# Colonial legacies, ethnicity and fertility decline in Kenya - What has financial inclusion got to do with it?


## Abstract

*Kenya has seen unprecedented declines in fertility from the late 1970s, which stalled during the decade from the mid-1990s, only to resume in the early 2000s when Kenya experienced rapid growth in financial inclusion. In this paper we do not intend to make causal explanations of these phenomena; instead, we explore what may be sensible to adduce from relationships between fertility and financial inclusion. The Kenyan context presents some unique challenges to establishing such connections; regional geographic and ethnic differences, spatial and temporal uneven economic growth, diverse legacies of colonialism, all of which may have affected how fertility trends and financial inclusion activities played out. We find that while modernisation variables such as urbanisation, education, wealth and employment are convincingly related to lower fertility levels, there is little plausible evidence of a role for financial inclusion. More plausible explanations may be found in the country's colonial history, ethnic identities and post-independence politics.*



**Keywords:** *Fertility, Financial inclusion, Colonial legacies, Ethnicity, Kenya*

**JEL codes:** *J13, O16, F54*

## Introduction

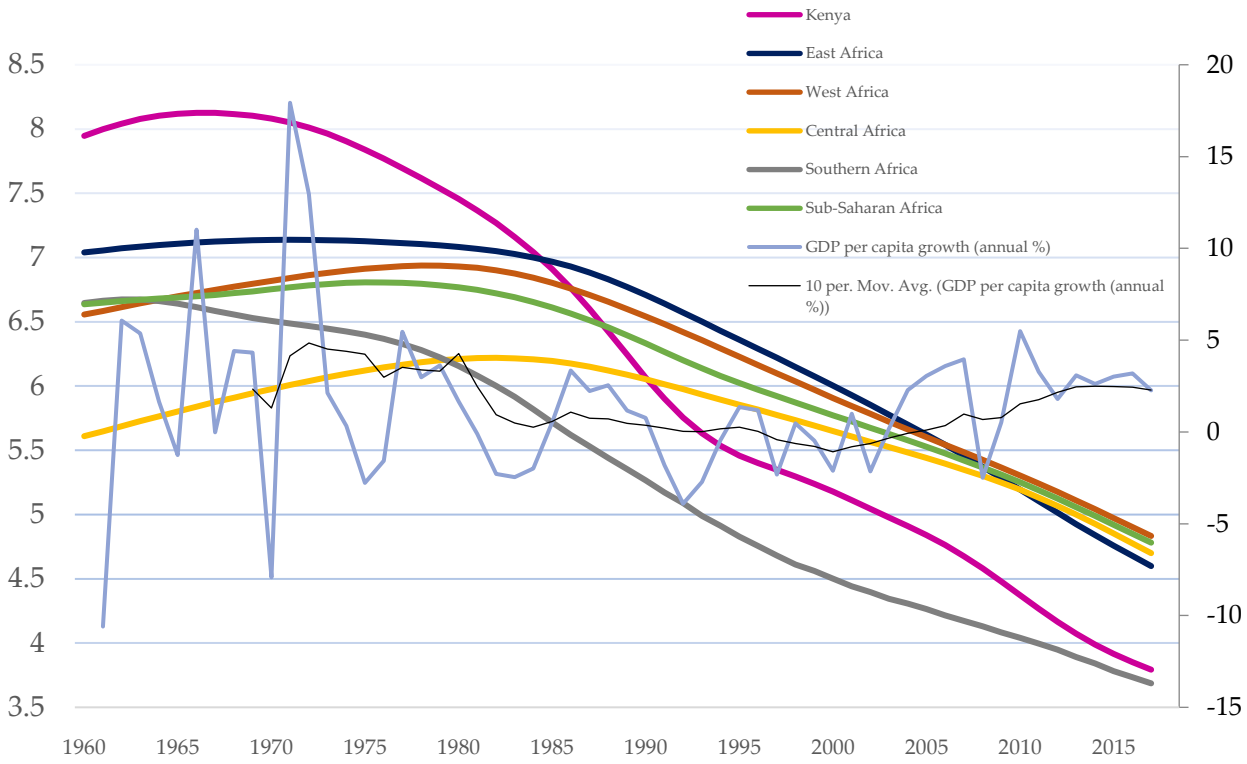
Notwithstanding the overwhelming importance of per capita income growth in driving poverty reduction, well-being improvements, as well as global environmental change and associated problems (e.g. Ravallion, 2001), population growth also plays an important discursive and in all probability substantive role (e.g. Cruz and Ahmed, 2018). The still rapid rate of population growth and common analyses of the recent apparent stalling in fertility decline in Sub-Saharan Africa (SSA) (Bongaarts, 2008; Askew et al, 2017; Schoumaker, 2019) makes the region of particular concern to some[1].

The case of Kenya is of particular interest as it was one of the first countries in SSA to adopt a formal family planning programme (FPP) in 1967 (Caldwell and Caldwell, 1987), which, once implemented from the late 1970s[2], has been seen to lead to rapid declines in total fertility rates (TFRs), especially when compared to the rest of SSA (Figure 1). However, the mainstream literature suggests that fertility reduction stalled in the decade from the mid-1990s only for it to resume in the mid-2000s (Askew et al, 2017).

[1] UN population projections suggest that the population of SSA will be more than twice that of China and other East and South-east Asian countries in 2100 (https://population.un.org/wpp/DataQuery/, accessed 11/3/2020; https://www.economist.com/special-report/2020/03/26/africas-population-will-double-by-2050, accessed 30/3/2020).

[2] Though Kenya formally adopted a family planning policy in 1967, the policy was not actually implemented until the early 1980s (Crichton, 2008; Hartmann, 1995).

**Figure 1:** Total fertility rates (births per woman) in Sub-Saharan Africa and GDP per capita growth in %, 1960 to 2017

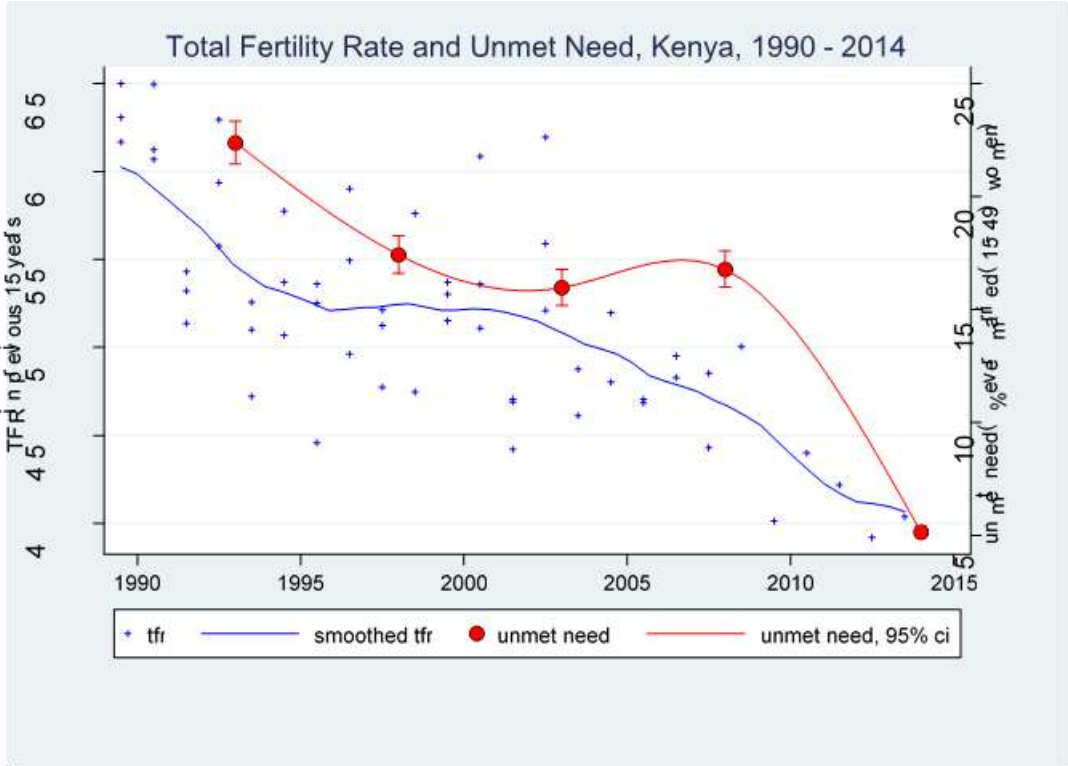



Source: World Development Indicators, 1960 - 2017. Notes: A 10 year moving averages trendline for GDP per capita growth in annual % has been added.

The initial decline of fertility in Kenya is widely attributed to intense and innovative FPP (e.g. Askew et al, 2009; 2017) but also to improvements in "modernisation" variables such as urbanisation, education, employment and wealth (Bongaarts, 2017; Kokole, 1994; Hartmann, 1995). The stalling in fertility decline has been attributed to changed policy and programme emphasis in Kenya from family planning to HIV/AIDs (Askew et al, 2017). However, the narrative explaining fertility decline in terms of limitations of FPPs does not closely fit the temporal pattern of various important proximate (direct) determinants of fertility, which can be summarised in the unmet

need for contraception calculated from Kenyan Demographic and Health Surveys (KeDHS), noting that fertility decline should follow not precede the direct fertility phenomena that are purported to explain it. The opposite is suggested by evidence from the KeDHS, which seems to show that fertility stopped declining (stalled) around 1995 while unmet need for contraception continued to decline, perhaps for more than half a decade. Also, fertility decline seemingly resumed in the mid-2000s, attributed by Crichton (2008) to opening up of policy space following the election of Kibaki as president in 2002, while unmet need only started to decline nearly half a decade later (Figure 2).

