeland and country level and reported in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 5: RDD estimation: Colonizer influence on Contraception Demand and Unmet Contraception Needs

	Contraception Demand				Contraception Unmet Need			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Legal Institutions								
Common Law	0.0904***	0.1007***	0.1021***	0.1025***	-0.0151	-0.0110	-0.0101	-0.0102
(vs Civil Law)	(0.0311)	(0.0324)	(0.0327)	(0.0324)	(0.0196)	(0.0159)	(0.0156)	(0.0154)
N	50336	62772	64901	65647	50336	62772	64901	65647
r2	0.0985	0.1075	0.1091	0.1105	0.0339	0.0313	0.0311	0.0309
Panel B: Colonizer Identity								
Britain (vs France)	0.0225	0.0295	0.0301	0.0299	-0.0870***	-0.0780***	-0.0791***	-0.0769***
	(0.0211)	(0.0221)	(0.0238)	(0.0237)	(0.0250)	(0.0214)	(0.0215)	(0.0215)
N	12805	15570	15938	15951	12805	15570	15938	15951
r2	0.0691	0.0669	0.0674	0.0673	0.0345	0.0321	0.0316	0.0312
Panel C: Colonizer Identity (ex. France)								
Britain	0.1514***	0.1549***	0.1600***	0.1602***	-0.0424	-0.0372	-0.0337	-0.0338
(vs other European)	(0.0513)	(0.0499)	(0.0506)	(0.0497)	(0.0295)	(0.0252)	(0.0254)	(0.0260)
N	59626	79216	85868	88917	59626	79216	85868	88917
r2	0.1209	0.1414	0.1440	0.1477	0.0361	0.0332	0.0331	0.0339
Distance (bandwidth)	50 kms	100 kms	150 kms	200 kms	50 kms	100 kms	150 kms	200 kms
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ethnic Homeland FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Birth year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note: Multidimensional Spatial RD design estimates for the effect of colonization on contraception demand and unmet contraception need. Contraception demand are women who have met or unmet need for contraception. Unmet contraception need are women who want family planning but are not using any contraception method. Columns 1 to 4 show estimates for contraception demand for women living within 50 kms to 200 kms from the border. Similarly columns 5 to 8 show estimates for unmet contraception need for women living within 50 kms to 200 kms from the border. Panel A compares common law countries with civil law countries and panel B compares estimates for British and French colonies. Panel C compares estimates for Britain and other European colonies excluding French. Estimates include all individual, grid-cell and country level controls. All standard errors are clustered at ethnic-homeland and country level and reported in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

C Additional Tables

Table 6: Country list of SSA countries

Country	Colonizer	Legal System
Angola	Portugal	Civil Law
Burlina Faso	France	Civil Law
Benin	France	Civil Law
Cote d-Ivoire	France	Civil Law
Ethiopia	None	Civil Law
Gabon	France	Civil Law
Ghana	Britain	Common Law
Guinea	France	Civil Law
Kenya	Britain	Common Law
Liberia	None	Common Law
Mali	France	Civil Law
Malawi	Britain	Common Law
Mozambique	Portugal	Civil Law
Nigeria	Britain	Common Law
Namibia	Britain	Common Law
Rwanda	Belgium	Civil Law
Sierra Leone	Britain	Common Law
Senegal	France	Civil Law
Chad	France	Civil Law
Togo	France	Civil Law
Tanzania	Britain	Common Law
Uganda	Britian	Common Law
South Africa	Britian	Common Law
Zambia	Britian	Common Law
Zimbabwe	Britian	Common Law

Note: This is a full list of all DHS countries for which I have the data. Not all countries are in my final sample. My sample consists of only those countries which border each other and have different colonial regimes.

