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Fertility decline, women's empowerment and financial inclusion in Kenya: It may not be 'As You Like It'?

By Maren Duvendack

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Fertility decline, women's empowerment and financial inclusion in Kenya: It may not be 'As You Like It'?*

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Abstract

Kenya has seen remarkable declines in fertility from the late 1970s associated with a much lauded family planning programme; fertility decline stalled during the decade from the mid-1990s, only to resume in the mid-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, women's empowerment and financial inclusion in Kenya. The Kenyan context presents challenges to establishing such connections including, regional geographic and ethnic differences, rural - urban differences, spatial and temporal uneven economic growth, diverse legacies of colonialism, and an HIV/AIDS epidemic, all of which may have affected how fertility patterns, women's empowerment and financial inclusion activities played out. The paper's contribution lies in incorporating a broader set of "deep" contextual factors that may challenge claims made in the literature. We find that while modernisation variables such as urbanisation, education, wealth and employment are convincingly related to lower fertility levels, setting up demand for family planning, 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.

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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] (Shapiro and Hinde, 2017).

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 (see Appendix 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).

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

[1] Recent 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).

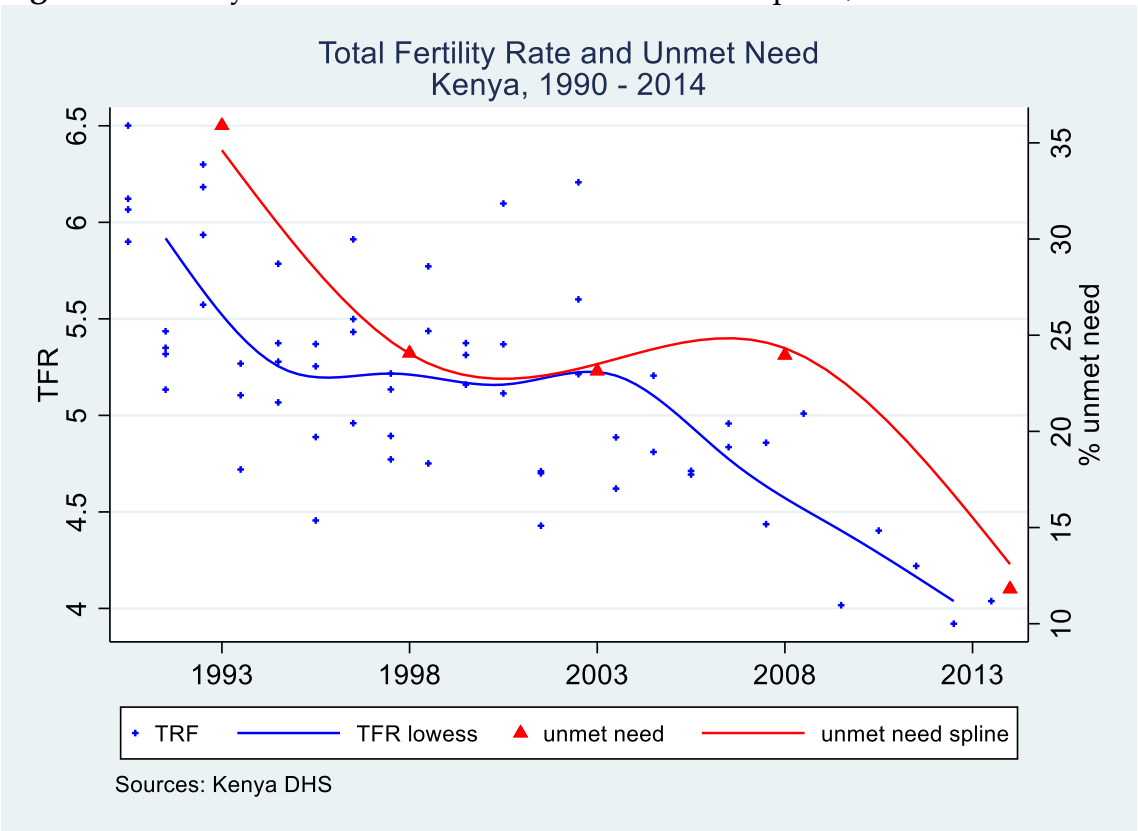
[2] Though Kenya formally adopted a family planning policy in 1967, the policy was not actually implemented until the early 1980s (Crichton, 2008; Hartmann, 1995).

such as urbanisation, education, employment and wealth (Bongaarts, 2017; Kokole, 1994; Hartmann, 1995[3]). 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)[4], 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 (see Figure 1).

[3] The role of education in fertility decline in SSA is particularly emphasised in Lutz et al (2014) and related literature.

[4] Measuring unmet need is contentious, e.g. Bradley et al (2012); we use the revised unmet need calculations from KeDHS.

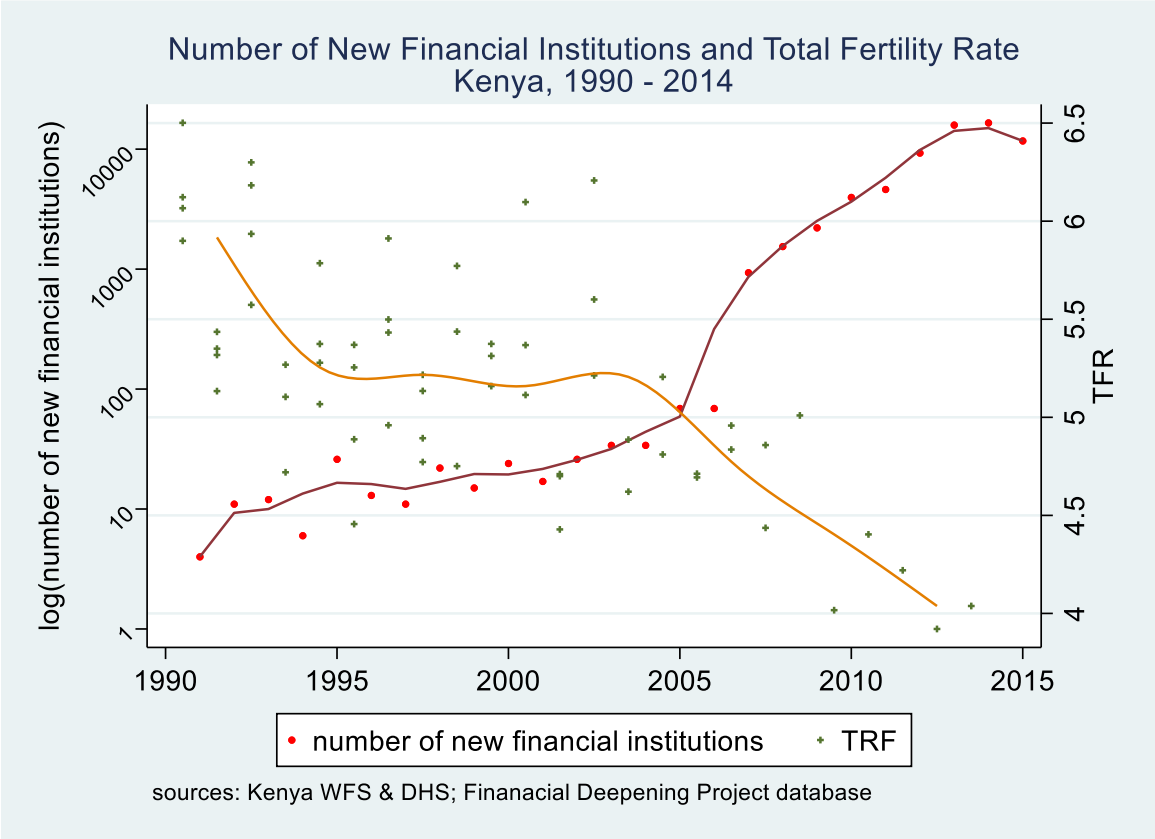
Figure 1: Fertility decline and unmet need for contraception, 1990-2014



Source: Authors calculations. KeDHS, 1990-2014.