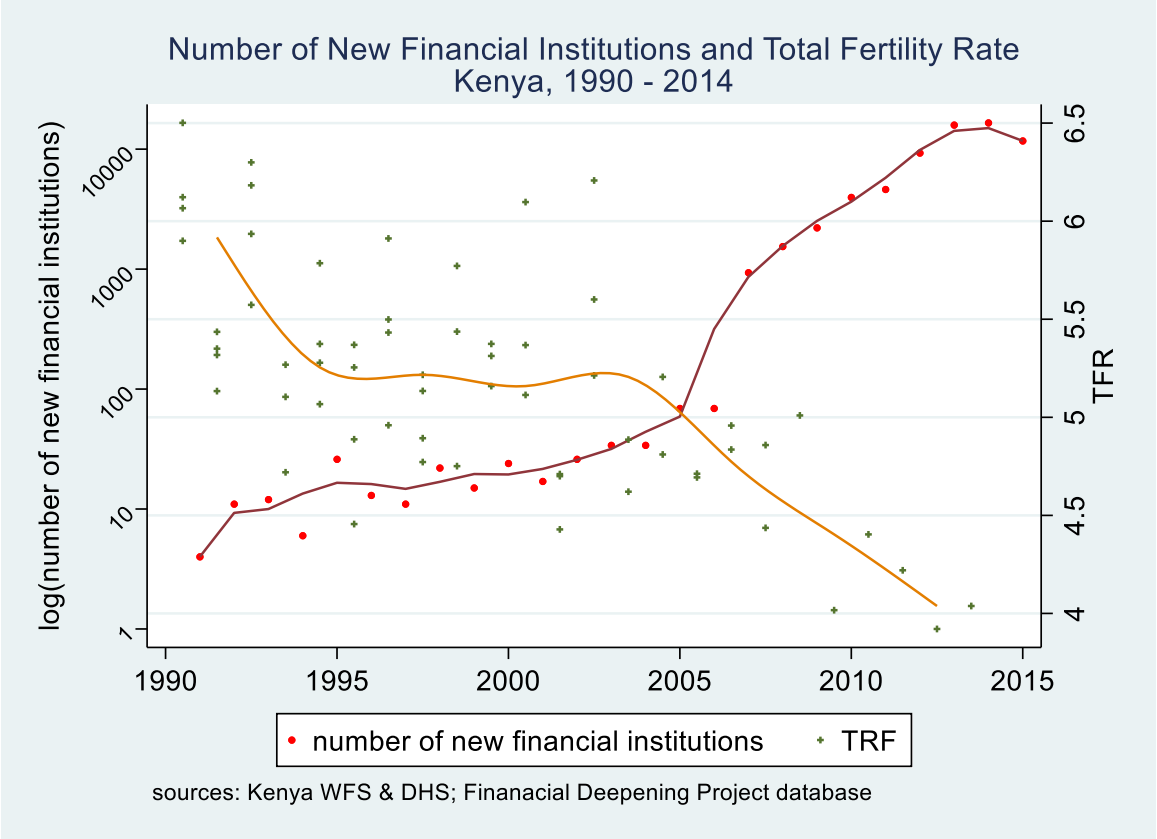
**Figure 2:** Fertility decline and unmet need for contraception, 1990-2014




Source: KeDHS, authors estimates. TFR estimated for previous 15 years unmet need DHS definition estimated with survey wieghts.

This raises the question as to what drives fertility trends in Kenya. Interestingly, fertility decline seems to have resumed at the same time as Kenya experienced an increase in financial inclusion from the mid-1990s (Figure 3), accelerating dramatically from the mid-2000s with a widely acclaimed expansion of digital financial services, especially with the establishment of M-PESA in 2007 (Suri and Jack, 2016). This phenomenon made Kenya the success story for financial inclusion as well as fertility decline in SSA.

**Figure 3:** Financial institutions and fertility decline in Kenya, 1990-2014




Source: Authors calculations. WFS, 1977-78 and KeDHS, 1989 – 2014, Financial Sector Deepening database.

Three features stand out from Figures 2 and 3; the fall in fertility (which started in the late 1970s – not shown) ending in the mid-1990s (commonly described as stalling by e.g. Askew et al, 2017; Bongaarts, 2008; Schoumaker, 2019) and the subsequent resumption of fertility decline in the mid-2000s, neither explained by proximate determinants; and the dramatic increase in financial inclusion initiated around the same period.

Development discourses have often made links between financial inclusion and fertility[3] via women's empowerment making it plausible, indeed tempting, to link these variables in understanding fertility trends in the Kenyan context (Kim et al, 2007; Leatherman et al, 2012; Cleland et al, 2006). In this paper, however, rather than creating, or lending support to, an assimilation of beneficial development phenomena such as fertility decline to the current trends in development policy agendas (e.g. women's empowerment, girls education, financial inclusion), we try to go beyond linking the recent decline in fertility to these development agendas, by drawing attention to the complexities involved in untangling the proximate and underlying factors associated with patterns of fertility and accounting for trends in these variables in the presence of long run or "deep" determinants thought to affect development performance. These determinants include pre-colonial polities and various impacts of colonialism (e.g. Michaelopoulos and Papaioannou, 2013; Spolare and Wacziarg, 2013); post-colonial political and economic developments (Weinreb, 2001; Maseland, 2018), including ethnic conflict (Easterly and Levine, 1997) and favouritism (La Porta et al, 1999); and socio-cultural diversity, such as ethnicities and economic status. However, rather than claiming "strong" causality[4], the thrust of the paper is that the interactions of factors plausibly, and usually considered in the literature as causally,

[3] See especially the literature on South Asia (e.g. Amin et al, 1995; Amin and Ahmed, 1996; Schuler et al, 1997).

[4] E.g. based on experimental or quasi-experimental quantitative analysis (see Deaton and Cartwright, 2018 and others).

related to fertility makes any clear contextually independent "strong" causality unlikely to be established. We adopt a more pragmatic approach drawing on the INUS concept of causality (Mackie, 1965), under which observed associations may be considered causal under the specific circumstances, but may not be generalisable; hence, it is the circumstances that are as important as the (usually) observed associations. Mackie (1965) argues that any number of factors or "causes" can bring about an effect we observe, each of these "causes" may be sufficient to bring about an effect but none of them may be necessary. Each "cause" can be related to an effect in an important way, it is an *Insufficient* but *Non-redundant* part of an *Unnecessary* but *Sufficient* condition, i.e. the INUS condition.

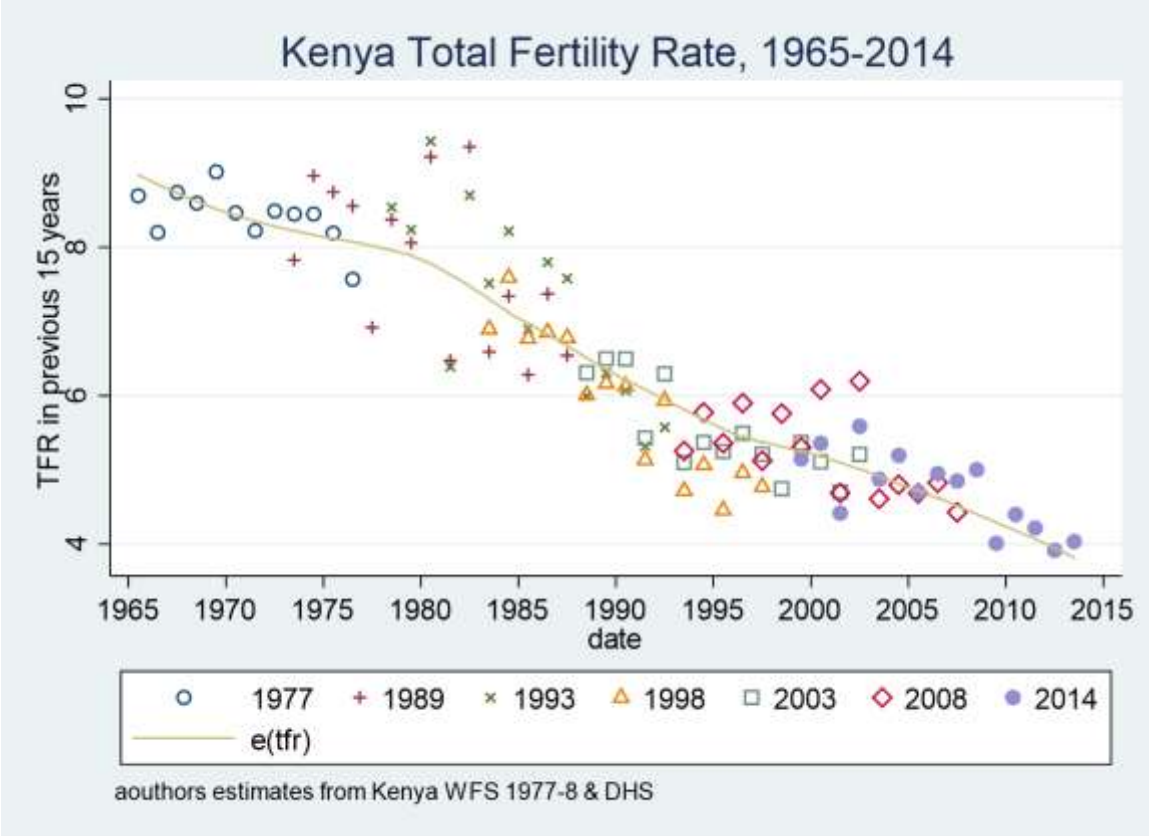
The paper proceeds as follows, first we review the literature and set out our conceptual framework drawing on 'deep structures' of social and economic development to better understand Kenya's fertility phenomena. Then we discuss data, measurement challenges and methods, followed by empirical evidence from Kenya's fertility and demographic and health surveys on patterns of fertility and their relationships with "modernisation" variables as well as factors largely absent from the literature, namely ethnicity, colonial legacies, and post-colonial political regimes; we also present data on spatial and temporal patterns of financial inclusion.

## Literature review and theoretical considerations

### Explaining fertility trends in Kenya

Fertility in Kenya has fallen from a TFR of over 8 in the mid-1960s to a TFR of just under 4 in 2014; combining reported fertility for the 15 years before the survey date, we see a pattern of decline, slowing and then resuming (Figure 4).

**Figure 4:** Kenya total fertility trends by year and survey, 1965-2014




Source: Authors calculations. WFS 1977-78, KeDHS 1989-2014, for the 15 years prior to survey.

As argued above, the slowing or stalling of fertility between the mid-1990s and mid-2000s is often attributed to shifting government priorities to address the HIV/AIDS epidemic which came to prominence in the mid- to late 1990s (Askew et al, 2017:303), and declining expenditure on education; donor commitments also changed away from FPPs (Askew et al, op. cit.). In addition, the Kenyan economy was strongly affected by

structural adjustment programmes that were first imposed by the World Bank in the early 1980s (Gibbon, 1992; O'Brien and Ryan, op. cit.); the economy and polity were adversely affected during the later, more "democratic" (Burgess et al, op. cit.), years of the presidency of Daniel arap Moi. Moi, a Kalenjin, lost power to a Kikuyu, Mwai Kibaki, in 2003, and Kenya became even more "democratic"[5], and fertility decline apparently renewed (from the mid-2000s – Figures 2, 3, & 4).

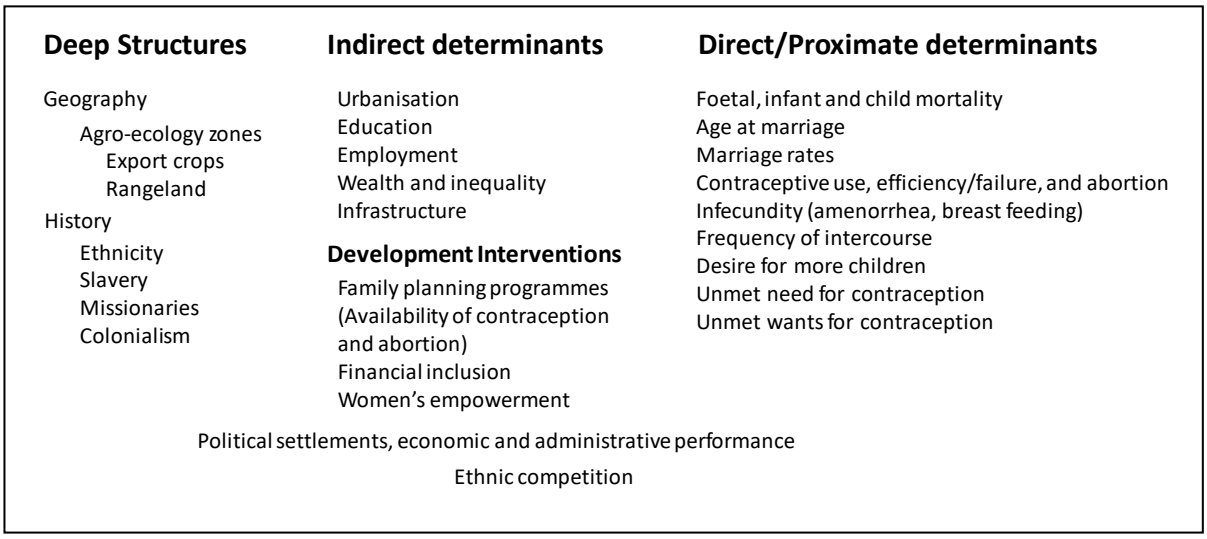
Theoretically, these trends can be better understood through the lens of an analytical framework that was developed by Davis and Blake (1956). Their framework proposes eleven intermediate variables through which "any social factors influencing the level of fertility must operate" (p. 211). Bongaarts' (1978; 1984) now widely used framework built on this work distinguishing between indirect and direct (or proximate) determinants of fertility. This generally linear framework was developed initially as support for policies that could alter and augment relationships between the indirect and direct determinants of fertility to achieve demographic goals (population control), and later to achieve women's reproductive rights such as their "unmet need" for contraception, which would empirically, it was perceived, (more than) achieve demographic goals (Sinding et al, 1994).

