Resumed fertility decline in Sub-Saharan Africa: what does happen from a stalling point?

Introduction

Demographic transition theories predicted that fertility rates in developing countries would continuously fall such as reaching almost the replacement level. Researchers and Policy analysts virtually did (and still do) agree that this demographic transition would improve social and economic development and enhance the quality of life. However, the observed transition in the developing world hides a wide variety of local situations. Some countries are still pre-transitional, and others experience downward trends in fertility that level-off with rates still well above the replacement level. Furthermore—and most importantly—fertility decline stopped in some countries for several years (fertility stall). The so-called fertility stall is challenging for both researchers (as regards theoretical expectations) and policymakers (as regards the important policy implications).

Debate on fertility stalls has (openly) started in 1985 with the World Bank's report entitled "Stalls in the Fertility Decline in Costa Rica, Korea, and Sri Lanka" (Gendell, 1985). Even at the turn of the century, there was still a lack of attention to the stalled fertility topic. In this period, the few existing studies on the topic were based on single-country analyses (Knodel et al., 1988 on Thailand; Srikantan & Balasubramanian, 1989 on India; Aghajanian, 1991 on Iran; Holl et al., 1993 on Costa Rica; De Silva, 1994 on Sri Lanka). The 2000s saw a renewed interest in the issue and concentrated more on multiple-country or regional approach, and especially in Sub-Saharan Africa (e.g., Bongaarts, 2006, 2008; Garenne, 2008; Moultrie et al., 2008; Shapiro & Gebreselassie, 2008; Schoumaker, 2009; Sneeringer, 2009; Machiyama, 2010).

Like many other developing countries, some of those identified as having experienced fertility stalls had also experienced—during a certain period of their demographic transition—a period of decline. The majority of the studies on fertility stalls have either surveyed the cases of stall or examined its potential causes. In addition, Schoumaker (2009) has approached the topic from a methodological point of view, asking whether the cases of fertility stalls identified in earlier studies were "real or spurious". In both cases, there is a need to assist policymakers in the development of policies aimed at helping restart constantly and consistently the transition to lower fertility. Instead of analysing the causes of fertility stalls, this study surveys Sub-Saharan African countries that resumed fertility decline—after stagnation in their fertility—and, identifies and quantifies the principal factors behind this. Understanding the factors affecting fertility in countries that restarted the transition to lower fertility would guide the development of programmes to further the downward trend.

Methodology and preliminary results

The study identifies countries that resumed fertility decline. Meanwhile, the work relies on three general agreements (see Howse, 2015, for more details) to identify a case of fertility stall. First, the study does not count pre-transitional countries—where total fertility rates (TFRs) are higher than 6 children per women[1] according to Shapiro and Gebreselassie (2008)—as cases of stalling. In fact, fertility decline can only stall where a transition has already started. Second, in mid-transition countries, any fertility stall should be subject to a prior decline in fertility. Third, the study does not consider countries where fertility rates are near replacement level—estimated at 2.1 live births during a woman reproductive period (Yusuf et al., 2014)—in identifying cases of stalls. Under these agreements, there is a stall in fertility decline if change during an inter-survey period is equal to or greater than zero while the change in the previous

[1] For countries with more than one DHS, a country is considered as pre-transitional if the average TFR is above 6 and there is no survey reporting a TFR bellow 5

inter-survey period is negative. Subsequently, a country resumes decline in fertility if change during the inter-survey period following the one with the stall is negative.

The study uses all currently (140) available data from Demographic and Health Surveys (DHS) carried out in 41 Sub-Saharan African countries from 1986 to 2018. The focus is on countries that have had at least four rounds of DHSs. This is because a least three inter-survey periods are required to compute changes in TFRs that enable to capture (1) a possible first decline, (2) a stall that may follow, (3) and a situation of resuming fertility decline. Table 1 presents the overall trends in fertility of the countries that comply with the conditions set out. Preliminary survey reveals sixteen cases of resuming fertility decline that occurred in nine countries. These countries are: Benin (from 2006 to 2011-12), Ghana (from 2003 to 2008), Kenya (from 2003 to 2014), Nigeria (from 2008 to 2013), Rwanda (from 2005 to 2014-15), Senegal (from 2012-13 to 2017), Tanzania (from 2004-05 to 2015-16), Zambia (from 2007 2013-14), and in Zimbabwe (from 2010 to 2015). The resuming fertility decline has been running consistently for several inter-survey periods of about five years in Kenya, Rwanda, and Tanzania. In all the other countries, with the exception of Senegal, fertility is rising again. Recent data from the 2016-17 Nigeria Multiple Indicator Cluster Survey (MICS) reported a TFR of 5.8 children per women (NBS & UNICEF, 2017)[2].