This raises the question as to what truly 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 2), 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 2: Financial institutions and fertility decline in Kenya, 1990-2014



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

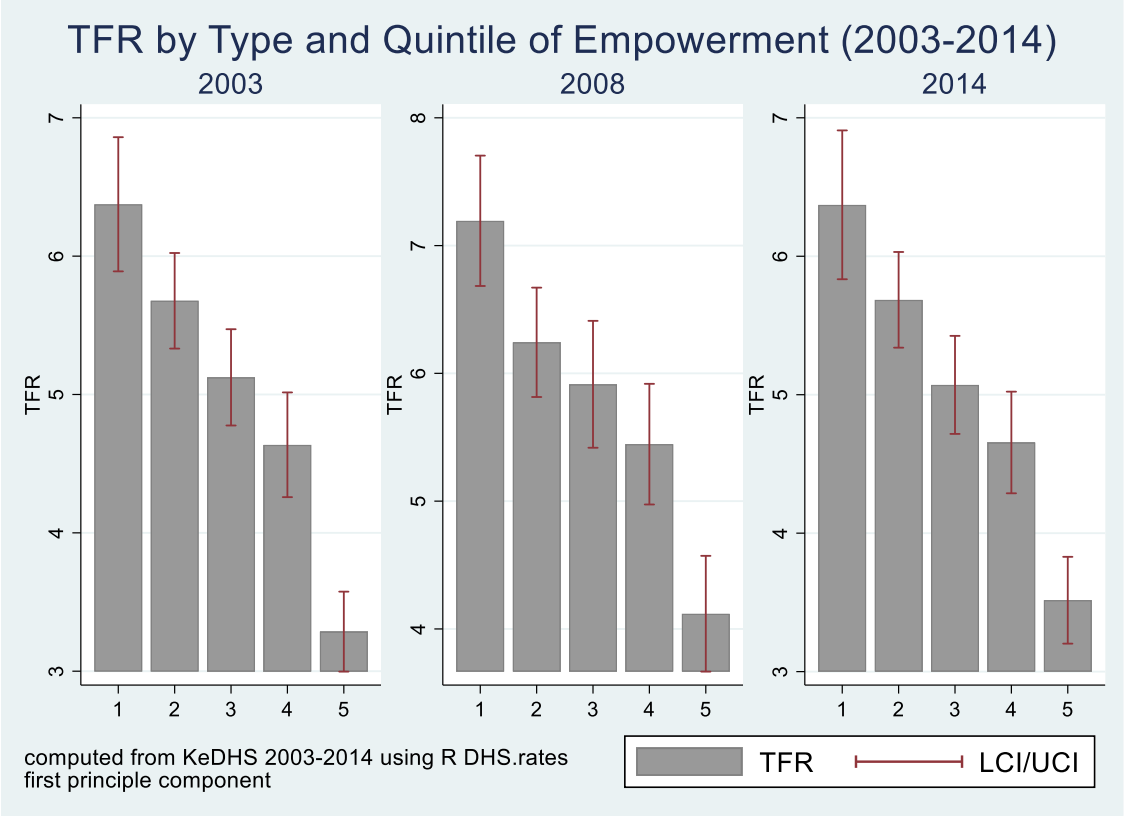
Three features stand out from Figures 1 and 2; the fall in fertility (which started in the late 1970s – not shown) ending in the mid-1990s (commonly described as stalling by e.g. Askew et al, 2017; Bongaarts, 2008; Schoumaker, 2019) and the subsequent resumption of fertility decline in the mid-2000s, 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, women's empowerment and fertility[5] making it plausible, indeed tempting, to link these

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

variables in understanding fertility trends in the Kenyan context (Kim et al, 2007; Leatherman et al, 2012; Cleland et al, 2006). Orton et al (2016), for example, argue that group-based microfinance increases women's empowerment which in turn improves contraceptive use and thus lowers total fertility rates. Brody et al (2015) support this view suggesting that membership in self-help groups (generally involving financial inclusion[6]) has positive effects on women's control over family sizes. This claim is further supported by KeDHS data (Figure 3)[7] which indicates that the TFR is lower among women who have higher values of an empowerment index.

Figure 3: Fertility and female empowerment in Kenya by type of survey, 2003-2014



Source: Authors calculations. KeDHS, 2003-2014.

[6] The World Bank defines financial inclusion as follows: "Financial inclusion means that individuals and businesses have access to useful and affordable financial products and services that meet their needs – transactions, payments, savings, credit and insurance – delivered in a responsible and sustainable way." (https://www.worldbank.org/en/topic/financialinclusion/overview, accessed 17 June 2020).

[7] Empowerment indexes cannot be calculated from the KeDHS prior to 2003.

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 (e.g. Kebede et al, 2019), 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[8], the thrust of the paper is that the interactions of factors plausibly, and usually considered in the literature as causally, related to fertility makes any clear contextually independent "strong" causality unlikely to be established. We adopt a more pragmatic approach drawing on the INUS[9] concept of causality (Mackie, 1965), under which observed associations may be considered causal under the specific

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

[9] Mackie 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 – this is the INUS condition.

circumstances, but may not be generalisable; hence, it is the circumstances that are as important as the (usually) observed associations (see also Lutz and Skirbekk, 2013).

Anticipating discussion later in this paper, Kenya's fertility decline, stalling, and resumption may have primarily been a phenomenon of urbanised, educated Kikuyu who not only experienced the most extensive impacts among ethnic groups within Kenya of colonialism, but also for most of the period of interest, had greatest access to its (colonialism's) modernising legacies, and political power. Hence, we suggest, a widely framed account of fertility decline, stalling, and resumed decline, in Kenya needs to accommodate both underlying, pre-colonial characteristics, colonialism's geographically differentiated impacts, and post-colonial economic and political regimes. To the extent that modernisation policies and variables, and development interventions such as FPPs, women's empowerment activities, financial inclusion and so on, play roles in fertility phenomena, they do so within these contexts, which may be crucial to interpreting and learning about these interventions for policy and practice both in Kenya and elsewhere.