While undoubtedly there are feedbacks between and among fertility and its direct and indirect determinants, what we address in this paper is what might be termed the

[5] According to the Polity IV Kenya index (http://www.systemicpeace.org/polity/ken2.htm).

"deep" structures (Constantine, 2017) putatively conducive to beneficial (in)direct determinants of fertility. We adapt Bongaarts' framework (Figure 5) drawing inspiration from the literatures on the institutional and geographic and political origins of (social and) economic development (Nunn, 2014; Michalopoulos and Papaioannou, 2020) to gain insight into the associations, and possibly the roles, of the features to which these literatures draw attention in Kenya's fertility trajectory.

**Figure 5:** Determinants of fertility in the Kenyan context in the 2000s




Source: Adapted from Bongaarts (1978; 1984).

Bongaarts' framework mandates policies which enhance the indirect and direct determinants to reduce fertility to meet population control (more recently importantly via women's empowerment) objectives. The most prominent current, and indeed earlier, example of such a policy is the promotion of female education. However, generally the (quantitative) empirical support for this policy emphasis has been only correlational (not causal), and the theory has been convincingly criticised (e.g. Basu,

1996)[6]. According to this approach, what is required is an understanding of the circumstances that promoted appropriate types (amount and content) of education (of males as well as females) and under what conditions that led to the desired fertility outcomes. What, in other words, determined the (in- and) direct determinants of fertility?

We aim to offer explanations of Kenya's fertility trends by focusing on previously largely unexplored cultural and historical variables – ethnicity and colonial legacies – , which influenced post-colonial economic and political developments. We show that fertility started to decline among the Kikuyu before Kenya's FPPs became effective, and that FPPs effects during the first phase of fertility decline in Kenya took place within a post-colonial modernising regime characterised by dominance of the Kikuyu and to a lesser extent other Bantu groups, enabling demand for fertility reduction associated with the depth of effects of British colonialism on these groups, their closeness to the new political regime, and perhaps their "ethnic" and economic characteristics. Stalling in fertility decline from the mid-1990s, in only some social groups, was perhaps associated with declining influence of colonialism (Maseland, 2018), new (or a re-assertion of pre-colonial) political and economic factors, including rising ethnic political competition, deterioration in the performance of institutions, and slower economic growth (Gibbon, 1992; O'Brien and Ryan, 2001; Burgess et al, 2015).

[6] See Duvendack and Palmer-Jones (2017), for a similar argument for Bangladesh.

Fertility decline at the national level resumed as political power returned to the Kikuyu after 2003 and Kenya's economy resumed an upward trend (Tyce, 2018).

While we do not dispute the associations between conventional "modernisation" variables such as education, employment and wealth, which also play a role in the financial inclusion and women's empowerment discourse; what we attempt to do is explore whether it is convincing to relate empowerment with the growth in financial inclusion, and, or, with the same "deep" structures that frame fertility developments in post-colonial Kenya.

## Data, measurement challenges and analytical approach

Our analysis is based on a range of nationally representative surveys[7], the World Fertility Survey (WFS), the KeDHS, the Kenya Census and FinAccess surveys. We also make use of the data sets accompanying Jedwab et al (2017) and Nunn (2010). The KeDHS survey datasets allow reconstruction of birth histories of representative samples of women, which can be used to compute fertility (number born and number alive). FinAccess survey data are used to augment the KeDHS data where possible. Correlational and multivariate approaches are adopted, notwithstanding a number of challenges to measuring fertility, women's empowerment and financial inclusion

[7] KeDHS 1989, 1993, 1998, 2003, 2008 & 2014; WFS 1977-78; Kenya Census 1962 and 1999; FinAccess surveys 2006, 2009, 2013, 2016 and 2018.

especially for particular sub-groups of the population. We describe these measurement challenges in more detail below.

*Fertility measurement:* It is well known that fertility cannot be measured accurately largely due to poorly administered questionnaires; Schoumaker (2011) argues that enumerators may drop or shift births to make additional sections of questionnaires for recently born children more manageable. There is some evidence of birth omissions and displacements of births in the KeDHS. Fertility estimates from census abstract data are thought to be unreliable, particularly only reporting total number of children born, not their dates of birth, and under reporting recent births (Moultrie et al, 2013). We combine estimates over the longer periods attempting to reduce errors that may be introduced by omissions or shifting of recent births.

*Women's empowerment measurement:* The diversity in conceptualising women's empowerment makes it notoriously difficult to measure. Commonly, scales are derived from answers to survey questions which are usually used to measure the different dimensions of empowerment. However, these answers are self-reported answers mediated by the interviewer and the survey instrument (the location in the questionnaire and wording of the question, and so on). Such instruments can be subject to a number of cognitive and response biases. The DHS surveys are examples of the instruments used to assess empowerment, e.g. numerous authors have used

DHS data to measure empowerment and its correlates, often in different ways[8]. Some of the most commonly used questions in these studies relate to the acceptability of wife beating, decision making within the household, ability to go outside the house, and use of media. The acceptability of wife beating questions are dichotomous (1 = yes, not otherwise) ask in relation to infidelity, neglect of children, poor cooking, arguing with husband, going out without permission. The decision-making questions are generally polytomous, from no role through joint to sole role in decision-making, resulting in scales derived from principal component analysis or multiple correspondence analysis. Many, especially feminist, researchers argue that women are more empowered when they have sole decision-making power in the household. However, Carter (2002) provides an example from Guatemala showing that women who have sole decision-making power are often pitied. Supportive husbands are now widely considered vital in improving well-being outcomes for women and thus it is important to measure decision-making in such a way that it represents the voices of both husband and wife (Carter, 2002; Story and Burgard, 2012). Mobility questions are also generally polytomous (not allowed, allowed accompanied, allowed unaccompanied). Generally, or at least in the DHS, the questions are asked sequentially. It should also be noted that empowerment questions in the DHS surveys have been influenced by how empowerment is understood in South Asia. E.g.,

[8] E.g., Basu and Koolwal (2005) for India and Story and Burgard (2012), Balk (1994) for Bangladesh.

women's autonomy in South Asia is restricted by purdah which may not apply to Sub-Saharan Africa. This begs the question as to how relevant these variables are for the African context especially when it is widely understood that context-specific gender systems shape notions of empowerment (Schatz and Williams, 2012; Kishore, 2005). A recently proposed and simplified index of empowerment, called SWPER, has been trialled by Ewerling et al (2017) using DHS data from 34 African countries. There are these variables in the last three KeDHS (2003, 2008 and 2014) which are commonly used to address women's empowerment. Following Ewerling et al (2017), we use principal component analysis where 15 survey questions on empowerment are used to estimate principal components; we retain the first three components which, as in Ewerling et al (2017) seem to reflect attitude to acceptability of violence, social independence, decision making[9] (see Appendix 1 for details).

*Financial inclusion measurement:* Common measures of financial inclusion include amount and timing of borrowing, usage of financial services and products, changes in access to financial services and products (e.g. Suri and Jack, 2016). KeDHS 2014 has a single variable ("has a bank account") which is not a convincing proxy for financial inclusion; FinAccess surveys have more extensive access and usage of financial

[9] The questions on acceptability and decision-making are particularly likely to invoke normative responses, and are asked at the same point in the questionnaire; hence it is not surprising that they emerge as factors in principal component analysis, multiple correspondence analysis or factor analysis.

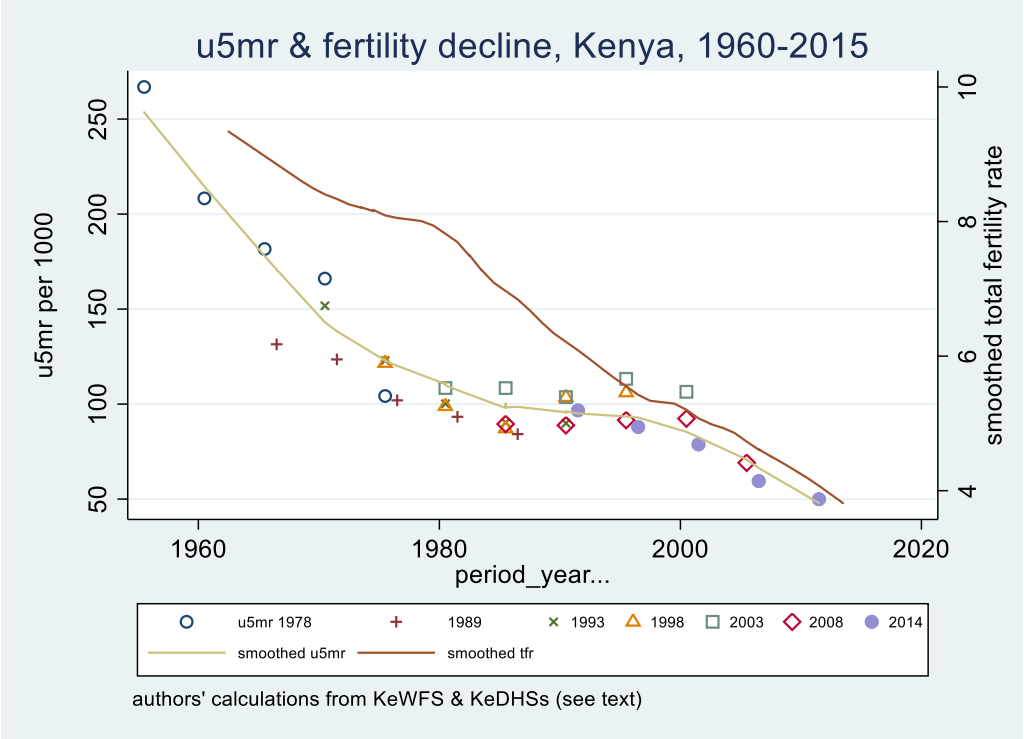
products variables but lack variables on household demography; we use the "access" variable constructed by the survey organisation where appropriate.