The preliminary analysis is performed in two main steps. First, at the macro level, the study presents changes in fertility and a set of variables representing the institutional, socioeconomic and reproductive behaviour (as described in Ezeh et al., 2009). Second, the micro level analysis aims to determine, for each country, the contribution of these variables—their proxy at the micro level—in explaining resuming fertility decline. The 2003 and 2014 Kenya DHS data are used as sample[3]. The dependent variable for the micro level analysis is the occurrence of more than one live birth during the five years prior to the 2014 Kenya DHS. At this stage, binary logistic regression is used. Coefficients obtained from the logistic regression—using the 2014 Kenya DHS—are multiplied by the changes in the distribution of the independent variables between 2003 and 2014. Finally, the products are summed up and this sum is exponentiated to get the change in fertility due to these factors between the period.

Preliminary results from Fig. 1a and Fig. 1b show that the increased demand for FP satisfied by modern methods, the increased demand for FP and the promotion of FP information on media (FP service environment variables) potentially contributed to the resuming fertility decline in the five East and Southern African countries. Concerning the potential contribution of socioeconomic variables, the figures show that more women were educated, in professional employment, leaving seasonal work, and living in households with electricity in all four West African countries when the resuming fertility decline occurred. Of the aspect of reproductive behaviour, the preference for small family size and the decline in childhood mortality seem to count in all nine countries. Increased use of modern contraceptive seems to count more consistently only in all five East and Southern African countries. Finally, results from the multivariate analysis (Table 2) reveal that, between 2003 and 2014, the increase of women with secondary or higher education, desire for small family size, and delay in age at first union are related to fertility decline. The results also confirm that a decline in under-five mortality, a decreased number of women in poor households and seasonal employment contribute to fertility decline. Overall, these characteristics account for a 28% reduction in the odds of having more than one child during the five years preceding the 2014 Kenya DHS and could have therefore counted for the resuming decline in fertility in Kenya

[2] NBS: Nigeria National Bureau of Statistics.

[3] This is just a sample chosen based on the fact that there is a consensus about the genuineness of the stall in Kenya. Under all different criteria and analyses using TFR as their metric, Machiyama (2010) agrees with Schoumaker (2009) that the evidence for fertility stall is compelling only in Kenya.

after the 2003's stall. Analyses including the other countries with resuming fertility decline are expected.

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Appendix

Table 1: Trends in total fertility rates in Sub-Saharan Africa*, DHS 1986-2017/18, (ICF International, 2019)

Country	DHS year	TFR	Change in TFR (%)	Comment
Benin	2017-18	5.7	16.3	stall
Benin	2011-12	4.9	-14.0	resumed fertility decline
Benin	2006	5.7	1.8	stall
Benin	2001	5.6	-6.7	decline
Benin	1996	6		
Cameroon	2011	5.1	2.0	stall
Cameroon	2004	5	4.2	stall
Cameroon	1998	4.8	-17.2	decline
Cameroon	1991	5.8		
Ethiopia	2016	4.6	-4.2	decline
Ethiopia	2011	4.8	-11.1	decline
Ethiopia	2005	5.4	-1.8	decline
Ethiopia	2000	5.5		
Ghana	2014	4.2	5.0	stall
Ghana	2008	4	-9.1	resumed fertility decline
Ghana	2003	4.4	0.0	stall
Ghana	1998	4.4	-15.4	decline
Ghana	1993	5.2	-18.8	decline
Ghana	1988	6.4		
Kenya	2014	3.9	-15.2	resumed fertility decline
Kenya	2008-09	4.6	-6.1	resumed fertility decline
Kenya	2003	4.9	4.3	stall
Kenya	1998	4.7	-13.0	decline
Kenya	1993	5.4	-19.4	decline
Kenya	1989	6.7		
Madagascar	2008-09	4.8	-7.7	decline
Madagascar	2003-04	5.2	-13.3	decline
Madagascar	1997	6	-1.6	decline
Madagascar	1992	6.1		
Malawi	2015-16	4.4	-22.8	decline
Malawi	2010	5.7	-5.0	decline
Malawi	2004	6	-4.8	decline
Malawi	2000	6.3	-6.0	decline
Malawi	1992	6.7		

* Pre-transitional countries include Burkina Faso, Burundi, Chad, Mali, Niger, and Uganda

Table 1 (Cont.)