Table 7: RDD estimation: Colonizer influence and fertility with cubic polynomial

	Total Children				Child Mortality			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Legal Institutions								
Common Law	-0.0181	-0.0121	-0.0250	-0.0210	-0.0467	-0.0390	-0.0436	-0.0432
(vs Civil Law)	(0.1269)	(0.1344)	(0.1456)	(0.1451)	(0.0351)	(0.0415)	(0.0421)	(0.0420)
N	50351	62790	64920	65666	50351	62790	64920	65666
r2	0.5431	0.5420	0.5394	0.5388	0.1655	0.1606	0.1592	0.1586
Panel B: Colonizer Identity								
Britain (vs France)	-0.1738	-0.2314*	-0.2909**	-0.2913**	-0.1142*	-0.0991	-0.1141**	-0.1143**
	(0.1354)	(0.1202)	(0.1157)	(0.1154)	(0.0590)	(0.0556)	(0.0494)	(0.0489)
N	12815	15580	15948	15961	12815	15580	15948	15961
r2	0.5118	0.5148	0.5133	0.5134	0.1597	0.1543	0.1550	0.1551
Panel C: Colonizer Identity (ex. France)								
Britain	0.1280	0.1927	0.1995	0.1942	-0.0439	-0.0044	-0.0047	-0.0093
(vs other European)	(0.1750)	(0.1640)	(0.1620)	(0.1626)	(0.0520)	(0.0546)	(0.0535)	(0.0530)
N	59639	79235	85890	88939	59639	79235	85890	88939
r2	0.5635	0.5639	0.5610	0.5591	0.1854	0.1937	0.1916	0.1904
Distance (bandwidth)	50 kms	100 kms	150 kms	200 kms	50 kms	100 kms	150 kms	200 kms
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ethnic Homeland FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Birth year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note: OLS Spatial RD design estimates for the effect of colonization on fertility and child mortality with distance to border in third order polynomial. Total children is the total number of births a woman has at the time of the survey. Child mortality is the number of children that were born to a woman who did not survive till the age of 5 years. Columns 1 to 4 show estimates for total children for women living within 50 kms to 200 kms from the border. Similarly columns 5 to 8 show estimates for child mortality for women living within 50 kms to 200 kms from the border. Panel A compares common law countries with civil law countries and panel B compares estimates for British and French colonies. Panel C compares estimates for Britain and other European colonies excluding French. Estimates include all individual, grid-cell and country level controls. All standard errors are clustered at ethnic-homeland and country level and reported in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 8: RDD estimation: Colonizer influence and fertility with degree 1 polynomial

	Total Children				Child Mortality			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Legal Institutions								
Common Law	-0.0183	-0.0141	-0.0304	-0.0271	-0.0466	-0.0399	-0.0465	-0.0454
(vs Civil Law)	(0.1285)	(0.1315)	(0.1386)	(0.1390)	(0.0351)	(0.0401)	(0.0411)	(0.0414)
N	50351	62790	64920	65666	50351	62790	64920	65666
r2	0.5431	0.5419	0.5393	0.5387	0.1654	0.1603	0.1589	0.1583
Panel B: Colonizer Identity								
Britain (vs France)	-0.1599	-0.2428*	-0.2919**	-0.2925**	-0.1049*	-0.0990**	-0.1139**	-0.1141**
	(0.1295)	(0.1300)	(0.1220)	(0.1214)	(0.0481)	(0.0444)	(0.0446)	(0.0446)
N	12815	15580	15948	15961	12815	15580	15948	15961
r2	0.5117	0.5144	0.5130	0.5130	0.1593	0.1542	0.1550	0.1550
Panel C: Colonizer Identity (ex. France)								
Britain	0.1274	0.1853	0.1937	0.1873	-0.0400	-0.0055	-0.0081	-0.0104
(vs other European)	(0.1709)	(0.1582)	(0.1613)	(0.1620)	(0.0482)	(0.0520)	(0.0520)	(0.0516)
N	59639	79235	85890	88939	59639	79235	85890	88939
r2	0.5635	0.5638	0.5609	0.5590	0.1854	0.1937	0.1915	0.1904
Distance (bandwidth)	50 kms	100 kms	150 kms	200 kms	50 kms	100 kms	150 kms	200 kms
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ethnic Homeland FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Birth year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note: OLS Spatial RD design estimates for the effect of colonization on fertility and child mortality with distance to border in first order polynomial (linear). Total children is the total number of births a woman has at the time of the survey. Child mortality is the number of children that were born to a woman who did not survive till the age of 5 years. Columns 1 to 4 show estimates for total children for women living within 50 kms to 200 kms from the border. Similarly columns 5 to 8 show estimates for child mortality for women living within 50 kms to 200 kms from the border. Panel A compares common law countries with civil law countries and panel B compares estimates for British and French colonies. Panel C compares estimates for Britain and other European colonies excluding French. Estimates include all individual, grid-cell and country level controls. All standard errors are clustered at ethnic-homeland and country level and reported in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 9: RDD estimation: Colonizer influence and fertility with thick border

