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Descriptive Finding

On the pace of fertility decline in sub-Saharan Africa

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Contents

1	Introduction	1328
2	Comparative fertility decline in the developing world	1328
3	Conclusion	1335
4	Acknowledgments	1335
	References	1336

On the pace of fertility decline in sub-Saharan Africa

David Shapiro¹

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Abstract

BACKGROUND

This descriptive finding examines the comparative pace of fertility decline in sub-Saharan Africa, relative to Asia, Latin America and the Caribbean, and Northern Africa.

OBJECTIVE

We seek to determine if fertility decline has been slower in sub-Saharan Africa than elsewhere in the developing world.

METHODS

United Nations 2017 estimates of national fertility are used in assessing the comparative pace of fertility decline, and the four regions are compared in terms of how far they are into their fertility transition.

RESULTS

The data shows clearly that fertility decline in sub-Saharan Africa, still at a comparatively early stage, has been considerably slower than the earlier declines in Asia, Latin America and the Caribbean, and Northern Africa at comparable stages of the transition, and displays less within-region heterogeneity than the transitions in these other regions.

CONCLUSION

The slower pace of fertility decline in sub-Saharan Africa, in conjunction with the high current fertility levels in the region, means that in the absence of policies seeking to accelerate fertility decline, sub-Saharan Africa will continue to experience rapid population growth that in turn will constrain its development.

CONTRIBUTION

Presentation of data in a novel way (Figures 2–4, and associated calculations) unambiguously demonstrates the slow pace of fertility decline in sub-Saharan Africa compared with other regions of the world.

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1. Introduction

Despite the existence of a number of studies suggesting that fertility transition in sub-Saharan Africa has been slow relative to elsewhere in the developing world, there are apparently some demographers who are not convinced that this is the case. This paper examines the pace of fertility decline in sub-Saharan Africa in comparison with that in other developing regions.

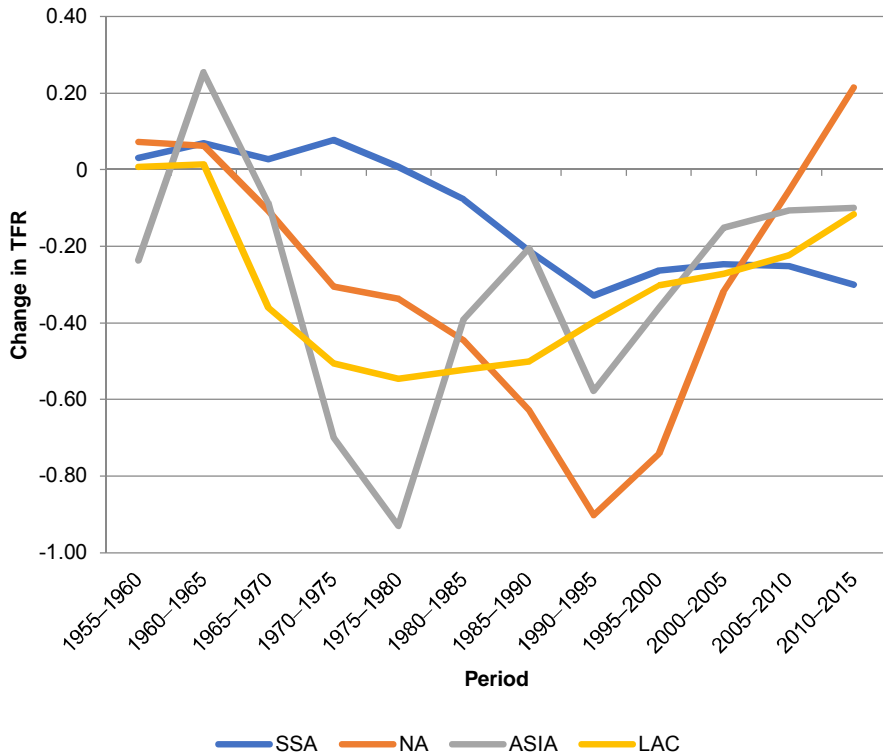
2. Comparative fertility decline in the developing world

There is a fair bit of literature suggesting that fertility transition in sub-Saharan Africa has been comparatively slow relative to other parts of the developing world (Casterline 2001; Bongaarts 2008; Shapiro and Gebreselassie 2008; Bongaarts and Casterline 2013; Shapiro et al. 2013). The Bongaarts and Casterline (2013) piece is especially comprehensive and persuasive in this regard. In this paper, we use more recent fertility data than was used by previous analysts to present a new approach to examining the pace of fertility decline.