Country	DHS year	TFR	Change in TFR (%)	Comment
Namibia	2013	3.6	0.0	stall
Namibia	2006-07	3.6	-14.3	decline
Namibia	2000	4.2	-22.2	decline
Namibia	1992	5.4		
Nigeria	2013	5.5	-3.5	resumed fertility decline
Nigeria	2008	5.7	0.0	stall
Nigeria	2003	5.7	-5.0	decline
Nigeria	1990	6		
Rwanda	2014-15	4.2	-8.7	resumed fertility decline
Rwanda	2010	4.6	-16.4	resumed fertility decline
Rwanda	2007-08	5.5	-9.8	resumed fertility decline
Rwanda	2005	6.1	5.2	stall
Rwanda	2000	5.8	-6.5	decline
Rwanda	1992	6.2		
Senegal	2017	4.6	-2.1	resumed fertility decline
Senegal	2016	4.7	-4.1	resumed fertility decline
Senegal	2015	4.9	-2.0	resumed fertility decline
Senegal	2014	5	-5.7	resumed fertility decline
Senegal	2012-13	5.3	6.0	stall
Senegal	2010-11	5	-5.7	decline
Senegal	2005	5.3	-7.0	decline
Senegal	1997	5.7	-5.0	decline
Senegal	1992-93	6	-6.3	decline
Senegal	1986	6.4		
Tanzania	2015-16	5.2	-3.7	resumed fertility decline
Tanzania	2010	5.4	-5.3	resumed fertility decline
Tanzania	2004-05	5.7	1.8	stall
Tanzania	1999	5.6	-3.4	decline
Tanzania	1996	5.8	-6.5	decline
Tanzania	1991-92	6.2		
Zambia	2013-14	5.3	-14.5	resumed fertility decline
Zambia	2007	6.2	5.1	stall
Zambia	2001-02	5.9	-3.3	decline
Zambia	1996	6.1	-6.2	decline
Zambia	1992	6.5		
Zimbabwe	2015	4	-2.4	resumed fertility decline
Zimbabwe	2010-11	4.1	7.9	stall
Zimbabwe	2005-06	3.8	-5.0	decline
Zimbabwe	1999	4	-7.0	decline
Zimbabwe	1994	4.3	-20.4	decline
Zimbabwe	1988	5.4		

Fig. 1a: Total fertility rates in Benin, Ghana, Nigeria, and Senegal (West Africa) by institutional, socioeconomic and reproductive behaviour variables, (ICF International, 2019)