## Results and discussion

### Indirect determinants of fertility decline: "Modernisation" factors

The first phase of fertility decline followed declines in child mortality rates which started from the mid-1950s, in a familiar demographic transition pattern (Figure 6), raising further questions about the primary role of FPPs compared to "modernisation" factors commonly associated with child mortality and fertility decline (Bongaarts, 2017; Kokole, 1994; Hartmann, 1995).

**Figure 6:** Child Mortality and Fertility Decline in Kenya 1960-2014




Source: Authors calculations. WFS 1977-78, KeDHS 1989-2014. Children under 5 mortality rate (U5MR) is used.

Education, urbanisation and wealth, together in some circumstances with paid employment, are the most prominent "modernisation" variables associated with fertility, and with women's empowerment (Balk, 1994; Upadhyay et al, 2014) – see Figure 7. However, these variables are only correlates since they themselves are contextually dependant on, and thus need to be explained by, other underlying variables. Using the language of INUS; education, employment, urbanisation and wealth are "causes" that can have an effect on fertility decline with each of them being sufficient to bring about a decline in fertility but with none of them being necessary. In other words, each "cause" can be related to fertility decline but is an *Insufficient* but *Non-redundant* part of an *Unnecessary* but *Sufficient* condition (INUS).

We refine our arguments in relation to the INUS condition by looking at each of these "causes" in more depth by starting with urbanisation. Figure 7 shows that fertility of the rural population is higher than the urban, and fertility levels have declined and stalled, for both rural and urban dwellers, but only resumed for the former.

As for education, fertility among the most educated women was relatively low, a TFR of around 4 in 1978, and had fallen to around 3 by 1998, but did not decline further up to 2014 (Askew et al, 2017; Odwe, 2015). Fertility is highest among women with no or only primary education, but declined from approximately a TFR of 8 in 1978 to 6 in 1998, then rising again to close to 7 in 2003 before starting to decline again. Part of the stalling might be attributed to failure to invest in education some years previously

following structural adjustment (Kebede et al, 2019), but it is evident that among the least educated fertility actually increased during the "stalling".

A similar pattern can be observed for differences in fertility between poorest (most fertile) and richest (least fertile), with noticeable increases in fertility among the poorest to middle wealth groups[10] and stagnation among the richer and richest groups between 1998 and 2008 (Askew et al, 2017; Odwe, 2015, among others).

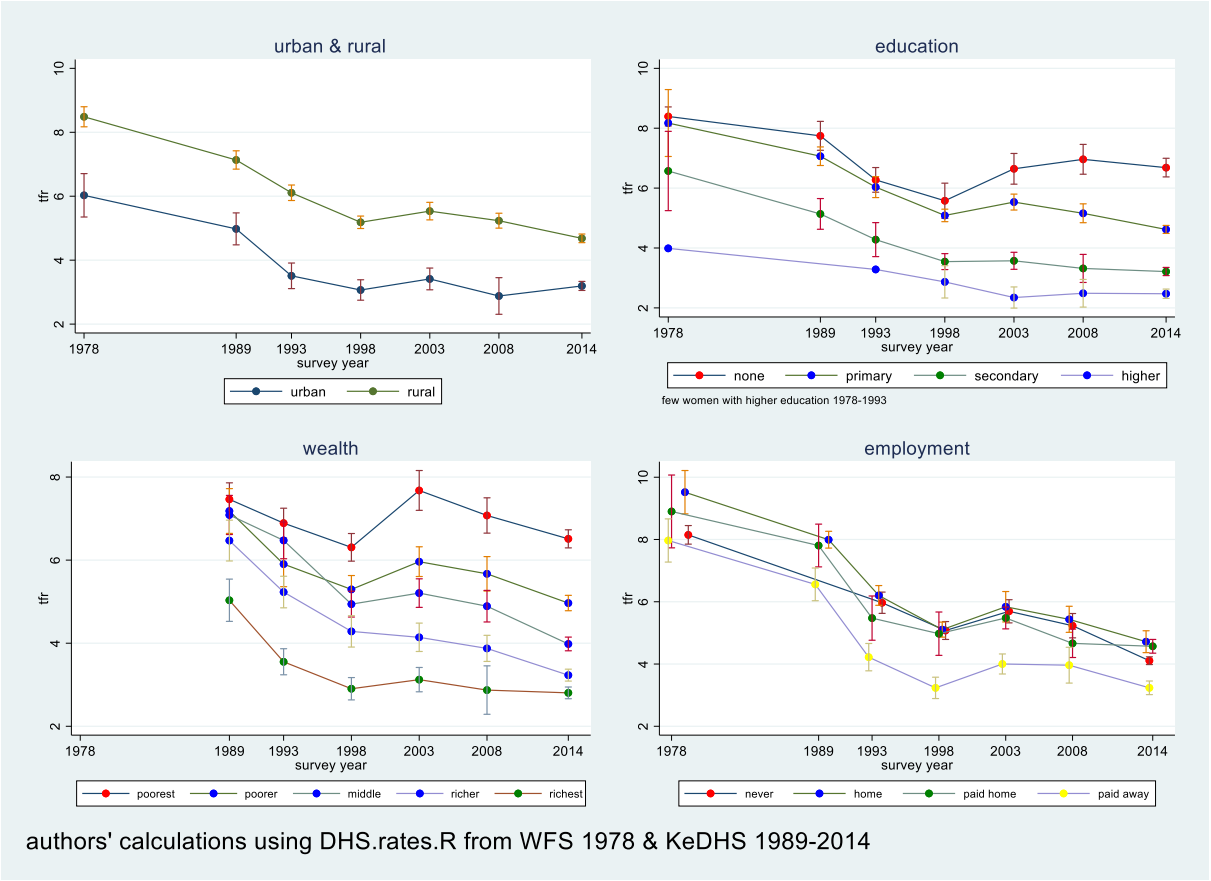
It is often argued that employment of women will affect their fertility in various often conflicting ways (Booth and Duval, 1981; Bernhardt, 1993)[11]. While in developed countries there is a consistent, though variable, negative relationship between paid employment and fertility, reflecting net income, time, gender role, and social support effects (Balbo et al, 2012), no such robust relationship is found in developing countries (Lloyd, 1991). Following the first wave of feminist literature, women's (paid) employment was thought to be strongly causally associated with women's empowerment and control of their reproduction, and would be associated with reduced fertility (Balk, 1994). This accounts for the presence of women's employment variables in measures of their empowerment, (Upadhyay and Karasek, 2010). While

[10] The WFS 1977-78 does not contain information on which to calculate a wealth index. KeDHS do not report wealth indexes for 1989 to 1998, for which surveys we compute asset indexes based on multiple classification scores (in preference to principal components scores) using the household assets reported in those surveys.

[11] Variables reflecting employment are not well conceptualised in the KeDHS; this is partly because much employment of females is on household or own account farming or gathering, and none of the relevant variables seems to reflect a sharp divide between women predominantly involved in these types of work and those who may be involved in "empowering" types of employment – for wages and or in the formal sector.

fertility is lowest among those who report paid work away from home, the difference with those in other categories of employment are not great, and all show a similar pattern of decline, stalling, and resumed decline (Figure 7, panel 4).

**Figure 7:** Proximate "causes" of fertility over time, 1978-2014




Source: Authors calculations. WFS 1977-78, KeDHS 1989 – 2014. Notes: No data for wealth available for 1978.

In summary, the "modernisation" variables presented in Figure 7 are by themselves sufficient but not necessary (INUS) to bring about fertility decline. They are essentially correlates that need to be explained by other underlying variables. We will discuss some of these other underlying variables below and argue that education, employment, urbanisation and wealth are quite plausibly causally derived from, and in proportion to, colonial impacts, proxied by distance to loci of colonial presence

including railways, urban centres and white settlements (e.g. Jedwab et al, 2017). Christian missions as well as emerging "ethnic" characteristics may also play a role. This implies that at least the first phase of fertility decline was "caused" largely by colonialism[12], and subsequent political-economic developments.

## The role of ethnicity and colonial legacies

Ethnicity[13] as a correlate of fertility is underexplored[14] although many studies report fertility by (large) administrative regions which often have considerable overlap with large ethnic groupings. Ethnicity may be an important factor in fertility levels for several reasons. The apparent persistence of high fertility in SSA has been attributed to the variously pronatalist nature of African societies (Kokole, 1994 on francophone Africa; Caldwell and Caldwell, 1987). However, culture is seldom reported as playing a role in mainstream accounts of Kenya's experience, although some less prominent sources suggest that the different cultural practices among ethnic groups in Kenya may partially explain why fertility rates remained high (e.g. Iyer and Weeks, 2009; Bauni et al, 1999). For example, the Kikuyu, Embu and Meru (Bantu speaking) groups are thought to favour smaller family sizes compared to the Kalenjin, Luo or Masaai (Nilotic speaking) perhaps because of the tradition of cattle keeping of the latter, for

[12] Unlike Jedwab et al (2017), we cannot identify these effects since the data do not allow us to construct a pseudo-panel of fertility by location over an extended period.

[13] We classify the ethnic groups reported in WFS and KeDHS along conventional ethno-linguistic lines distinguishing Bantu (sub-set into the Kikuyu as the nationally most numerous, other Western, and Eastern Bantu, Nilotic (merging Eastern, Southern and Western groups), and Cushitic categories (Greenberg, 1948).

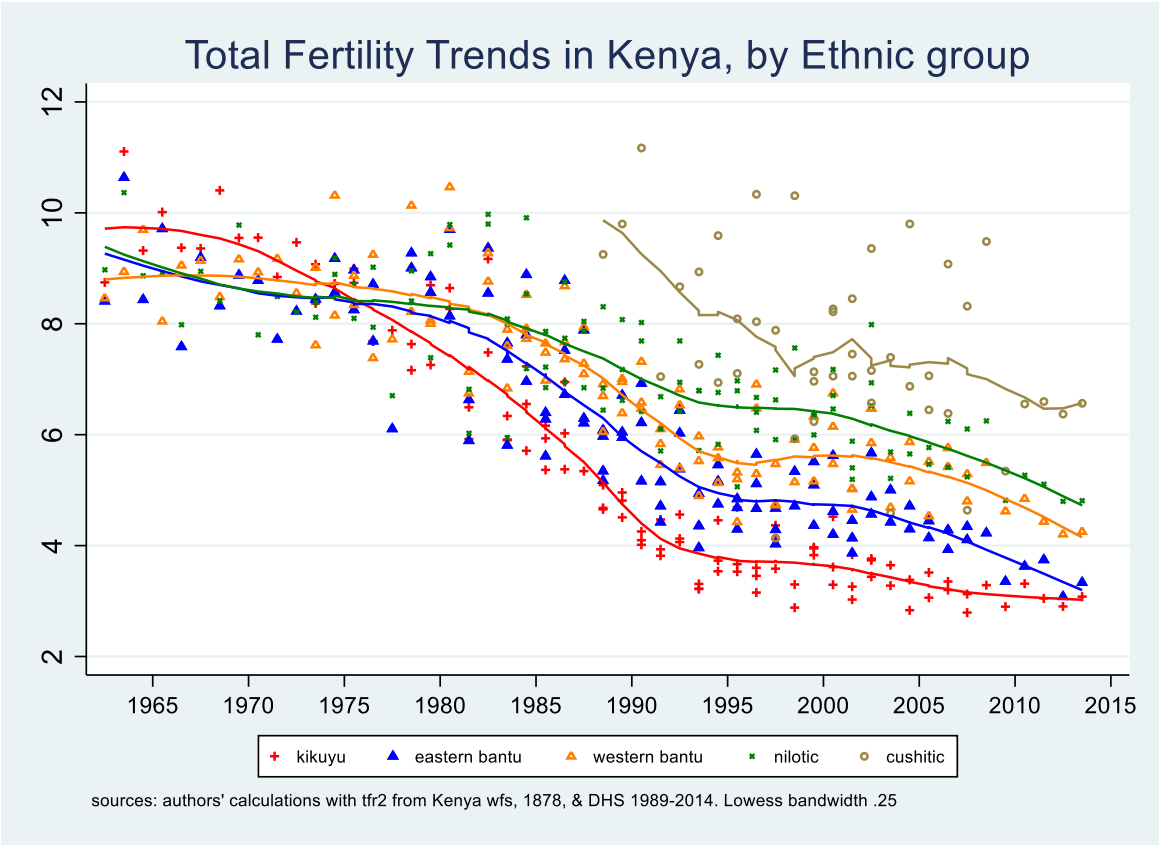
[14] Official KeDHS reports of fertility stalling in Kenya only report ethnic differences in desire for more children by ethnic group.

which children are more useful than in settled agriculture (Bauni et al, 1999:16, passim).