To address the question of whether fertility decline in sub-Saharan Africa is slower than elsewhere in the developing world, we use data from the United Nations (2017). This is the most recent and comprehensive set of estimates of fertility in the world. Figure 1 shows changes in total fertility rates (TFRs) for sub-Saharan Africa (SSA), Asia, Latin American and the Caribbean (LAC), and Northern Africa (NA), for the period from 1955 to 2015.

The late onset of fertility decline in sub-Saharan Africa compared to each of the other three regions is evident. Also, the pace of fertility decline in sub-Saharan Africa becomes similar to that in the other three regions only in 1985–1990, when it is close to the pace of decline in Asia, about 20 years after fertility decline emerged elsewhere in the developing world.

Figure 1: Quinquennial changes in total fertility rates, 1955–2015



For the 25-year period after 1985–1990, sub-Saharan Africa had a pace of fertility decline that was initially slower than the declines in other regions, but during the past 10 years, as the pace of fertility decline has diminished in Asia and Latin America and decline has reversed in North Africa, sub-Saharan Africa has become the region with the most rapid pace of fertility decline.

However, it should be noted that the data from the past ten years, with sub-Saharan Africa having the most rapid fertility decline, compares that region in its early stages of transition with Asia and Latin America both at late stages of their transitions, having reached TFRs of slightly above 2 by 2015–2020 (United Nations 2017). Indeed, peak quinquennial decline in the TFR in sub-Saharan Africa is about 0.3, compared to peak declines in earlier years almost twice as large (and for a sustained time) in Latin

America, and even more substantial declines (albeit of shorter duration) in the other two regions.

If fertility transition is considered as a process, then comparing the pace of fertility transition in different regions should be done not in terms of calendar years, as in Figure 1, but rather in terms of where each region is in its unfolding fertility transition. When the analysis is done from this perspective it becomes clear that fertility transition in sub-Saharan Africa has been distinctly slower than the transitions elsewhere in the developing world (cf., Bongaarts and Casterline 2013).

Before looking at the resulting analysis it is useful to consider the timing of peak fertility and of the onset of fertility decline in the four developing world regions that are the focus here. Table 1 shows the relevant data, with the first column of data showing the peak TFR, and the second column identifying the quinquennium within which that peak took place. The third column shows the period within which the TFR had fallen by at least 10% from its peak (as discussed below, realizing this threshold has been used by some researchers to define the onset of fertility decline).

Table 1: Value and timing of peak fertility and timing of a fertility decline of at least 10%, by region

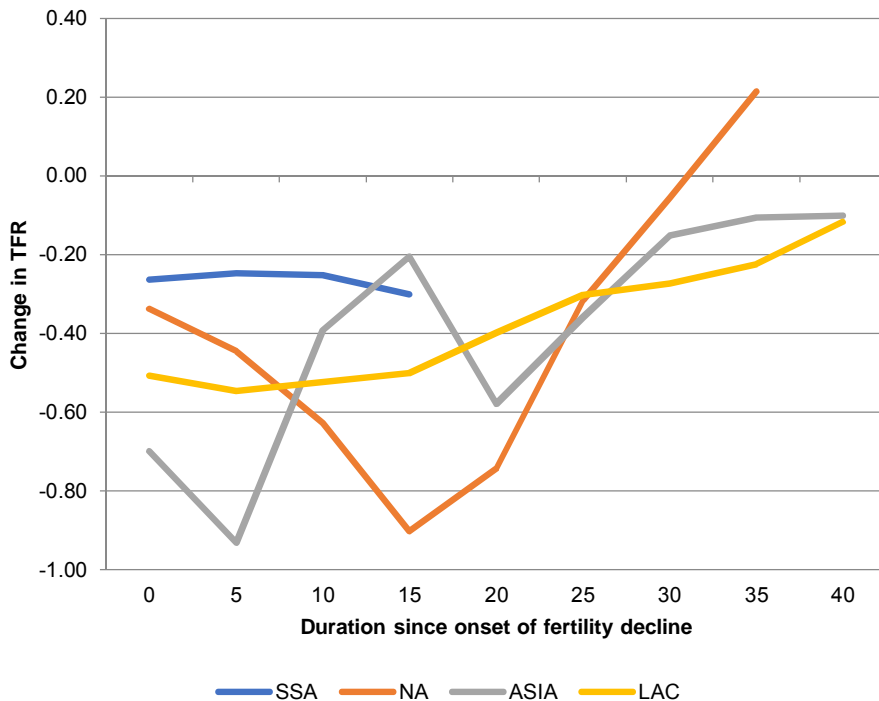
Region	Peak TFR	Peak period	Period with TFR 10% below peak
Sub-Saharan Africa	6.78	1975–1980	1995–2000
Asia	5.81	1960–1965	1970–1975
Latin America/Carib.	5.89	1960–1965	1970–1975
Northern Africa	6.94	1960–1965	1975–1980

Source: United Nations 2017.