The paper proceeds as follows, first we 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 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, women's empowerment, 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.

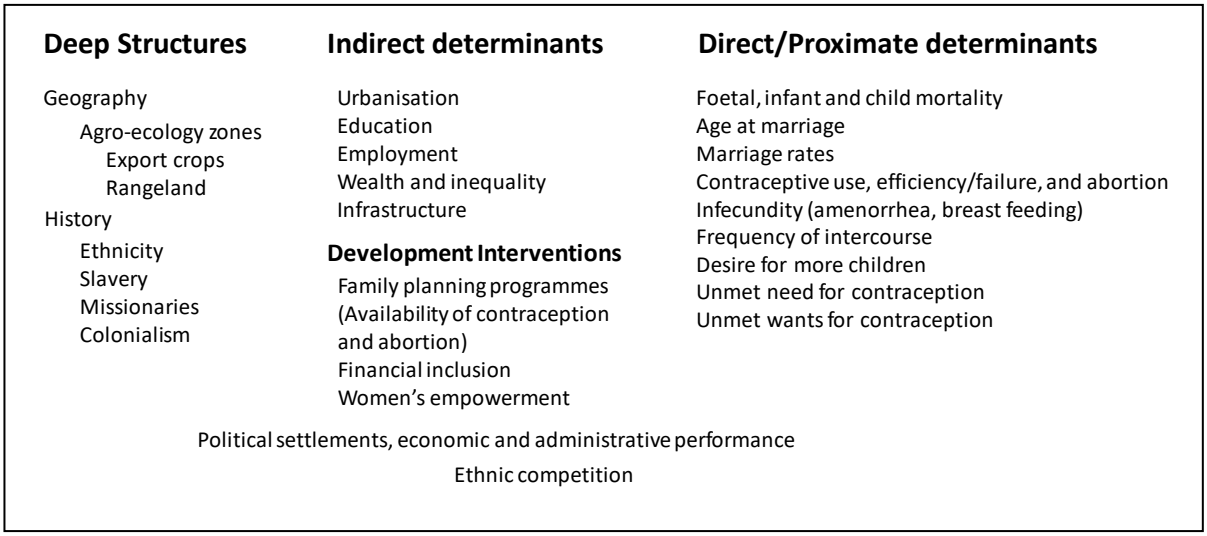
Deep structures of social and economic development

Davis and Blake (1956) were the first to develop an analytical framework to understand the drivers of fertility, proposing 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 "deep" structures (Constantine, 2017) putatively conducive to beneficial (in)direct determinants of fertility. We adapt Bongaarts' framework (Figure 4) 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 4: 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 promotion of female education (e.g. Kebede et al, 2019). 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)[10]. 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

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

led to the desired fertility outcomes? What, in other words, determined the (in- and) direct determinants?

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

[11] We note, but cannot extensively address here, the problem that ethnicity in Kenya as elsewhere is not a primordial (exogenous) characteristic but has been constructed over and since the colonial period. The implication of this is that ethnicity is at least partly endogenous (pace Burgess et al, 2015); this has wide ranging effects, from the way one can use the declared ethnic affiliations of the respondents in KeDHS, Kenya census, etc., to the ethnic designations of administrative or geographic areas, in econometric models.

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 and analytical approach

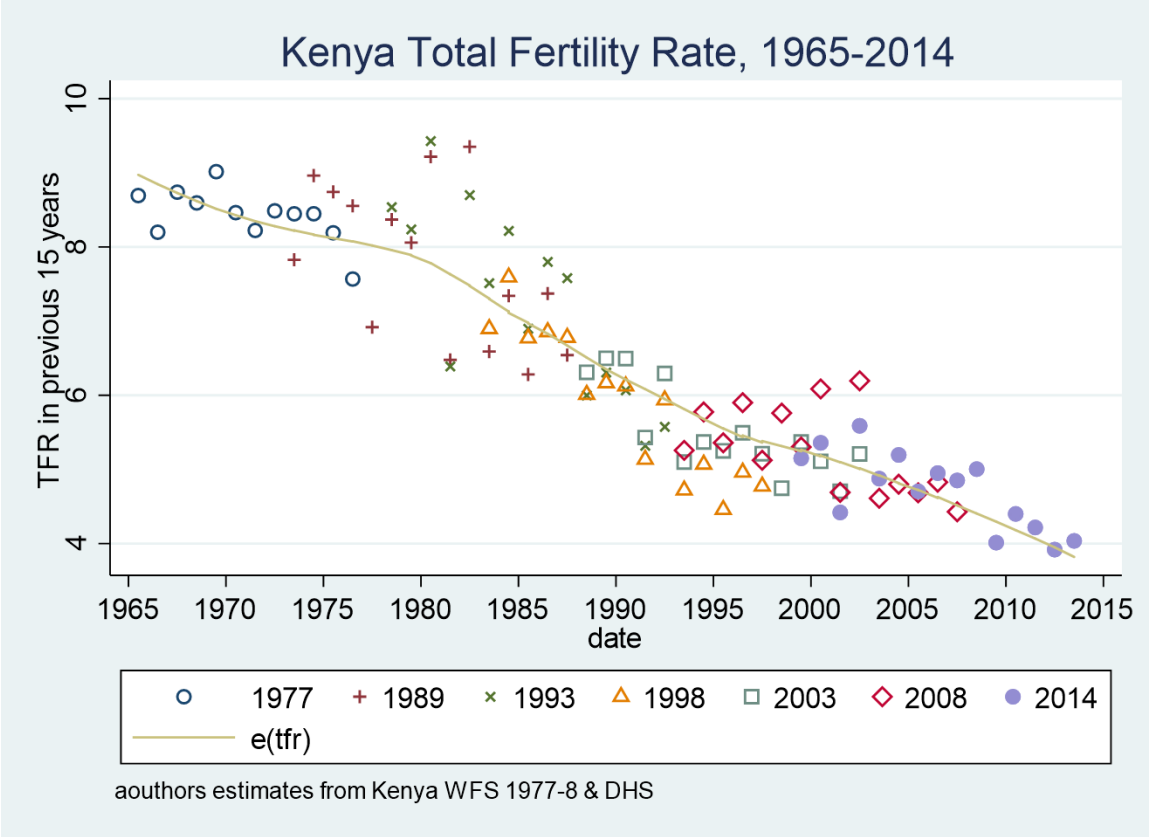
Our analysis is based on a range of nationally representative surveys[12], the World Fertility Survey (WFS), the KeDHS, the Kenya Census and FinAccess surveys. We also make use of the data sets accompanying Jedwab et al (2017), Cagé and Rueda (2016), Cagé et al (2019), and Nunn (2010). The KeDHS survey 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 especially for particular sub-groups of the population (see Appendix 2).

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

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 5)[13].

Figure 5: 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.

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 (Kebede et al, 2019); donor commitments also changed away

[13] Using a longer pre-survey period reduces the apparent slowdown in fertility decline, but is probably more accurate in fertility reconstructions (Schoumaker, 2014).

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"[14], and fertility decline apparently renewed (from the mid-2000s – see Figures 1, 2, & 5).