Nevertheless, the evidence is that fertility varies consistently by ethnicity; Figure 8 shows that those classified as Kikuyu have had lower fertility than other groups since 1989, followed by other Bantu east of the Rift Valley, Bantu west of the Rift Valley, the Nilotic (Kalenjin) and related groups, with the Cushitic[15] having the highest fertility. The difference between Bantus east and west of the Rift Valley raises the possibility that ethnicity interacts with other contextual variables, including neighbouring ethnic groups, or agro-ecological and livelihood characteristics which we do not explore here. The rank order of fertility, with the Kikuyu having the lowest fertility, followed by eastern then western Bantu, Nilotic and Cushitic, immediately suggests that fertility has been lower among those more affected by colonialism.

[15] There are insufficient numbers of Cushitic in the surveys up to 2003 for meaningful estimates of fertility.

**Figure 8:** Historic fertility trends by ethnic groups in Kenya, 1978-2014




Source: Authors calculations using tfr2 from WFS 1977-78, KeDHS 1989 – 2014.

### Post-independence political regimes and ethnic fertility

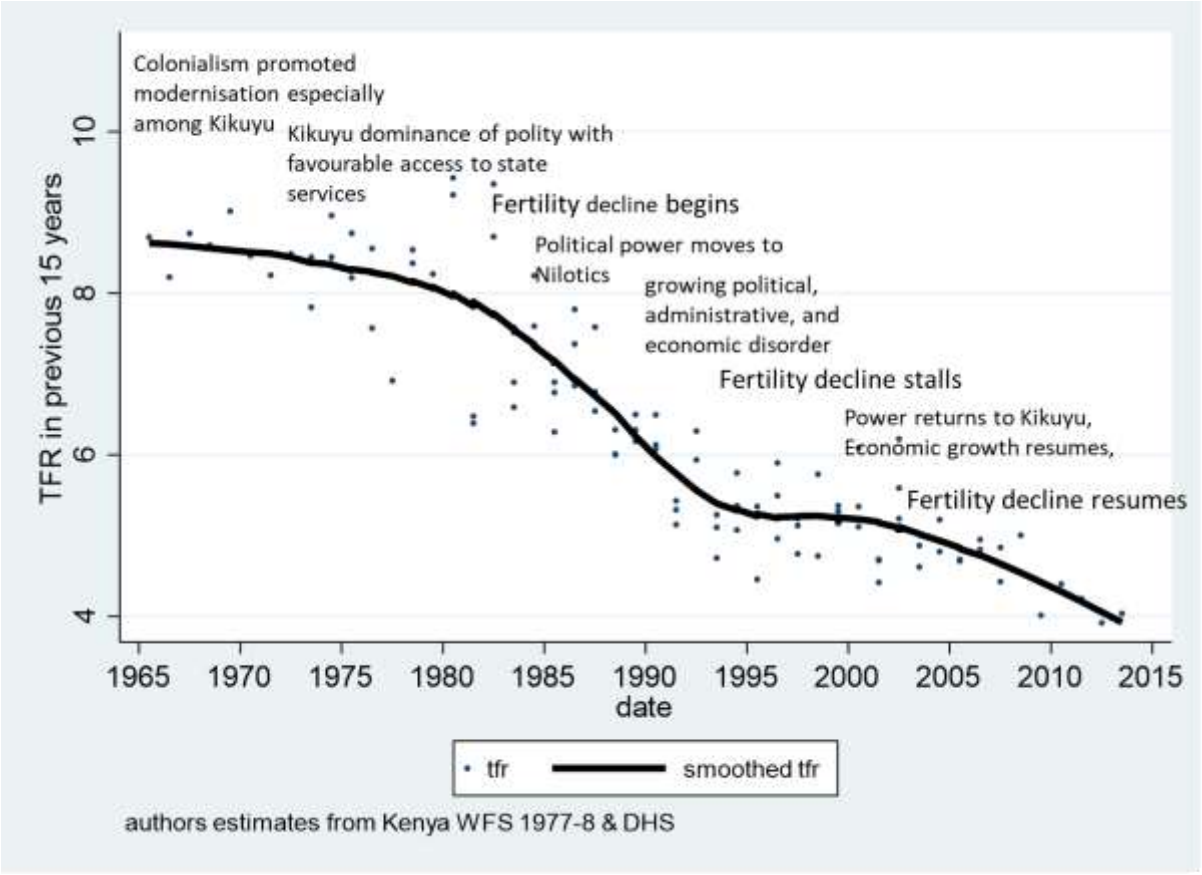
In addition to the greater effect of colonialism on the Kikuyu, common knowledge of Kenya's political history suggests an association of these temporal and spatial fertility patterns of different ethnic groups in Kenya with the succession of political regimes over this period. Since independence, Kenya's politics have been dominated by ethnic competition (Oyugi, 1997; Berman, 1998; Berman et al, 2009; Khadiagal, 2010). The temporal and spatial patterns of ethnic politics has been exploited under the rubric of "ethnic favouritism" to account for spatial and temporal patterns of development investments and outcomes including education, infant mortality, and roads (Franck and Rainer, 2012; Burgess et al, 2015; Kramon and Posner, 2016). While the Kikuyu

(and Luo) were "senior partners" up to the death of Jomo Kenyatta in 1978, Daniel arap Moi, the next president, a Nilotic (Kalenjin), raised the status of Nilotic groups and the Kikuyu became "discriminated" - using the terms of the Ethnic Power Relations database (Vogt et al, 2015). Kenya was a one-party state from the late 1960s up to 1992 but the advent of multi-party competition resulted in increasingly chaotic, ethnically based political competition (Oyugi, op cit.; Berman et al, op cit.). Ethnic conflict was prominent in the elections of 1992 and 1997 (Mulli, 1999) and again in 2002 and 2007 (Berman et al, 2009), and subsequently (Cheeseman et al, 2019). GDP growth reversed, poverty rose, and financial and administrative performance deteriorated during the period of structural adjustment from 1992 to 2003 (O'Brien and Ryan, 2001). While political disorder continued after 2003, economic and administrative affairs improved considerably as Moi was able to isolate the economy from political competition and establish the financial environment for renewed economic growth (Tyce, 2018), which was also conducive to innovations such as M-PESA (ibid). Political conflict in the 2007 elections did not disrupt either political dominance of the Bantu, especially the Kikuyu, or economic progress (ibid).

Hence, changing ethnic power, together with (absolute) decline in GDP and rising poverty, may have reduced the incentives, rather than the possibilities, for fertility reduction bringing about the observed stalling in fertility. These effects may have been mediated through "modernisation" variables, and moderated by the favouring and discrimination of different ethnic groups by different regimes. Fertility reduction,

which had been partial and different in different groups, resumed at a national level, we suggest, with a return to more orderly political competition after Moi's death in 2003, when economic growth resumed under the presidency of Mwai Kibaki, and political power returned to the Kikuyu. This trajectory is depicted in Figure 9.

**Figure 9:** Total fertility over time and key political events




Source: Authors calculations. WFS, 1977-78 and KeDHS, 1989-2014.

## Fertility and ethnic privileging

The decline in fertility from the late 1970s, a decade after introducing Kenya's FPP, probably reflected changing demand for fertility reduction, facilitated rather than initiated by ready availability of "efficient" contraception. Similarly, fertility stalling may have reflected changed ethnic power. Weinreb (2001), using 1989 and 1993 KeDHS and an index of "political capital" (p.451), argues that access to family

planning ("current use of modern contraception") was facilitated by the ethnic related political capital, with the Kikuyu and affiliated Bantu groups predominant in the 1989 estimation and the Kalenjin and related Nilotic groups predominant in the estimation using the 1993 KeDHS.

Similar arguments ("ethnic favouritism") have been adduced with regard to education and infant mortality (Franck and Rainer, 2012; Kramon and Posner, 2016), however the implications of such arguments for fertility change have not been addressed. In contrast to other variables fertility may be affected positively or negatively, or both or neither, by ethnic privileging. Ethnic competition may lead to pronatalist sentiments if ethnic dominance is associated with relative population size (or growth) (Goliber, 1985; Kokale, 1994). Referring to earlier (than the late 1970s) period, Goliber (1985)[16] suggests that smaller ethnic groups may have feared losing ethnic dominance to the Kikuyu (Kenya's most numerous ethnic group), thus adopting pronatalist attitudes (Kokole, 1994; Caldwell and Caldwell, 1987). On the other hand, ethnic favouritism may lead to greater access to resources facilitating fertility reduction of co-ethnics of the dominant political group. However, because, it seems, the trajectory of unmet need for contraception in Kenya followed rather than preceded the stalling and subsequent resumption of fertility decline (Figure 2), it may have been that other factors were dominating.

[16] Quoted in Kokole (1994).

We explore this argument by relating fertility of different ethnic groups to the ethnicity of the president and the type of political regime (demo- or auto-cratic). We regress single year period fertility on ethnic and political variables (Table 1). The ethnic variables are Kikuyu, other Bantu, Nilotic, Cushitic and other. The two political variables are "ethnic co-presidency" and "democracy" which takes the value 1 if the group has a co-ethnic president in that year[17], and democracy takes the value 1 if the political regime was democracy, and zero otherwise[18]. In some models, we include ethnic dummies and year or time effects.

Table 1 shows that having an ethnic co-president has a positive (and statistically significant) coefficient, as do all the ethnic dummies compared to the Kikuyu (as expected from the earlier and steeper onset of fertility decline among the Kikuyu reported above). When the co-president was Nilotic, (Moi), fertility was lower. The sign and size of the democracy variable depends on whether time or year fixed effects are included.

[17] for Kikuyu this variable is 1 between 1963 - 1978 and 2003 - 2014, 0 otherwise; for Nilotic it is 1 between 1979 and 2002.

[18] Democracy takes the value 1 1963-1969 and 2003 – 2014. In both cases 0 otherwise. The regime is classified as autocratic between 1969 and 1992. This periodisation is the same as in Burgess et al (2015).