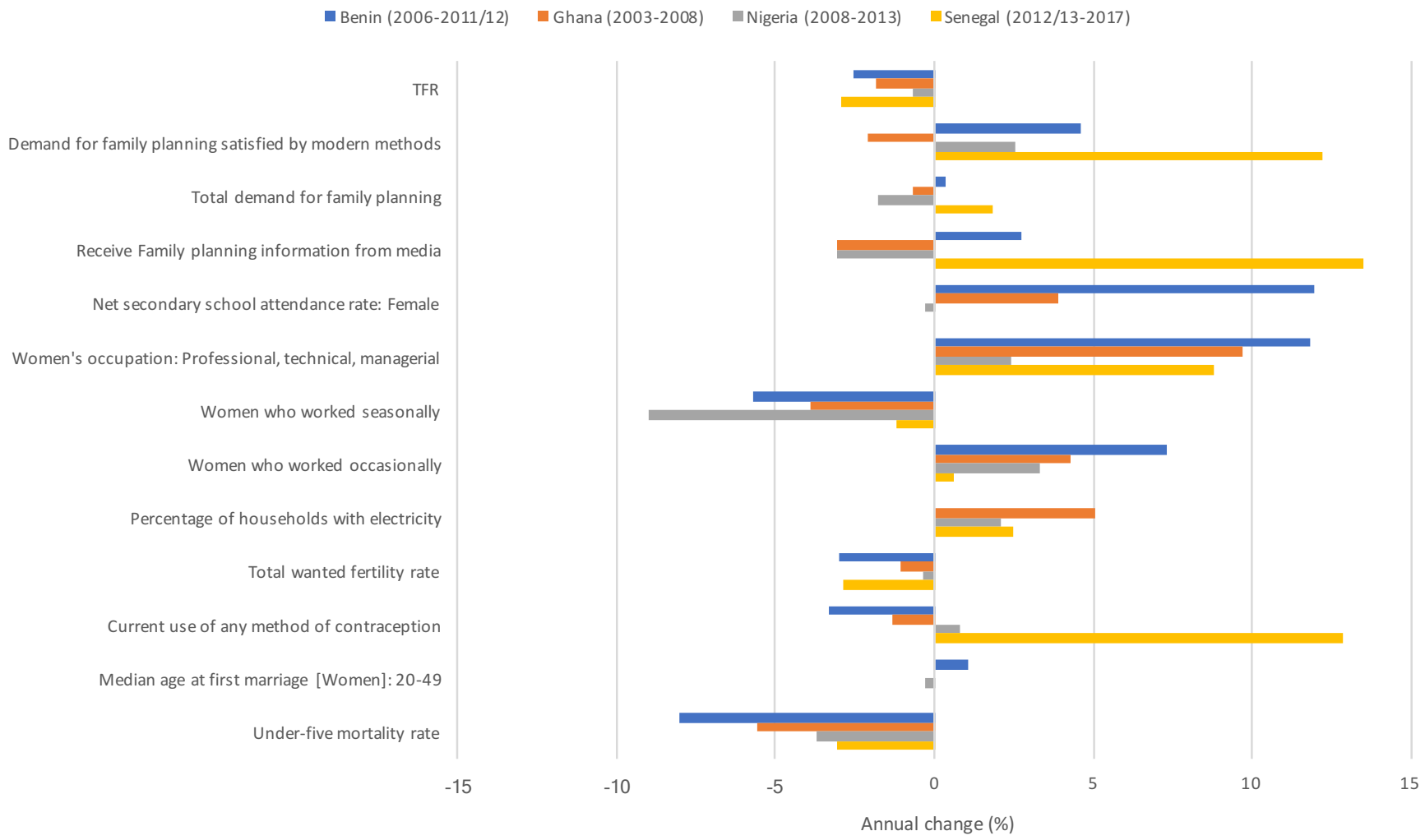

Fig. 1b: Total fertility rates in Kenya, Rwanda, Tanzania, Zambia, and Zimbabwe (East and Southern Africa) by institutional, socioeconomic and reproductive behaviour variables, (ICF International, 2019)