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 (see Appendix 3), 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). 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) – confirmed in Appendix 4 which depicts patterns of fertility in Kenya. However, these variables are only correlates since they themselves are contextually dependant on, and thus need to be explained, by other, underlying variables. We suggest that education, employment, and urbanisation are plausibly (INUS) causally derived, along with wealth, from, and in

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

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), and Christian missions, as well as, maybe emerging "ethnic" characteristics. This implies that at least the first phase of fertility decline was "caused" largely by colonialism[15], and subsequent political-economic developments, as explored below.

The role of ethnicity and colonial legacies

Ethnicity[16] as a correlate of fertility is underexplored[17] 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

[15] 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.

[16] 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).

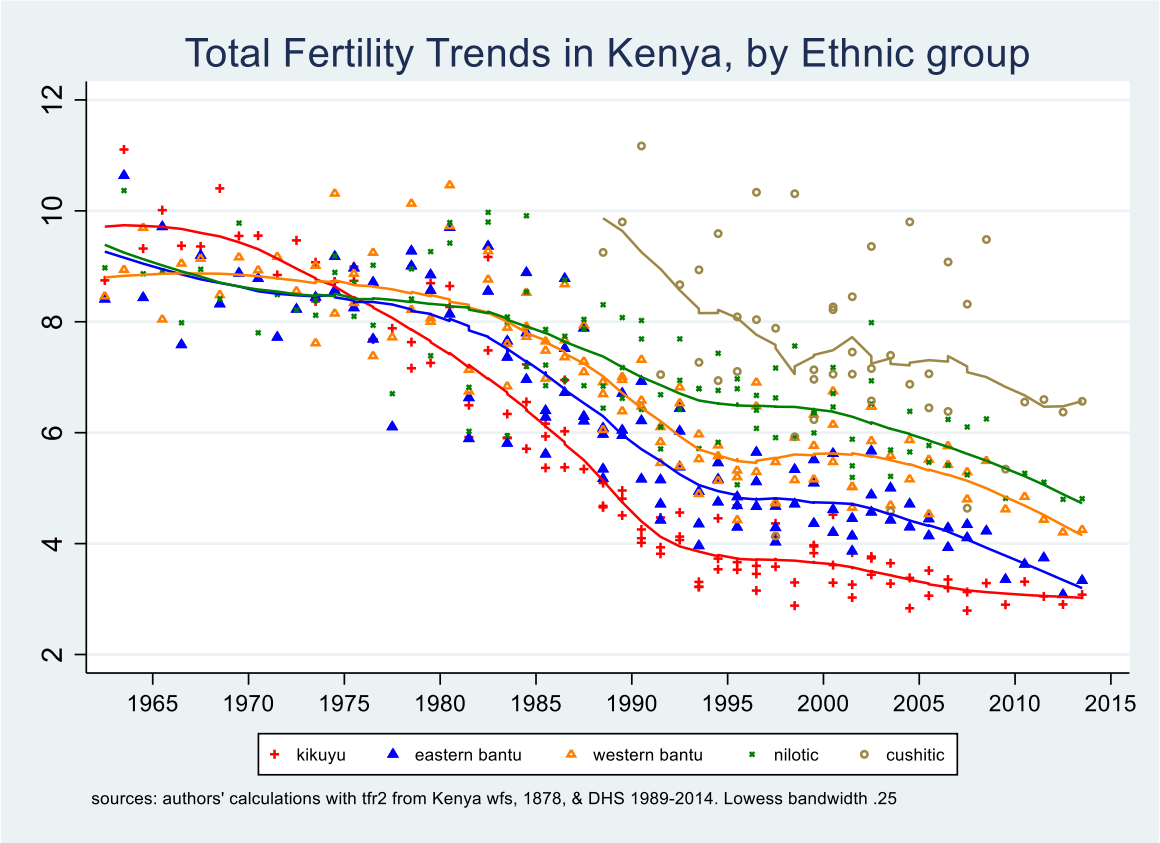
[17] Official KeDHS reports of fertility stalling in Kenya only report ethnic differences in desire for more children by ethnic group.

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 6 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[18] 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.

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

Figure 6: 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

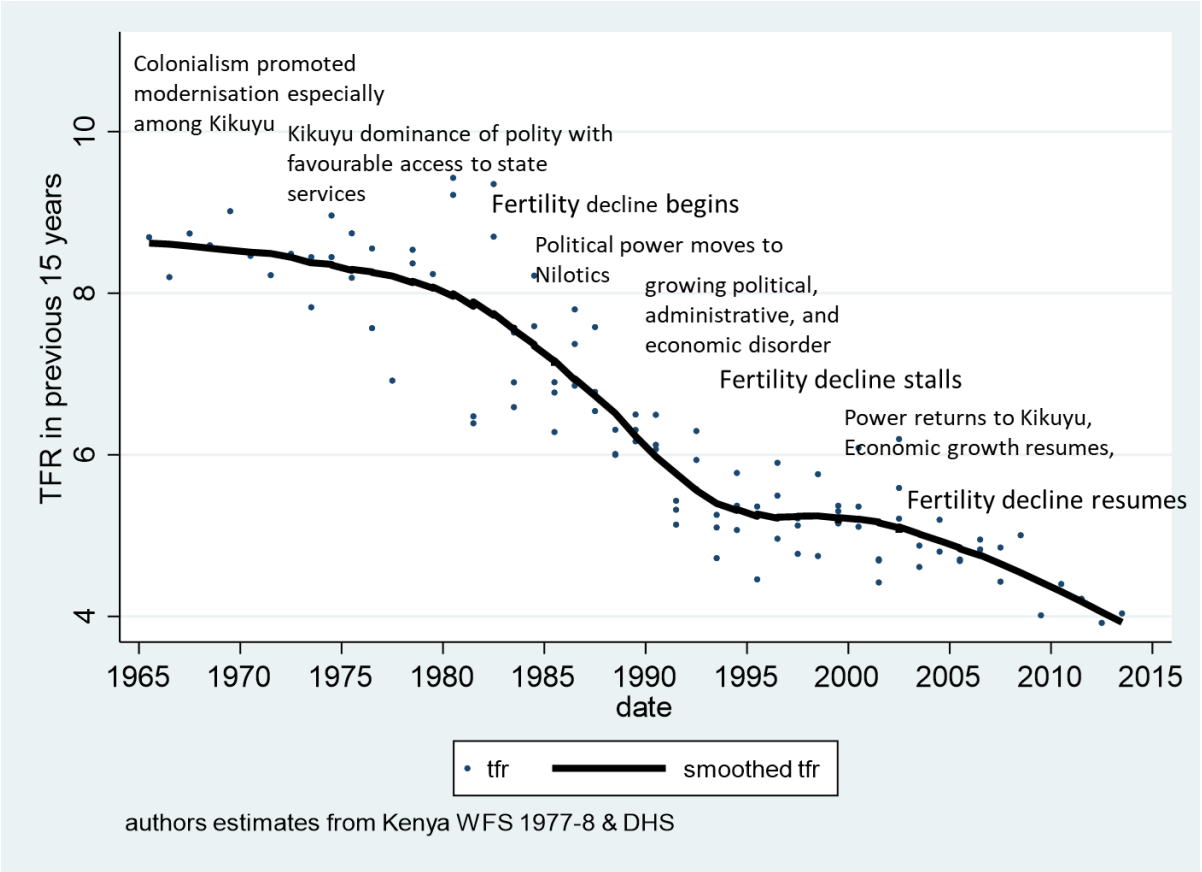
In addition to the greater effect of colonialism on the Kikuyu, common knowledge of Kenya's political history suggests an association of these temporal and spatial fertility patterns of different ethnic groups in Kenya with the succession of political regimes over this period. Since independence, Kenya's 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 7.