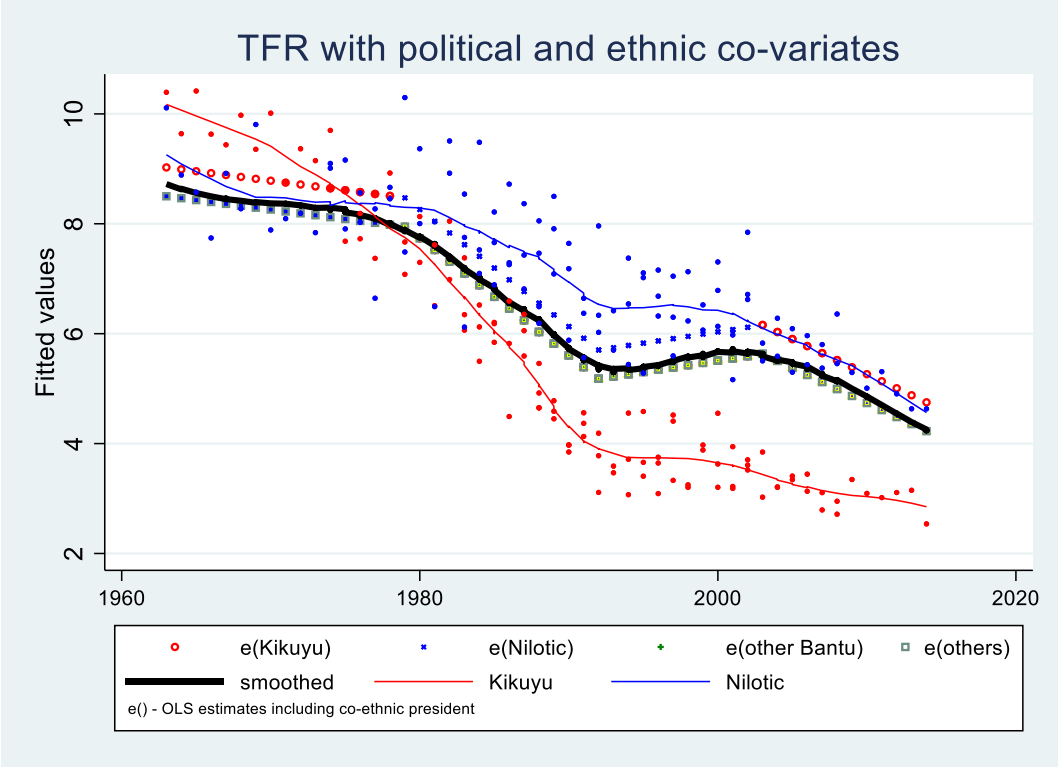
**Table 1:** Total fertility rate by ethnic and political characteristics, Kenya 1963-2014

| | (1) TFR | (2) TFR | (3) TFR | (4) TFR | (5) TFR | (6) TFR |
|---|---|---|---|---|---|---|
| Co-ethnic president | 1.479*** | 0.664 | 1.059** | 1.059** | 10.10*** | 7.608*** |
| | (3.94) | (1.96) | (2.67) | (2.67) | (6.27) | (14.41) |
| Other Bantu | 1.591*** | 1.288*** | 1.291*** | 1.291*** | 6.762*** | 6.285*** |
| | (5.44) | (5.59) | (5.62) | (5.62) | (3.54) | (22.27) |
| Nilotic | 2.259*** | 1.444*** | 1.452*** | 1.452*** | 7.207*** | 6.910*** |
| | (6.01) | (4.27) | (4.31) | (4.31) | (3.78) | (15.55) |
| Cushitic | 2.151*** | 2.551*** | 2.527*** | 2.527*** | 2.594 | 6.794*** |
| | (6.48) | (9.86) | (9.79) | (9.79) | (1.36) | (18.13) |
| Other ethnicity | 0.920** | 0.806*** | 0.797*** | 0.797*** | 5.066*** | 5.590*** |
| | (3.05) | (3.39) | (3.36) | (3.36) | (7.03) | (18.03) |
| Nilotic * co-ethnic president (interaction) | -1.471** | 0.158 | 0.00183 | 0.00183 | -10.54*** | -6.588*** |
| | (-2.77) | (0.29) | (0.00) | (0.00) | (-4.41) | (-9.49) |
| Democracy | | | 4.565*** | 4.565*** | 2.904* | 0.297 |
| | | | (5.68) | (5.68) | (2.01) | (1.14) |
| Democracy*co-ethnic president (interaction) | | | -0.604 | -0.604 | -2.616 | -2.306*** |
| | | | (-1.89) | (-1.89) | (-1.48) | (-3.99) |
| N | 465 | 465 | 465 | 465 | 465 | 465 |
| $R^2$ | 0.143 | 0.569 | 0.573 | 0.573 | 0.983 | 0.851 |
| Year fixed effects | n | y | y | y | n | n |
| Time | n | n | n | n | n | n |
| Ethnic*time | | | | | y | n |

Source: Authors calculations. WFS, 1977-78 and KeDHS, 1989-2014 using STATA user routine 'tfr2'. Observations are 7 (surveys) * 4-5 (ethnic groups) * 15 (fertility in 15 years prior to survey); some ethnic groups are not present in some KeDHS. The ethnic reference category Kikuyu; for periodisation and other variables see text. t-statistics in parentheses, * p< 0.05, ** p<0.01, *** p<0.001.

Figure 10 clearly shows that there is a strong correspondence between the political (ethnic and regime) periodisation and the course of fertility decline. However, the clear implication of Table 1, column 5 is that ethnic*time variables cause a significant rise in $R^2$ and alter the sizes of the coefficients of both ethnic and political variables.

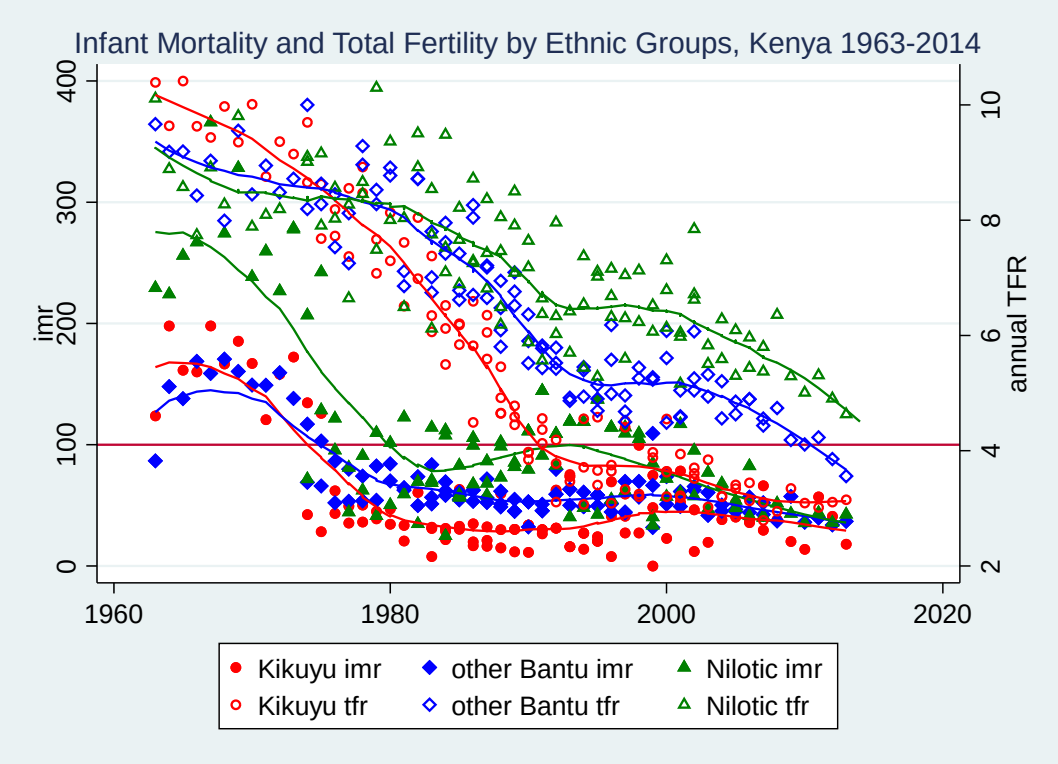
**Figure 10:** Total fertility rate and political, ethnic, and time variables




Source: Authors calculations. WFS, 1977-78 and KeDHS, 1989-2014.

This last finding raises questions whether the model is correctly specified with regard to time. As has been evident from the results above, fertility in Kenya showed secular decline at different times and rates for different ethnic groups. These declines followed earlier declines in infant mortality, as is common in demographic transitions (Figure 11). Since ethnic co-presidency and democracy are time related variables, we next explore whether the political variables retain their statistical significance when we include earlier declines in infant mortality (Table 2).

**Figure 11:** Infant mortality and total fertility rates by ethnic group in Kenya




Source: Authors calculations. WFS 1977-78, KeDHS 1989-2014.

Figure 11 shows that the Infant Mortality Rates (IMR) of the Kikuyu crossed the (arbitrary) 100 per 1000 line births rate around the early 1970s when fertility in Kenya (mainly among the Kikuyu) started to decline, and among the other Bantu groups shortly after, as their fertility also started to decline. Among the Nilotic IMR fell to 100/1000 around the early 1980s and their fertility started to decline towards the end of the 1980s. This suggests a rough 10-year lag between IMR falling below 100/1000 and the onset of fertility decline. Table 2 reports regressions of fertility of each group in the 15 years prior to survey on IMR of that group lagged by 10 years, ethnic and political variables. Because we cannot calculate IMRs prior to 1963, to accommodate a 10-year lag between IMR decline and fertility decline we have to drop TFR rates between 1963 and 1973.