	Total Children				Child Mortality			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Legal Institutions								
Common Law	-0.0211	-0.0275	-0.0424	-0.0413	-0.0301	-0.0268	-0.0328	-0.0335
(vs Civil Law)	(0.1294)	(0.1245)	(0.1160)	(0.1135)	(0.0372)	(0.0394)	(0.0387)	(0.0389)
N	42142	54581	56711	57457	42142	54581	56711	57457
r2	0.5415	0.5409	0.5383	0.5379	0.1625	0.1580	0.1566	0.1556
Panel B: Colonizer Identity								
Britain (vs France)	-0.2873	-0.4032*	-0.4260**	-0.4319**	-0.1111	-0.1497*	-0.1562*	-0.1558*
	(0.2009)	(0.1872)	(0.1907)	(0.1912)	(0.0831)	(0.0742)	(0.0756)	(0.0751)
N	11239	14004	14372	14385	11239	14004	14372	14385
r2	0.5089	0.5133	0.5116	0.5116	0.1522	0.1495	0.1503	0.1504
Panel C: Colonizer Identity (ex. France)								
Britain	0.2239	0.2301	0.2001	0.1895	-0.0085	0.0353	0.0188	0.0143
(vs other European)	(0.1887)	(0.1553)	(0.1699)	(0.1784)	(0.0539)	(0.0501)	(0.0517)	(0.0528)
N	50225	69821	76476	79525	50225	69821	76476	79525
r2	0.5638	0.5646	0.5614	0.5594	0.1823	0.1931	0.1908	0.1896
Distance (bandwidth)	50 kms	100 kms	150 kms	200 kms	50 kms	100 kms	150 kms	200 kms
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ethnic Homeland FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Birth year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note: OLS Spatial RD design estimates for the effect of colonization on fertility and child mortality with 10 kms thick border. Total children is the total number of births a woman has at the time of the survey. Child mortality is the number of children that were born to a woman who did not survive till the age of 5 years. Columns 1 to 4 show estimates for total children for women living within 50 kms to 200 kms from the border. Similarly columns 5 to 8 show estimates for child mortality for women living within 50 kms to 200 kms from the border. Panel A compares common law countries with civil law countries and panel B compares estimates for British and French colonies. Panel C compares estimates for Britain and other European colonies excluding French. Estimates include all individual, grid-cell and country level controls. All standard errors are clustered at ethnic-homeland and country level and reported in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 10: Poisson RD design estimation: Colonizer influence on Fertility and Child Mortality