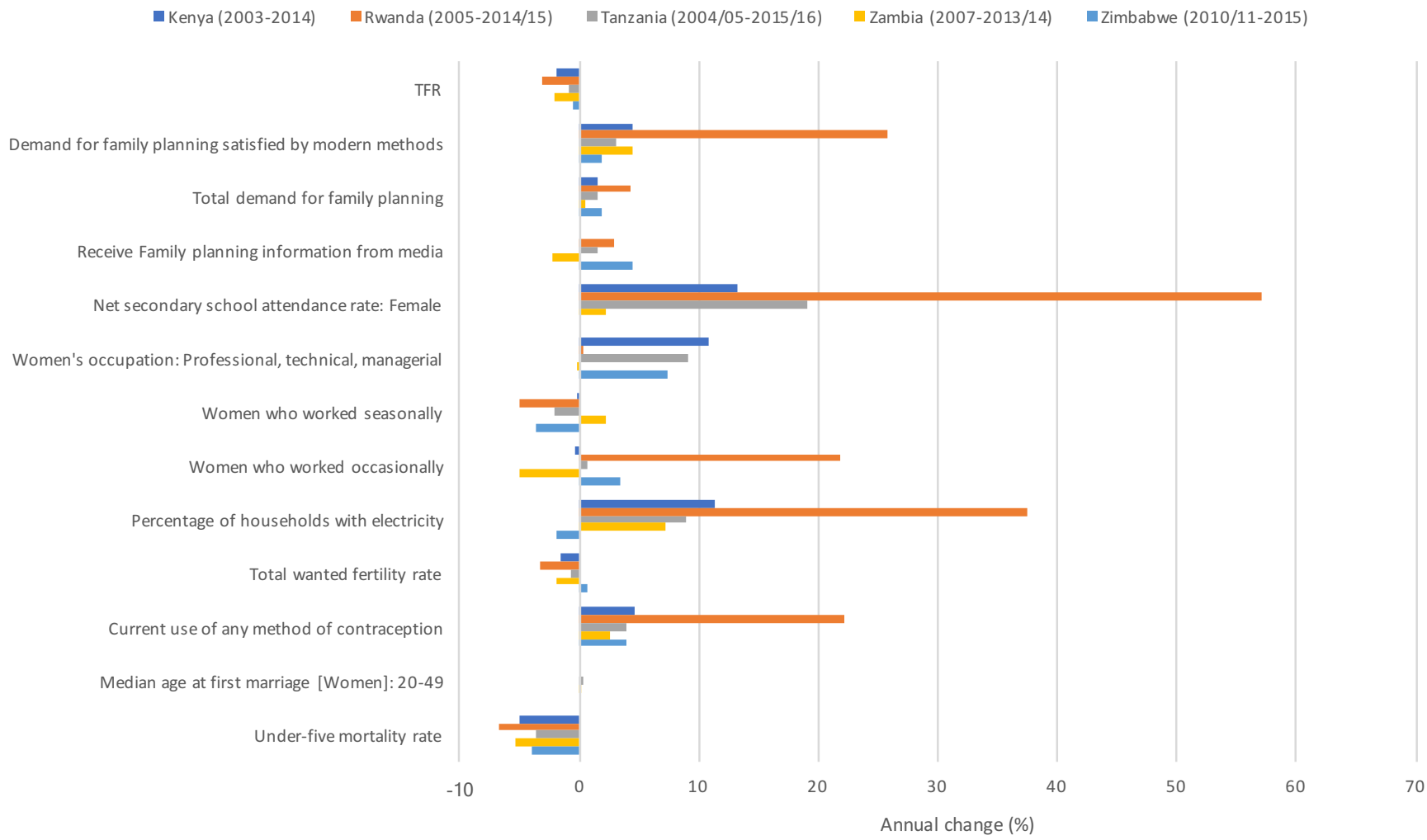

Table 2: Expected change in fertility in Kenya between 2003 and 2014

	Percentages		Change in proportion	Regression model		Products
	2003 DHS	2014 DHS	2003-2014	Last 5 years birth > 1		
				Coefficient	Odds ratio	2003-2014
	(1)	(2)	(3)	(4)	(5)	(6) = (3) * (4)
heard information on FP on media						
no	NA	20.3	NA			
yes	NA	79.7	NA			
education						
no education	12.7	7.0	-0.4477	Ref.		
primary	58.0	50.3	-0.1328			
secondary+	29.3	42.7	0.4563	-0.413	0.66	-0.18826
works as professional/technical/managerial						
no	96.0	90.5	-0.0572			
yes	4.0	9.5	1.3666			
works seasonally						
no	71.8	72.3	0.0071	Ref.		
yes	28.2	27.7	-0.0180	0.200	1.22	-0.00360
household wealth						
not poor	65.4	66.9	0.0236	0.788	2.20	0.01863
poor	34.6	33.1	-0.0446	Ref.		
ideal number of children						
wants >= 4 children	51.6	43.8	-0.1514	Ref.		
wants < 4 children	43.1	54.1	0.2544	-0.175	0.84	-0.04447
non-numeric response	5.3	2.1	-0.6006			
uses modern contraception						
no	77.3	60.9	-0.2120			
yes	22.7	39.1	0.7210			
age at 1st union						
1st union < 18	38.9	33.9	-0.1284	Ref.		
1st union >= 18	61.1	66.1	0.0817	-0.161	0.85	-0.01317
age at 1st birth						
1st birth < 18	33.2	29.9	-0.0991			
1st birth >= 18	66.8	70.1	0.0492			
child death						
no child died	80.1	86.7	0.0826	Ref.		
child died >=1	19.9	13.3	-0.3321	0.281	1.32	-0.09332
sum						-0.32418
exp(sum) = **ratio**						**0.723123509**

Note: Non-significant variables and categories are blank. NA = Not applicable. Ref. = Reference category.