**Table 2:** Total fertility, infant mortality, and post-colonial politics

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---|---|---|---|---|---|---|---|
| IMR_10 | 0.0149*** | 0.0321*** | 0.0309*** | 0.00876*** | 0.0139*** | 0.0125*** | 0.00255 |
| | (8.03) | (9.15) | (10.02) | (3.58) | (7.42) | (6.30) | (1.12) |
| Other Bantu | | 1.769*** | 2.050*** | 1.760*** | 1.770*** | 1.891*** | -0.795 |
| | | (4.92) | (6.75) | (9.22) | (10.41) | (11.07) | (-1.13) |
| Nilotic | | 2.561*** | 2.681*** | 2.236*** | 2.545*** | 2.424*** | -1.334 |
| | | (7.66) | (8.68) | (11.39) | (16.14) | (13.91) | (-1.79) |
| Other Bantu * infant mortality(-10) | | -0.0199*** | -0.0233*** | -0.0111*** | -0.0155*** | -0.0145*** | -0.00515 |
| | | (-3.66) | (-5.01) | (-3.46) | (-5.96) | (-5.46) | (-1.77) |
| Nilotic * infant mortality(-10) | | -0.0257*** | -0.0261*** | -0.0120*** | -0.0171*** | -0.0154*** | -0.00236 |
| | | (-6.01) | (-6.87) | (-4.31) | (-8.26) | (-6.95) | (-0.91) |
| Co-ethnic president | | | -0.153 | 38.87* | | 0.199 | 0.169 |
| | | | (-0.54) | (1.99) | | (1.24) | (0.79) |
| Democracy | | | -1.868*** | -97.34*** | | -0.180 | -0.152 |
| | | | (-9.75) | (-4.03) | | (-0.92) | (-0.89) |
| Co-ethnic president * democracy | | | 0.497 | | | 0.303 | -0.0547 |
| | | | (1.46) | | | (1.59) | (-0.27) |
| Co-ethnic president * year | | | | -0.0193* | | | |
| | | | | (-1.97) | | | |
| Democracy * year | | | | 0.0489*** | | | |
| | | | | (4.02) | | | |
| 1963-1978 | | | | | -0.0305 | -0.0412 | -0.144*** |
| | | | | | (-1.55) | (-1.60) | (-3.70) |
| 1979-1991 | | | | | -0.219*** | -0.216*** | -0.298*** |
| | | | | | (-15.63) | (-13.14) | (-12.52) |
| 1992-2002 | | | | | -0.0442** | -0.0371 | -0.0250 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | (-2.80) | (-1.79) | (-0.85) |
| 2003-2014 | | | | | -0.100*** | -0.104*** | -0.0721 |
| | | | | | (-4.12) | (-4.27) | (-1.87) |
| 1963-1978 * other Bantu | | | | | | | 0.110* |
| | | | | | | | (2.43) |
| 1963-1978 * Nilotic | | | | | | | 0.114* |
| | | | | | | | (2.34) |
| 1979-1992 * other Bantu | | | | | | | 0.0745* |
| | | | | | | | (2.42) |
| 1979-1992 * Nilotic | | | | | | | 0.162*** |
| | | | | | | | (4.74) |
| 1992-2002 * other Bantu | | | | | | | -0.00534 |
| | | | | | | | (-0.15) |
| 1992-2002 * Nilotic | | | | | | | 0.0189 |
| | | | | | | | (0.44) |
| 2003-2014 * other Bantu | | | | | | | -0.0693 |
| | | | | | | | (-1.33) |
| 2003-2014 * Nilotic | | | | | | | -0.0640 |
| | | | | | | | (-1.10) |
| Constant | 5.309*** | 3.815*** | 4.762*** | 303.2*** | 7.187*** | 7.294*** | 9.972*** |
| | (39.47) | (17.33) | (23.20) | (12.83) | (23.68) | (19.50) | (15.79) |
| N | 372 | 261 | 261 | 261 | 261 | 261 | 261 |
| $R^2$ | 0.148 | 0.381 | 0.586 | 0.850 | 0.865 | 0.873 | 0.909 |
| Year fixed effects | | | | | | | |
| Time | | | | | | | |
| Ethnic*Time | | | | | | | |

Source: Authors calculations. WFS, 1977-78 and KeDHS, 1989-2014 using STATA user routine 'tfr2'. Ethnic reference category Kikuyu, Cushitic and other ethnic groups excluded; time intervals run 0 1 .. N; year 13 1963-2014; for periodisation see text. t-statistics in parentheses, * p< 0.05, ** p<0.01, *** p<0.001.

Table 2 shows that TFR is positively correlated with lagged IMR (column 1) as expected; the coefficient on IMR is relatively unchanged when ethnic group specific IMRs (column 2) and when political periodisation is introduced (column 3). Other Bantu and the Nilotic had higher fertility and slower decline in TFR as their IMRs fell compared to the Kikuyu (column 2). Co-ethnic presidency increased but democracy decreased fertility (column 3), but the signs are reversed when these variables are interacted with time (column 4). The political periodisation (time trend breaks in 1979, 1992, and 2003) remain significant (column 5), dominating the co-ethnic president and democracy variables (column 6) but adding no further increase in $R^2$.

These results suggest that ethnic, political and politically associated temporal variables are associated with fertility decline, even after accounting for trends in infant mortality. Column 5 suggests that there was an especially strong fall in fertility between 1979 and 1992 which might be thought to be associated with the roll out of Kenya's FPP, but this was also a period of increasing political and economic uncertainty, which in some contexts would be associated with reluctance to procreate (Sobotka et al, 2011). However, column 7 confirms what is evident from Figure 8 that during the period when Kenya's FPP was putatively most effective (1979-1992) the fertility of the Nilotic declined less fast (see row '1979-1992*Nilotic') than that of the Kikuyu (the excluded category), and other Bantu (see row '1979-1992*other Bantu') despite the Nilotic's ethnic affiliation with the president during this period, Daniel Arap Moi. This suggests that ethnic favouritism may not have been the crucial factor

compared to the secular trends in fertility decline of the different ethnic groups (contra Weinreb, 2001).

### The nexus between ethnicity and colonial legacies

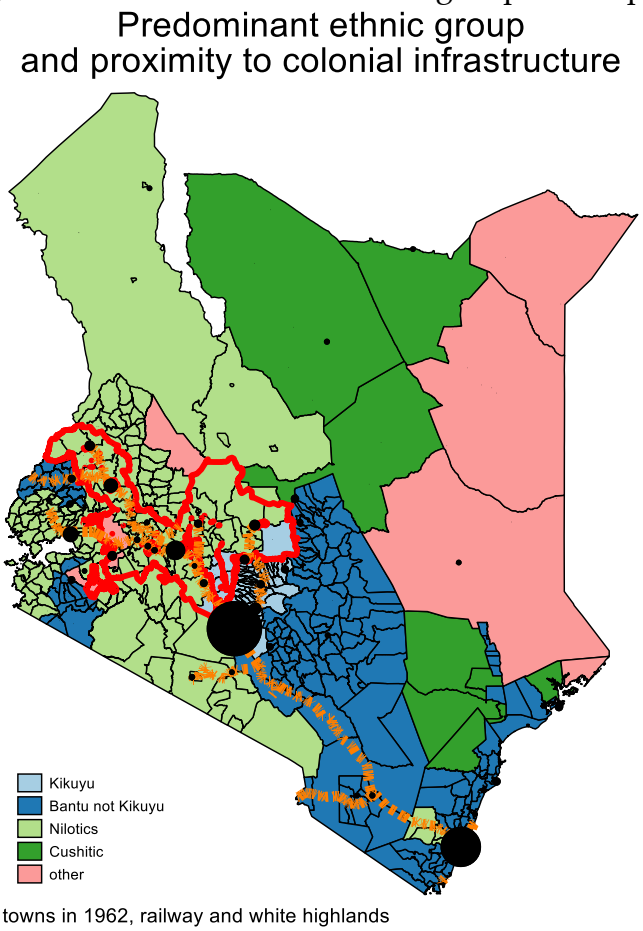
The exceptional fertility decline of the Kikuyu suggests that colonial investments, missions, and settlers, were associated with factors which affected fertility, particularly urbanisation, education, commercialisation of agriculture, population growth, and so on. These factors affected the Kikuyu more than other ethnic groups, and were themselves affected by geographical features, especially, as emphasised by Jedwab et al (2017), the location of the railway linking the port of Mombasa with the interior in the early 1900s and land that was suitable for export crops. Historical events such as the Mau Mau rebellion in the early 1950s and subsequent colonial development plans such as the Swynnerton Plan (e.g. Thurston, 1987), were spatially concentrated in specific regions with the result that colonial infrastructure developments and settlements had profound but spatially, and ethnically, very uneven effects on the African population.

As Jedwab et al (2017), show, the location of the railway[19] strongly influenced the development of towns, and associated urban developments including schooling of the

[19] It was initially built to provide military access to Lake Victoria, seen as a key to imperial interests; it so happened that the route passed through or near areas which would become of agricultural interest to settlers, partly through deliberate colonial policies aimed to make the railways pay. The thrust of Jedwab et al (2017) is that towns set up to support and administer first the initial colonial railway and then settler interests had lasting effects on the pattern of urbanisation.

African population. They show further that these influences, particularly the pattern of location of towns, were lasting. Alwy and Schech (2004) argue that ethnic groups residing near colonial settlements, ports or railway lines had better access to employment and educational opportunities, which thus shaped their fertility preferences and behaviour as illustrated by Figure 12 which shows that the Kikuyu in particular were located near and thus impacted most by colonial settlements, specifically in terms of education and employment (Kokole, 1994:79; Iyer and Weeks, 2009:10) which may contribute to understanding why their fertility rates were lower than those of other ethnic groups (Bauni et al, 1999).

**Figure 12:** Predominant ethnic groups and proximity to colonial infrastructure




Source: Authors calculations. Notes: Orange dotted line = Railways; Red solid line = Boundaries of White Highlands; Black dots = Towns in 1962.

To summarise, the KeDHS prior to the 2000s show that lower levels of fertility were most obvious in urban areas, for those with higher education, and more wealth, while those with primary education and the poorer were more fertile, but in the 1970s there were small differences among ethnic groups. Since the late 1970s, fertility has declined for most groups, but especially for the Kikuyu and other Bantu groups but less so for the Nilotic. There was significant stalling in fertility from 1993 to 2008, especially for the less educated and the poorer (whose fertility actually increased); and stalling was most noticeable among Bantu groups.

### What has financial inclusion got to do with it?

Many studies have explored the link between financial inclusion and fertility via women's empowerment (discussed in Appendix 1) with a focus on South Asia (Amin et al, 1995; Amin and Ahmed, 1996; Duvendack and Palmer-Jones, 2017). Similar explorations are absent from the SSA context. Kenya is a particularly interesting case due to its three distinct phases of fertility – decline, stalling and resumption of decline. Only the latter coincided with the obvious time pattern in the financial inclusion data (Figure 3).

Financial inclusion came to the fore in Kenya's development policy with the International Labour Office report on Kenya (1972) which first recognised the importance of the informal sector as contributor to employment and economic growth but at the same time acknowledging that many informal sector actors struggle to obtain credit (pp.114 and 119). Credit providers to the informal sector in Kenya

expanded starting with heavily subsidised church-based NGOs to more specialised institutions such as the Kenya Rural Enterprise Programme (K-REP) and Kenya Women's Finance Trust (KWFT) in the early 1990s (Hulme et al, 1999). However, penetration of these credit services remained limited into the mid-2000s and households continued to rely on merry-go-rounds, family and friends, Savings and Credit Cooperative Societies (SACCOs) and church groups (Hulme et al, 1999; Shipton, 2010). This rapidly changed with the digital finance revolution epitomised by the establishment of M-PESA in 2007. The nominal rate of financial inclusion rose from 26.7% in 2006 to 82.9% in 2019 (FSD Kenya et al, 2019:8). As of 2017, at least one individual in 96% of Kenyan households is using digital financial service providers (ibid), reducing, it is claimed, poverty (Suri and Jack, 2016). However, doubts have arisen over the efficacy of financial inclusion as the silver bullet to achieve improvements in key well-being indicators (Duvendack and Mader, 2020), especially in SSA (Stewart et al, 2010).