	Total Children				Child Mortality			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Legal Institutions								
Common Law	-0.0042	-0.0020	-0.0087	-0.0087	-0.0912	-0.0710	-0.0904	-0.0935
(vs Civil Law)	(0.0327)	(0.0297)	(0.0281)	(0.0275)	(0.0796)	(0.0766)	(0.0736)	(0.0729)
N	50351	62790	64920	65666	50351	62790	64920	65666
Panel B: Colonizer Identity								
Britain (vs France)	-0.0819*	-0.1015**	-0.1070**	-0.1082**	-0.2855*	-0.3434***	-0.3433***	-0.3415***
	(0.0473)	(0.0432)	(0.0435)	(0.0437)	(0.1457)	(0.1211)	(0.1130)	(0.1124)
N	12815	15580	15948	15961	12807	15571	15936	15949
Panel C: Colonizer Identity (ex. France)								
Britain	0.0460	0.0413	0.0326	0.0281	-0.0641	-0.0023	-0.0320	-0.0431
(vs other European)	(0.0405)	(0.0341)	(0.0385)	(0.0408)	(0.1077)	(0.0984)	(0.1011)	(0.1004)
N	59667	79263	85918	88967	59615	79159	85779	88820
Distance (bandwidth)	50 kms	100 kms	150 kms	200 kms	50 kms	100 kms	150 kms	200 kms
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ethnic Homeland FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Birth year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note: Poisson Spatial RD design estimates for the effect of colonization on fertility and child mortality. Total children is the total number of births a woman has at the time of the survey. Child mortality is the number of children that were born to a woman who did not survive till the age of 5 years. Columns 1 to 4 show estimates for total children for women living within 50 kms to 200 kms from the border. Similarly columns 5 to 8 show estimates for child mortality for women living within 50 kms to 200 kms from the border. Panel A compares common law countries with civil law countries and panel B compares estimates for British and French colonies. Panel C compares estimates for Britain and other European colonies excluding French. Estimates include all individual, grid-cell and country level controls. All standard errors are clustered at ethnic-homeland and country level and reported in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Table 11: RDD estimation: Colonizer influence on Fertility, Child Mortality and Family Planning for Only colonized Countries

	Total Children				Child Mortality			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Fertility and Child Mortality								
Common Law	-0.0249	-0.0253	-0.0460	-0.0455	-0.0529	-0.0482	-0.0543	-0.0556
(vs Civil Law)	(0.1253)	(0.1147)	(0.1071)	(0.1050)	(0.0359)	(0.0358)	(0.0347)	(0.0350)
N	50351	62790	64920	65666	50351	62790	64920	65666
r2	0.5435	0.5426	0.5402	0.5397	0.1655	0.1607	0.1593	0.1585
Panel B: Family Planning								
	Contraception Demand				Contraception Unmet Need			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Common Law	0.0914***	0.1020***	0.1031***	0.1036***	-0.0169	-0.0125	-0.0113	-0.0114
(vs Civil Law)	(0.0315)	(0.0330)	(0.0333)	(0.0330)	(0.0203)	(0.0165)	(0.0161)	(0.0159)
N	50336	62772	64901	65647	50336	62772	64901	65647
r2	0.0985	0.1075	0.1091	0.1104	0.0338	0.0312	0.0310	0.0308
Distance (bandwidth)	50 kms	100 kms	150 kms	200 kms	50 kms	100 kms	150 kms	200 kms
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ethnic Homeland FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Birth year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note: OLS Spatial RD design estimates for the effect of colonization on fertility, child mortality and family planning for all sample countries excluding Ethiopia and Liberia. Total children is the total number of births a woman has at the time of the survey. Child mortality is the number of children that were born to a woman who did not survive till the age of 5 years. Columns 1 to 4 show estimates for total children for women living within 50 kms to 200 kms from the border. Similarly columns 5 to 8 show estimates for child mortality for women living within 50 kms to 200 kms from the border. Panel A compares shows results for fertility and child mortality for common and civil law countries and panel B shows results for family planning. Estimates include all individual, grid-cell and country level controls. All standard errors are clustered at ethnic-homeland and country level and reported in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

D Multi-Dimensional RDD estimation

The analysis so far used the main running variable as the shortest (i.e. perpendicular) perpendicular to the country boundary. This estimation then relied on comparing all individuals within the specified bandwidth (fixed distance from country border) on both sides of the border. However, using distance to boundary ignores the spatial nature of geographic locations and therefore masks important geographical heterogeneity. Two individuals could be at the same distance from the border but located on two different ends geographically (see Keele and Titiunik (2015) for detailed discussion on this). In this section I exploit the multi-dimensional (latitude and longitude) nature of spatial country boundaries and household locations for spatial RD estimation. Following Dell (2010), I estimate the below model:

$$Y_{idec} = \alpha_0 + \alpha_1 Colonizer_c + \alpha_2 X_c + \alpha_3 X_{gec} + \alpha_4 X_{idgec} + f(location_{dec}) + \delta_e + \gamma_r + \eta_b + \epsilon_{idgec} \tag{2}$$

where Y_{idgec} is the outcome variable of interest for the women i, from DHS cluster d, residing in country c, and ethnic homeland e. The indicator $Colonizer_c$ is equal to 1 for common law countries and 0 for civil law countries in specifications testing for the colonizer effect through legal institutions. In specifications identifying colonizer effect through colonial policies it is equal to 1 when colonizer was Britain and 0 for France. The variable X_c is a vector of country-level controls. X_{gec} is a vector of grid cell level controls; X_{idgec} represents a set of individual level controls. δ_e, γ_r, and η_b are ethnic homeland, region and mother's year of birth fixed effects. The function $f(location_{dec})$ is second order RD polynomial which controls for smooth functions of geographic location.[13] All estimations use continue to use multi-way clustering on standard errors at the country and ethnic homeland level to account for spatial correlation.

Estimation for fertility is shown in table 12. Results are similar, though lower in magnitude to those we obtained using the one-dimensional approach but are more precise as they account for location of each DHS cluster.

[13] This is the second degree polynomial of each DHS cluster's latitude and longitude. 2nd order polynomial approximation around the boundary is $f(location_{dec})$ = Latitude + Longitude + (Latitude × Longitude) + $Latitude^2$ + $Longitude^2$

Table 12: Multidimensional-RDD estimation: Colonizer and Fertility

	Total Children				Child Mortality			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Legal Institutions								
Common Law	-0.0078	-0.0152	-0.0116	-0.0066	-0.0625	-0.0464	-0.0475	-0.0465
(vs Civil Law)	(0.1385)	(0.1312)	(0.1312)	(0.1329)	(0.0369)	(0.0379)	(0.0385)	(0.0383)
N	53262	65116	66764	67395	53262	65116	66764	67395
r2	0.5356	0.5361	0.5365	0.5358	0.1628	0.1582	0.1575	0.1572
Panel B: Colonizer Identity								
Britain (vs France)	-0.1165	-0.2219*	-0.2438**	-0.2438**	-0.0901	-0.0976*	-0.1007*	-0.1007*
	(0.1507)	(0.1109)	(0.1081)	(0.1081)	(0.0649)	(0.0498)	(0.0507)	(0.0507)
N	13280	15465	15961	15961	13280	15465	15961	15961
r2	0.5100	0.5126	0.5145	0.5145	0.1617	0.1552	0.1549	0.1549
Panel C: Colonizer Identity (ex. France)								
Britain	0.1820	0.2175	0.2170	0.2133	-0.0370	0.0021	0.0111	0.0094
(vs other European)	(0.1573)	(0.1506)	(0.1484)	(0.1495)	(0.0485)	(0.0537)	(0.0533)	(0.0513)
N	63215	81838	88491	91486	63215	81838	88491	91486
r2	0.5582	0.5577	0.5574	0.5570	0.1913	0.1907	0.1900	0.1902
Distance (bandwidth)	50 kms	100 kms	150 kms	200 kms	50 kms	100 kms	150 kms	200 kms
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ethnic Homeland FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Birth year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Note: Multidimensional Spatial RD design estimates for the effect of colonization on fertility and child mortality. Total children is the total number of births a woman has at the time of the survey. Child mortality is the number of children that were born to a woman who did not survive till the age of 5 years. Columns 1 to 4 show estimates for total children for women living within 50 kms to 200 kms from the border. Similarly columns 5 to 8 show estimates for child mortality for women living within 50 kms to 200 kms from the border. Panel A compares common law countries with civil law countries and panel B compares estimates for British and French colonies. Panel C compares estimates for Britain and other European colonies excluding French. Estimates include all individual, grid-cell and country level controls. All standard errors are clustered at ethnic-homeland and country level and reported in parentheses. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.