Figure 7: 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)[19] 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 in Kenya followed rather than preceded the stalling and subsequent resumption of fertility decline (Figure 1), it may have been that other factors were dominating.

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

[19] Quoted in Kokole (1994).

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 take the value 1 if the groups has an ethnic co-president or in that year, and 1 if the political regime was democracy[20], and zero otherwise. 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.

[20] 1 for Kikuyu 1963-1978 and 2003 – 2014 and for Nilotic 1979 – 2002. 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).

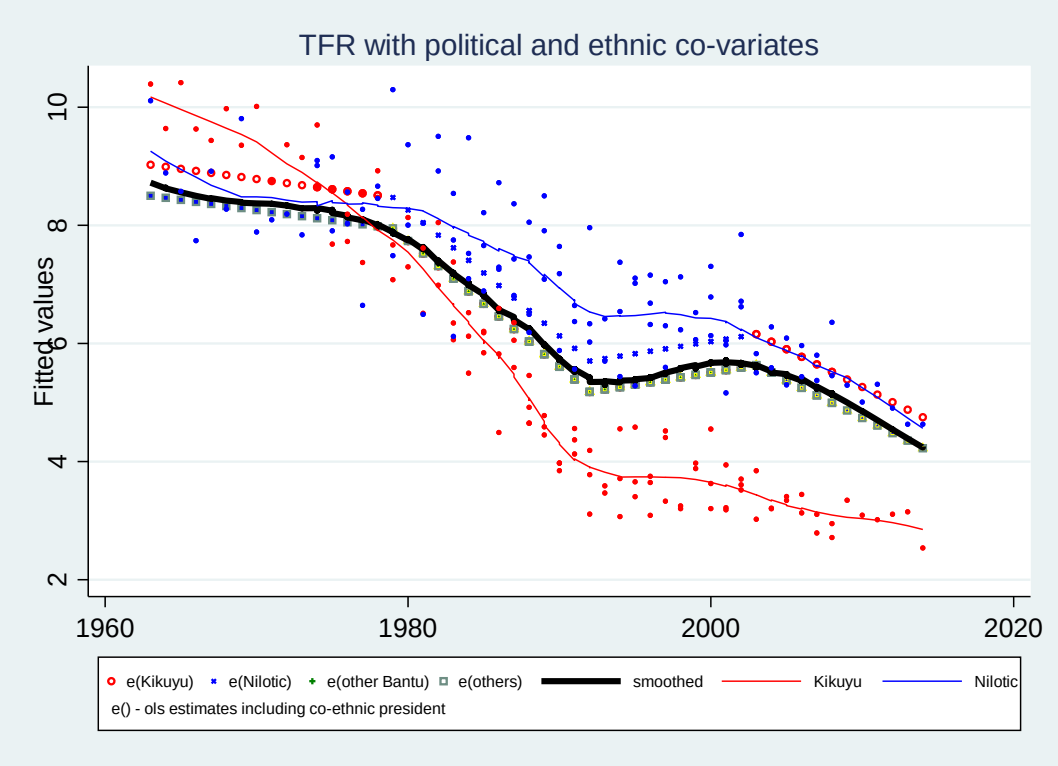
Table 1: Total fertility rate by ethnic and political characteristics, Kenya 1963-2014

	(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	-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			-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'. 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 8 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.

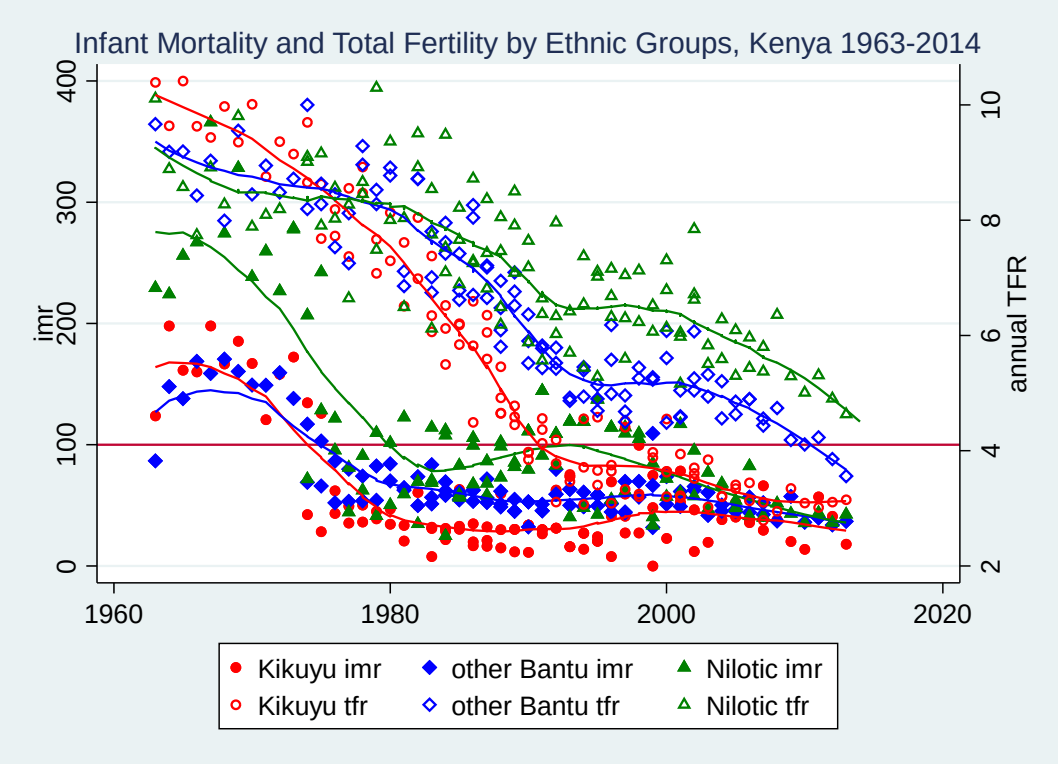
Figure 8: Total fertility rate and political, ethnic, and time variables



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 9). 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 9: Infant mortality and total fertility rates by ethnic group in Kenya



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

Figure 9 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 even after accounting for trends in infant mortality, ethnic, political and politically associated temporal variables are associated with fertility decline. 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 9 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 Moi, the president during this period. This suggests that ethnic

favouritism was not a factor compared to the secular trends in fertility decline of the different ethnic groups.