Financial inclusion supposedly promotes enterprise thereby raising incomes and consumption, and empowers women by raising the resources they control, exposing them to modern influences, and facilitating collective action, which, together may raise their bargaining power within households (Alkire et al, 2012). While, generally, but not always, increased incomes increase demand for children, any associated increase in female work might offset income effects by raising the opportunity cost of female time and increasing their bargaining power relative to putatively more

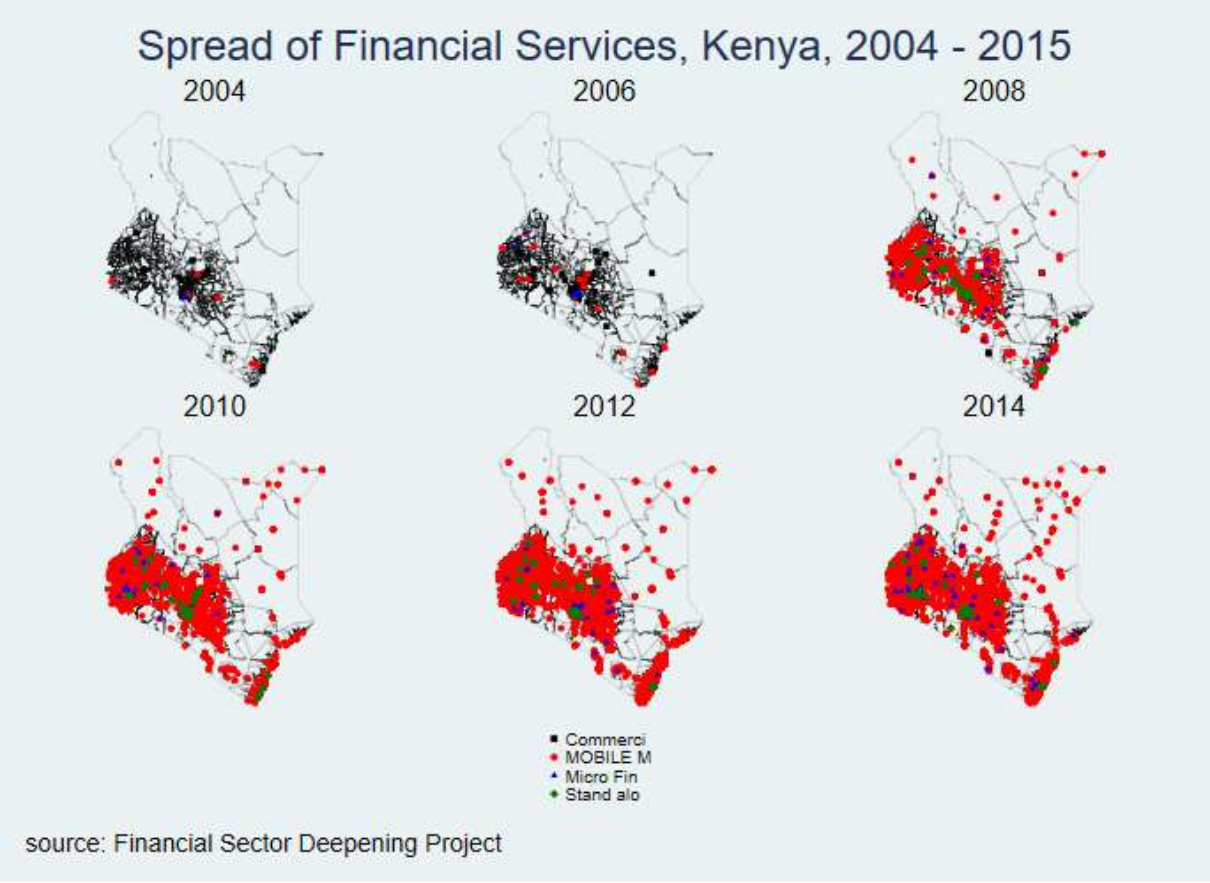
pronatalist members of their household (Desai and Tarozzi, 2011). Rising demand for "quality" (education, nutrition and health) of children may also substitute for "quantity" of children as incomes rise. In other words, the direction of the impact of financial inclusion on fertility is unclear (Desai and Tarozzi, 2011). Increased household incomes and income under female control, together with their empowerment may reduce foetal, infant and child mortality, because of a shift in expenditure patterns to more mother and child friendly patterns (Lundberg and Pollak, 1993), again possibly reducing demand for children.

### Financial inclusion, colonial legacies and ethnicity

As discussed above, there are temporal disconnects between the first phase of fertility decline and the low levels of financial inclusion in Kenya, and between the subsequent stalling in fertility while novel forms of financial inclusion were initiated and rising (from the mid-1990s); the third phase from the mid-2000s of resumption of fertility decline is strongly coincidental with a sharp rise in financial inclusion, but hardly reflects its explosive nature. Hence, these trends lend only partial correlational support to the narrative that financial inclusion has an effect on fertility whether or not through women's empowerment. In any case, as our theoretical framing suggests, if there were such a relationship the spatial and temporal trajectory of financial inclusion needs to be explained. Consequently, we explore the associations of financial inclusion with colonial legacies, post-colonial political settlements and ethnicity in this context using the INUS concept of causality.

The early stages of financial inclusion were associated with proximity to the same transport, urban and settler locations established in the colonial era. This can be demonstrated by data on the location of banks and other financial institutions at different dates (Figure 13; also Figure 14). Most financial institutions in 2004 were concentrated in the same areas where colonial impacts and associated modernisation were greatest (Figure 13).

**Figure 13:** Spread of financial services (mobile money outlets) from 2006-2014

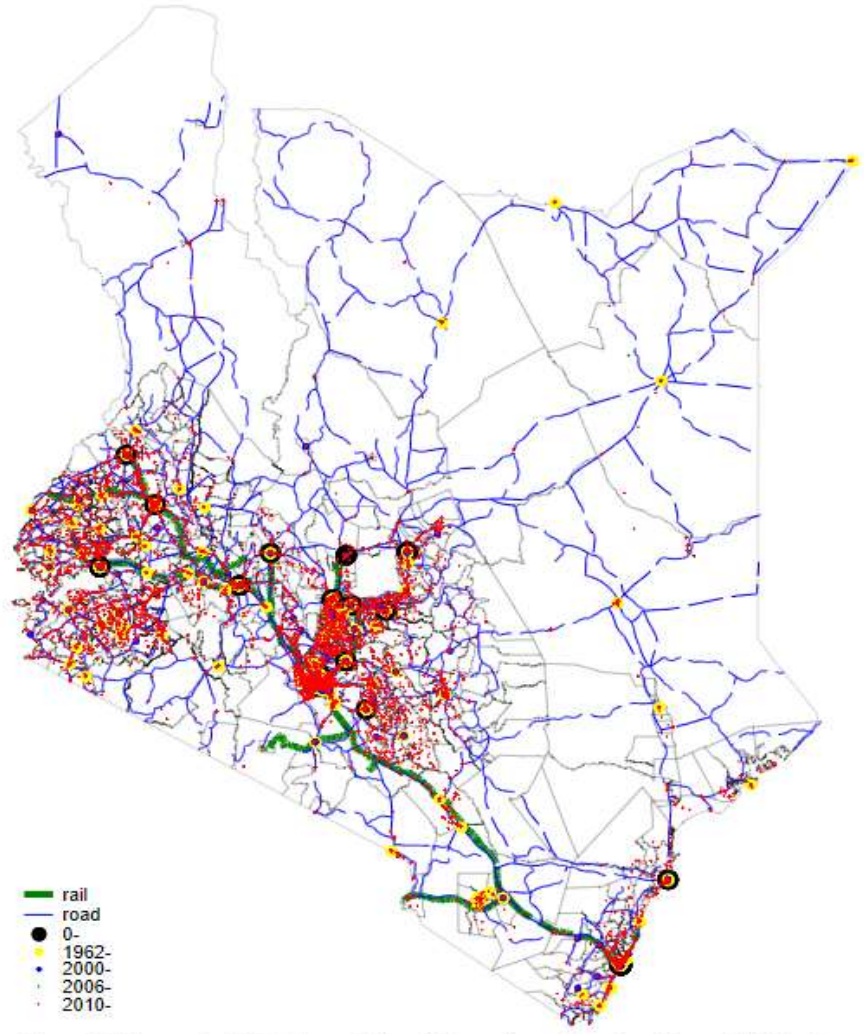



Source: Financial Sector Deepening database and authors calculations.

Up to about 2006, financial service providers such as commercial banks and other formal financial organisations were largely located in established towns; the mobile

money outlet locations, however, may have started in these areas, but over time were more likely to spread along the road network more distant from the areas where colonialism had its most intense interaction with the local populations (Figure 14).

**Figure 14:** Colonial infrastructure and financial institutions




railway 2002, roads 2002, financial institutions branches by date established

Source: Financial Sector Deepening database and authors calculations.

Empirically exploring the link between fertility and financial inclusion further is challenging, as we do not have sufficiently detailed data on access to or use of formal and informal financial services (commercial banks and other financial organisations).

While FinAccess datasets contain a large set of variables on financial characteristics of respondents, they have limited contextual information, meaning that they can throw little light on the complex inter-connections that we wish to explore; also, these data have no information on ethnicity and only provide information at a coarse spatial resolution. This prevents a credible attempt to untangle relationships among potentially underlying and endogenous variables such as financial access, women's empowerment and fertility. We find that at household, and area levels, the indirect and direct correlates of empowerment (and lower fertility) are all themselves higher the closer to colonial railways (and towns) as indeed is financial inclusion (see Appendix 1)[20].

## Conclusion: Fertility Trajectories, Financial inclusion and Politics in Kenya 1960s-2010s

We explored whether plausible causal mechanisms, following the INUS concept of causality, between fertility and current trends in development interventions – notably financial inclusion - bear empirical examination and argued that Kenya's underlying ethnic characteristics along with its colonial legacies need to be accommodated in any such account. Despite the coincidence in time between Kenya's dramatic increase in financial inclusion and renewed patterns of fertility decline, how the spread of financial institutions might affect fertility remain largely unexplored. We acknowledge that the link between financial inclusion and its effects on fertility is hard

[20] Further results from the authors.

to disentangle due to lack of data. However, access to these new financial institutions was initially associated with the same locational features (proximity to colonial infrastructure investments), and later expanded along subsequently developed road systems; hence, any effects of these institutions would themselves have been due in part to these other historical, political, sociological and infrastructure characteristics.

Notwithstanding the temporal coincidence of the resumption in fertility decline from the mid-2000s and the rapid extension of digital financial services, there is no robust evidence, yet, that financial inclusion caused recent changes in Kenya's fertility rates whether directly (via incomes) or indirectly via women's empowerment, as women's empowerment and financial inclusion "boosters" might well be inclined to assert, based on the simple associations we report. Such naïve interpretation could mislead policymakers to suppose that the desired fertility reduction could arise simply by letting financial markets get on with business.

Political (and economic) dynamics were also strongly associated both with fertility levels of different ethnic groups and with their changes over time. But, as to Kenya's vaunted FPP and ideas of ethnic favouritism (facilitating access to FPP), we find that although fertility did indeed fall fast in the period of most FPP activity, fertility fell most rapidly among the ethnically discriminated (at the time) Kikuyu rather than among the ethnically favoured Nilotic. Rather than excluding or marginalising ethnic, and associated historical and political variables, demographic studies, and policy analyses concerned with fertility, should consider these variables more carefully in

their analyses, and rather than focussing overwhelmingly on direct and indirect correlates of fertility, they should pay attention to the factors underlying, in a "deep" sense, the factors related to fertility decline.

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