Note that while it took 20 years following peak fertility in sub-Saharan Africa before the TFR for the region had declined by 10%, the corresponding interval was only 10 years for both Asia and Latin America and the Caribbean, and 15 years for Northern Africa.

Bryant (2007), in a discussion of determination of the timing of the onset of fertility decline, refers to the Princeton European Fertility Project's 10% rule (Coale and Treadway 1986) for identifying the onset. This rule dates the onset of a fertility decline as having taken place once a country's or region's total fertility rate has fallen by at least 10% from a previous peak. Figure 2 shows TFRs for the four different regions, expressed in terms of the onset of fertility transition, with onset corresponding to the first period in which the TFR had fallen by at least 10% from its peak level. Because of the late onset of fertility decline in sub-Saharan Africa, data for the region is available only up to year 15.

Figure 2: Quinquennial changes in the TFR by region, by duration since onset of fertility decline (10% rule)



It is apparent from the figure that when the fertility declines in regions are compared in terms of when they take place within a region's fertility transition, sub-Saharan Africa is clearly the region with the slowest pace of fertility decline. In only one case, Asia in year 15, is sub-Saharan Africa not the region with the slowest pace of fertility decline.

As an alternative rule for identifying the timing of the onset of fertility decline, a case can be made in favor of treating the period in which peak fertility occurred as the period corresponding to the onset of fertility decline. Indeed, this is the approach used by Casterline (2001) and justified in his Appendix as "a more defensible approach" (p. 45) than the 10% rule. Likewise, Bryant considers this alternative rule to be better than the 10% rule. From this perspective, the criterion of a 10% decline may serve to distinguish a genuine fertility decline from simply small random fluctuations in fertility,

but once that 10% criterion has been met the onset of fertility decline is deemed to be when the peak occurred, rather than when the 10% decline was realized.

In fact, in all four regions the TFR declined monotonically following peak fertility, so there was no short-term reversal from peak fertility as decline proceeded. Given that, at the regional level, decline was continuous from each region's peak fertility, it makes more sense to treat the period in which peak fertility took place as the onset of fertility decline. As already noted, decline from peak fertility to 10% below the peak was slowest in sub-Saharan Africa and most rapid in both Asia and Latin America and the Caribbean.

This latter approach of dating decline from peak fertility corresponds at least in part to how the National Bureau of Economic Research (NBER) dates recessions and recoveries (NBER 2017). The NBER seeks to establish the timing of turning points, and while its statement acknowledges the possibility of a contraction that is a small interruption of an expansion, or an expansion that is a small interruption of a contraction (analogous to stalling in the fertility transition literature), ultimately, they identify a month that is a turning point, not a month that is 10% or $X\%$ different from some previous peak or trough.

Bryant's (2007) analysis that is relevant here, which is focused on the relationship of socioeconomic factors to the timing of the onset of fertility decline, used both alternatives described here, and also a third variant used by Bongaarts (2002), which specifies a 5% decline from peak fertility as indicating the onset of fertility transition (with adjustment in case of a decline by 5% followed by a reversal to less than a 5% decline, but this is irrelevant for the regions that we are examining). Although we have already expressed a strong preference for the peak fertility rule, we have examined the data with this third rule, and it leads to the same basic conclusion: Fertility decline is clearly slower in sub-Saharan Africa than elsewhere in the developing world. Results of this analysis (i.e., a version of Figure 2 using a 5% decline) are available from the first author on request.

Figure 3, like Figure 2, shows quinquennial changes in total fertility rates in relation to the number of years since the onset of fertility decline, but here onset corresponds to the period when peak fertility was realized. Because of the slower decline of fertility from its peak in sub-Saharan Africa compared to elsewhere, the extent to which the region tends to be slower in fertility decline than the other regions is evident for substantially longer, up to 35 years following peak fertility. Notice also that after 30 years of fertility decline following peak fertility, all three other regions show diminishing magnitudes of quinquennial fertility declines as they reach a half-century of fertility transition.