The nexus between ethnicity and colonial legacies

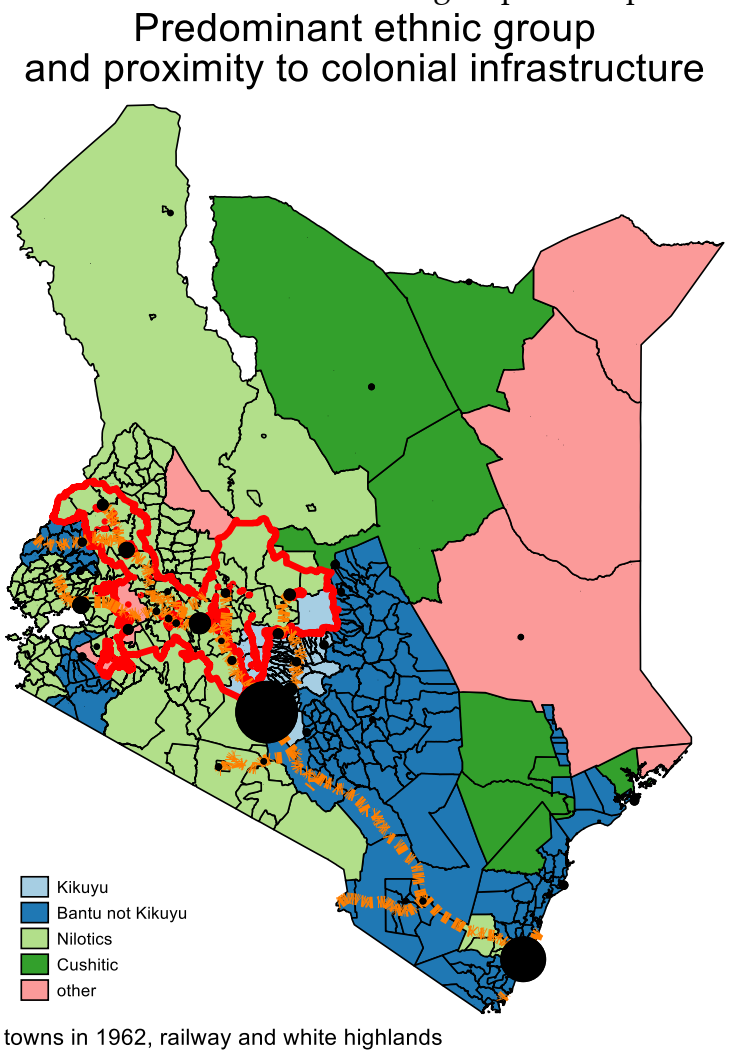
The exceptional fertility decline of the Kikuyu suggests that colonial investments, missions, and settlers, were associated with factors which affected fertility, particularly urbanisation, education, commercialisation of agriculture, population growth, and so on. These factors affected the Kikuyu more 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[21] strongly influenced the development of towns, and associated urban developments including schooling of the 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

[21] 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.

residing near colonial settlements, ports or railway lines had better access to employment and educational opportunities, which thus shaped their fertility preferences and behaviour. This is illustrated by Figure 10 showing clearly 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).

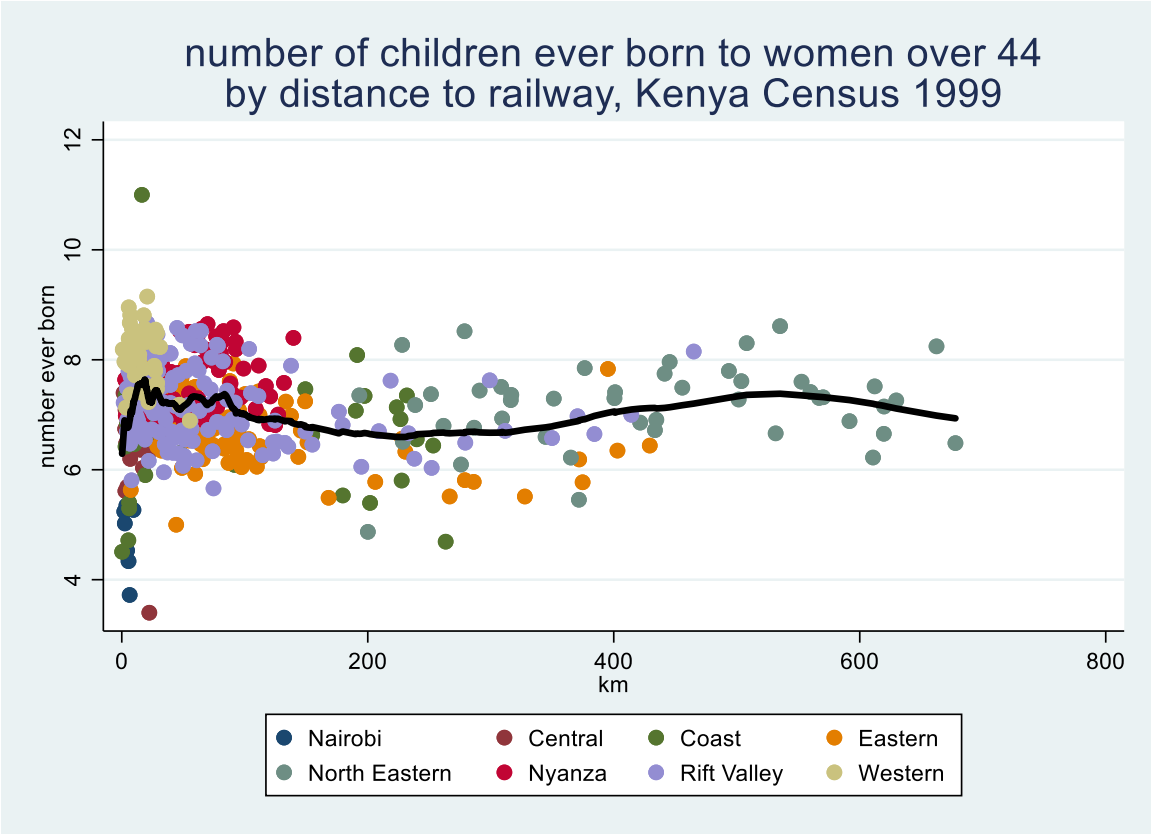
Figure 10: Predominant ethnic groups and proximity to colonial infrastructure



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

The strong influence of colonialism is further supported by the lowess[22] plot of the number of children ever born to older women by distance to railway; there is a steep rise in fertility up to about 40 km from the nearest railway is consistent with this understanding, i.e. the lowest number of children in divisions[23] closest to the railway (Figure 11)[24].

Figure 11: Number of children ever born to women over 44 by distance of division to railway



Source: Authors calculations. Kenya census abstract 1999.

[22] Locally Weighted Scatterplot Smoothing to show the relationship between fertility and proximity to colonial infrastructure more clearly.

[23] In the 1999 census, Kenya was divided into 8 provinces, further into 69 districts and then into 497 divisions. This administrative set up changed under the 2010 Constitution.

[24] Similar results (drawing on data from Cagé and Rueda (2016); Cagé et al (2019)) are found with distance from Christian missions and from major urban centres (results available from the authors).

To recapitulate, 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.

In the 2014 KeDHS we find that the Kikuyu score higher on nearly all indirect correlates of fertility decline, and they were also more likely to be impacted by colonialism (closer to railways - Table 3). The other Bantu groups reported similar, but less impressive, statistics of modernisation and fertility decline, followed by the Nilotic, with the Cushitic having very low statistics of "modernisation", and high average distance to railways.

Table 3: Summary statistics for indirect "causes" of fertility by ethnicity

	KeDHS 2014				Relative average distance to railway[25]		
Ethnicity	Proportion urbanised	Mean years of education	Proportion currently working	Mean wealth score	2003	2008	2014
Kikuyu	0.55	9.97	0.71	9.0275	1	1	1
Other Bantu	0.40	8.78	0.64	3.2522	3.05	3.47	3.11
Nilotic	0.30	7.92	0.58	1.173	3.76	3.33	3.98
Cushitic	0.46	2.92	0.15	-2.6249	15.86	19.80	17.73

Source: Authors calculations. KeDHS 2014.

In this context, it is also worth investigating the location of Protestant and Catholic missions, which unsurprisingly were established in close proximity to colonial infrastructure (see Cagé and Rueda, 2016; Cagé et al, 2019 for location data on Protestant and Catholic missions up to 1903 and 1924 respectively), using their geographic location of missions data along with KeDHS we find[26] that living in proximity to missions is associated with lower fertility – this further complicates the causal web by raising the role of religion in shaping fertility via education (i.e. living in proximity to a mission is associated with higher educational levels due to mission investments in educational facilities[27]).

[25] Using GPS locations, the "average" distance of a location where the predominant group is Kikuyu – as derived by Jedwab et al (2017), from the Murdock map (1967) of ethnicities – is from the line of rail or nearest railway station.

[26] Results available from the authors.

[27] The argument can be extended to mission health investments. Cagé et al (2019) show that living in proximity to a mission which invested in health facilities is associated with lower prevalence rates of HIV due to increased levels of sex education thus influencing sexual behaviour and attitudes.

Women's Empowerment, fertility and ethnicity

We now turn to exploring the role of variables associated with recent trends in development interventions mentioned in the introduction, women's empowerment and its relationship to fertility, ethnicity, colonial legacies and financial inclusion. First, we use the Survey-based Women's emPowERment (SWPER) index (Ewerling et al, 2017) to explore women's empowerment and its relationship to the proximate "causes" of fertility. The SWPER index comprises variables relating to three domains of empowerment: Attitudes to domestic violence (acceptability of beating women); social independence (e.g. reading of newspapers, recent employment, age and education difference between partners, etc.); and participation in decision-making. Examining these three domains of empowerment by level of educational attainment and rural location, we see that in the years 2003 to 2014 more educated women had higher scores on the (un)acceptability of being beaten by their husbands, and on the social independence component. The results for participation in decision-making are less clear-cut (see Appendix 5, Table A5). Appendix 5, Figure A5, also shows how these different domains of empowerment are related to fertility; those most likely to reject acceptability of beatings have lower fertility than others, and those for whom beatings are most acceptable have higher fertility. It seems that education, empowerment and fertility of women are interrelated; Table 4 adds to this analysis testing the link between empowerment and ethnicity.

Table 4: SWPER index - empowerment components, ethnicity and rural location

	2003			2008			2014		
Ethnic Group	Acceptability of beating	Indepen dence	Decision-making	Acceptability of beating	Indepen dence	Decision-making	Acceptability of beating	Indepen dence	Decision-making
Kikuyu	1.299***	0.400***	0.211***	1.211***	0.206***	0.436***	1.218***	0.211***	0.462***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Other Bantu	0.670***	0.026	0.077*	0.714***	0.319***	0.122***	0.702***	0.292***	0.102**
	(0.000)	(0.577)	(0.061)	(0.000)	(0.000)	(0.006)	(0.000)	(0.000)	-0.02
Nilotic	0.394***	0.159***	-0.044	0.354***	0.013	0.089*	0.346***	0.01	0.076
	(0.000)	(0.007)	(0.408)	(0.000)	(0.827)	(0.069)	(0.000)	-0.882	-0.126
Cushitic	-0.701***	-0.016	-0.471***	-0.379**	-0.423***	-0.237***	-0.389***	-0.433***	-0.269***
	(0.000)	(0.837)	(0.000)	(0.010)	(0.000)	(0.000)	-0.009	(0.000)	(0.000)
Rural	-0.956***	-0.204***	-0.095**	-0.899***	-0.209***	-0.242***	-0.893***	-0.196***	-0.237***
	(0.000)	(0.000)	(0.025)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
N	8155	8155	8155	5041	5041	5041	8195	8195	8195

Source: Authors OLS calculations from KeDHS 2003-2014. t-statistics in parenthesis.

We find that Kikuyu women are generally more empowered in terms of all three of the indexes than other groups. Women from Bantu groups are generally more empowered than the Nilotic, while women from the Cushitic groups are least empowered (Table 4). The Kikuyu also have lower fertility rates than the other Bantu groups (discussed earlier), with the Nilotic and the Cushitic having higher fertility rates than all Bantu groups. However, from these data, it is not clear whether the higher values on empowerment indexes among the Kikuyu reflect underlying cultural (or geographic) characteristics, or greater exposure to modernising influences, although it is clear that the Kikuyu were earliest and most affected by colonialism, and this would confound any attempt to allocate causal paths in the absence of valid identification strategies.

What has financial inclusion got to do with it?

Many studies have explored the link between financial inclusion, fertility and women's empowerment 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 2).

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, 2019), especially in SSA (Stewart et al, 2010); doubts have also been raised about a causal relation of financial inclusion with women's empowerment (Vaessen et al, 2014).

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.