Figure 3: Quinquennial changes in TFR, by region and years since peak fertility

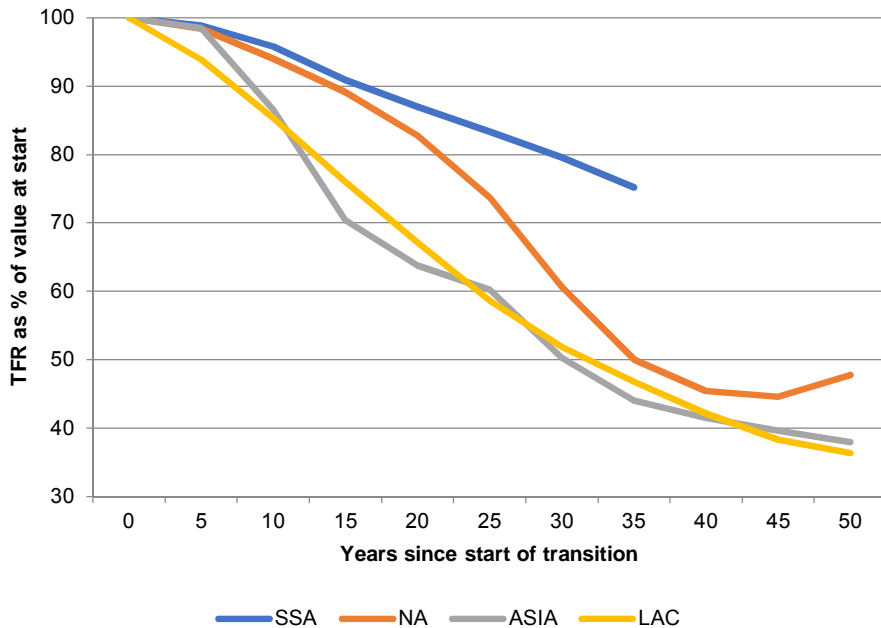


Consider now the cumulative effects of the quinquennial fertility changes that have taken place since the onset of fertility transition. Based on Figure 2, we observe only the first 15 years for sub-Saharan Africa. From years 0–15 following the onset of fertility decline the TFR in sub-Saharan Africa declined by 0.80. This was essentially half of the corresponding declines in Asia and Latin America, and even less of the decline in Northern Africa. In Figure 3 the period of observation for sub-Saharan Africa has more than doubled, to 35 years. During those 35 years the TFR in sub-Saharan Africa declined from 6.78 to 5.10, by 1.68 children. This represents a decline of about 25% from peak fertility. In each of the other three regions the TFR fell from 3.1 to 3.5 children during the first 35 years of fertility transition, representing declines of 50% to 56% of peak fertility.

Figure 4 provides an alternate way of showing the comparative pace of fertility decline, emphasizing relative changes. Using the peak fertility rule, the figure shows the relative declines in fertility as transition proceeds. After 35 years of fertility decline,

sub-Saharan Africa's TFR was at 75% of its peak value. In the three other regions, after 35 years of fertility decline the TFR ranged between 44% and 50% of its peak value.

Figure 4: TFR as percentage of its value at start of transition, by region and duration of transition



From Figures 2, 3, and 4 it is evident that when viewing fertility transition as a process, irrespective of what rule is used to determine its onset, in sub-Saharan Africa that process has been taking place substantially more slowly – about half as slow – than was the case in the other three regions.

One final aspect of fertility transition that we examine is the degree of variability across countries in the pace of fertility decline. Casterline (2001: 26) notes that “the pace of Asian and Latin American transitions is more variable.” That was the case with the 1996 data that he used, and it is still the case with the 2017 data used here. Using the standard deviation to measure variability in fertility change, we find lower variability in Sub-Saharan Africa than the other three regions, both at the start of the transition and 10, 20, 25, and 30 years after the start, and lower variability in sub-Saharan Africa than in Asia and Latin America and the Caribbean at all durations since

the start of the transition. Although the comparison between the regions is not exact because the mean pace of fertility decline differs, the general picture is clearly one of less within-region heterogeneity in sub-Saharan Africa than in other regions, especially Asia. The coefficient of variation, which adjusts for differences in the mean, is not useful here, because negative values of change (i.e., increasing TFR) in some cases render the means close to zero.

We think that the lower level of variability in the transition in sub-Saharan Africa may be related to both a greater degree of cultural homogeneity within the region and to two distinguishing regional characteristics, the importance of the extended family and child fostering. These factors both promote high demand for children, who 'belong' to the clan rather than just to their parents, and alleviate the cost of children to the individual family via fostering and extended-family solidarity (Caldwell, Orubuloya, and Caldwell 1992; Isiugo-Abanihe 1994).

3. Conclusion

We have presented and summarized data in a novel way to demonstrate unambiguously that the pace of fertility decline in sub-Saharan Africa has, to date, been substantially slower than the pace of fertility decline in other regions of the world at a comparable stage of their fertility transition. This is the case regardless of the definition used to identify the start of the fertility transition.

4. Acknowledgments

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