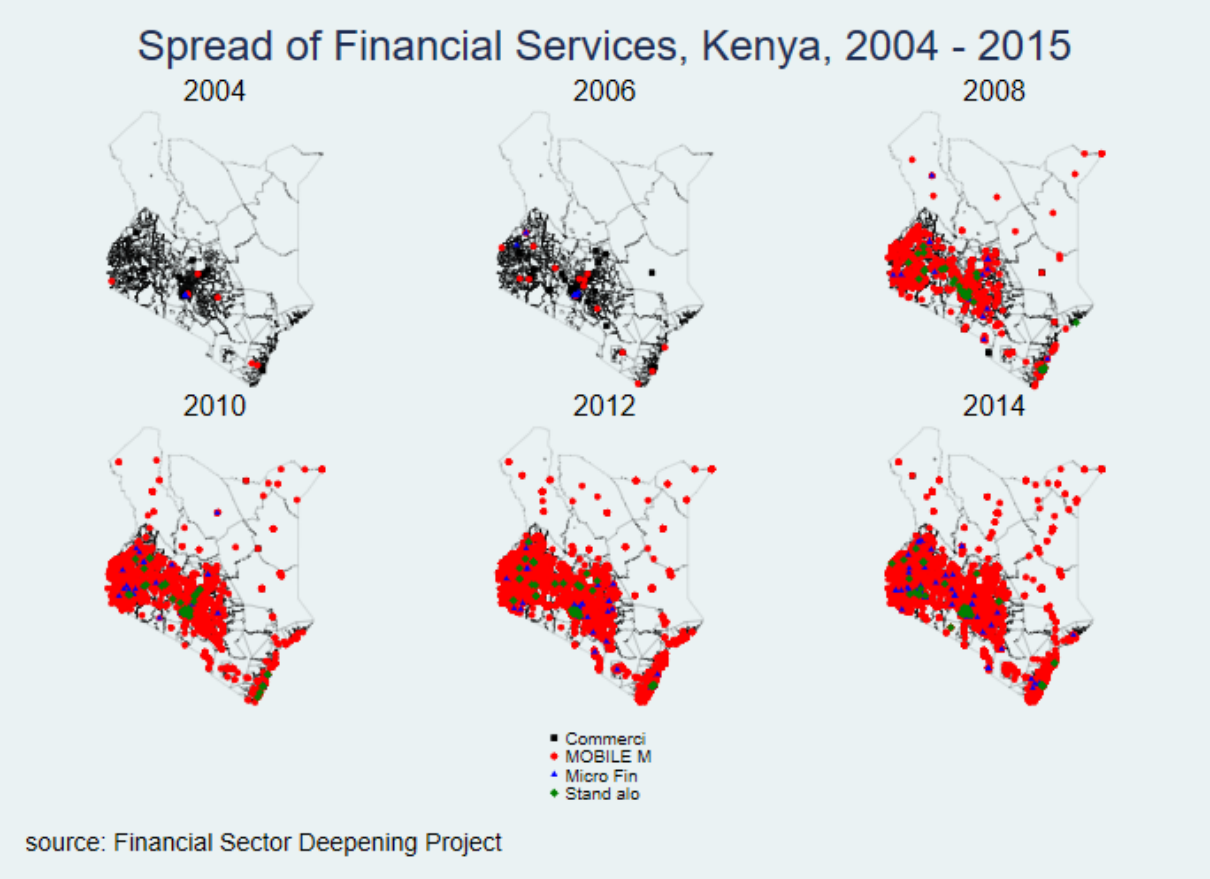
Notwithstanding the apparently strong theoretical reasons for expecting associations between financial inclusion and empowerment and empowerment and fertility, empirical studies report contradictory findings (Duvendack and Palmer-Jones, 2017; Duvendack and Mader, 2019). Nevertheless, the logic of a causal relation between financial inclusion, women's empowerment and fertility reduction seems so strong (Amin et al, 1995; Amin and Ahmed, 1996; Schuler et al, 1997) that the absence of robust empirical evidence of such associations must cast doubt on at least one, if not both links in this causal chain. Either there is no robust link between financial inclusion and women's empowerment, or, between women's empowerment and fertility, or neither.

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.

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 12; also Figure 13). Most financial institutions in 2004 were concentrated in the same areas where colonial impacts and associated modernisation were greatest (Figure 12).

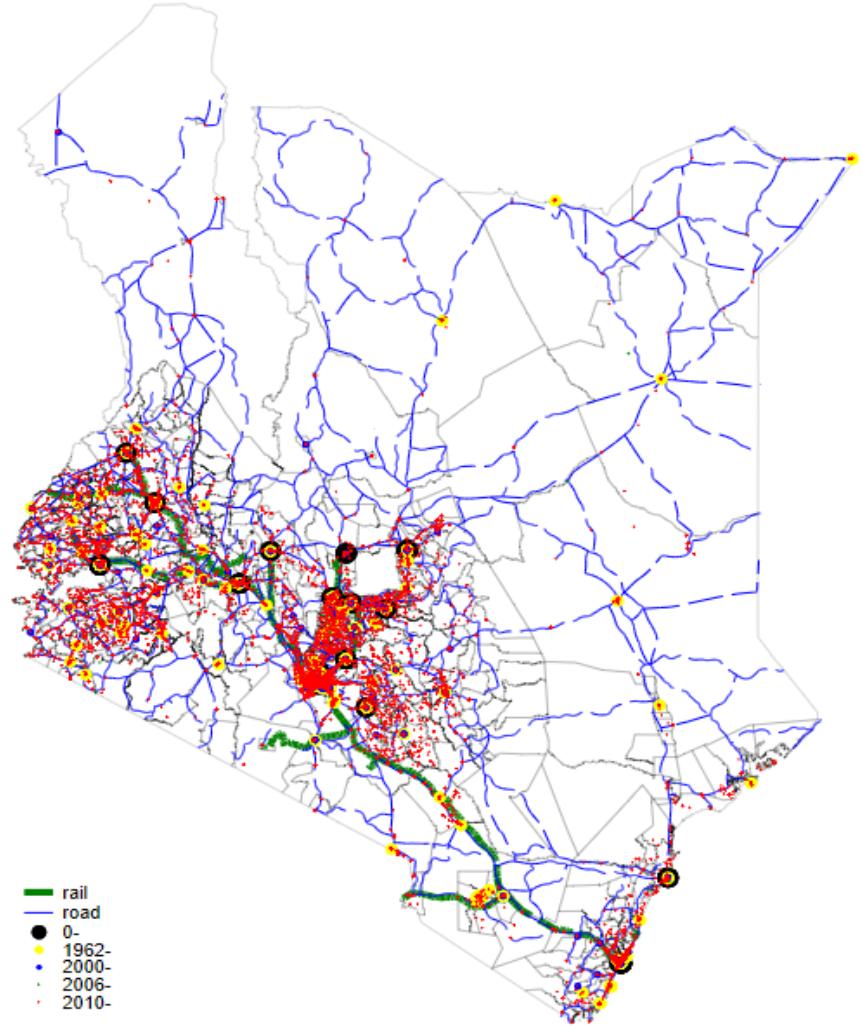
Figure 12: Spread of financial services (mobile money outlets) from 2006-2014



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 13).

Figure 13: 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 (above county level)[28]. 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[29].

Conclusion: Fertility Trajectories, Financial inclusion, Women's Empowerment, 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 - women's empowerment, and financial inclusion[30] - 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 and whether women's empowerment may play a role remain largely unexplored. We find that the indirect indicators of empowerment – urbanisation, education, wealth, and employment – are quite strongly associated with lower fertility; however, some of the supposedly direct indicators of empowerment such as autonomy and decision-

[28] The FinAccess surveys only report location as within only one of 47 counties limiting spatial analysis.
[29] Further results from the authors.
[30] And implicitly (female) education.

making components of the SWPER index, show little association with fertility levels. We acknowledge that the link between financial inclusion and its effects on fertility is hard 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 been due 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 even though they are more directly, even strongly, related to fertility decline.

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