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Descriptive Finding

Extramarital fertility in low- and middle-income countries

John Bongaarts

John Casterline

Contents

Extramarital fertility in low- and middle-income countries

John Bongaarts[1]

John Casterline[2]

Abstract

BACKGROUND
In most societies, childbearing is largely confined to women in formal marital unions, but in a subset of contemporary low-fertility Western societies, extramarital fertility has become common. However, extramarital fertility is often ignored in fertility research in contemporary low- and middle-income countries (LMICs).

OBJECTIVE
To document recent levels, trends, and differentials in extramarital fertility (both premarital and postmarital) in LMICs.

METHODS
We employ Schoumaker's (2013) Stata program tfr2 to calculate two fertility measures from Demographic and Health Surveys in 63 countries: (1) the standard total fertility rate (TFR), which is based on all births in the three years before the survey date, and (2) the marital total fertility rate (MTFR), which is based on all births within marital unions in the three years before the survey date. The percentage of fertility that is extramarital (PEM) is estimated as 100 x (TFR–MTFR)/TFR.

RESULTS
The unweighted average PEM for the most recent surveys in the 63 DHS countries equals 11.3%, with 7.9% premarital and 3.4% postmarital. By far the highest percentage premarital is found in southern Africa (43%) and the lowest in Asia/North Africa (0.9%). Postmarital fertility is most common in sub-Saharan Africa and Latin America.

CONCLUSIONS
Childbearing outside of marriage is an important feature of contemporary reproductive regimes in sub-Saharan Africa and Latin America. By contrast, less than 2% of births are extramarital in most Asian and North African societies.

[1] Population Council, New York, New York, USA. Email: jbongaarts@popcouncil.org.
[2] Ohio State University, Columbus, Ohio, USA.

CONTRIBUTION
Extramarital fertility has social and economic consequences – for women, for their households, and for their children. We estimate, for the first time, the levels, trends, and differentials in both categories (premarital and postmarital) of extramarital fertility in LMICs.

1. Introduction

In most societies, childbearing is largely confined to women in formal unions. In a subset of contemporary low-fertility Western societies, extramarital fertility has become common and is routinely documented (for example, by Eurostat, drawing on various national sources). In contrast, in assessments of levels and trends in fertility in low- and middle-income countries (LMICs), within-union and extramarital fertility are typically not distinguished, notably in the biennial UN World Population Prospects (United Nations 2019) and the Demographic and Health Surveys (DHS) StatCompiler (DHS 2022). Because in many settings the determinants and consequences of extramarital fertility differ from those of within-union fertility, as discussed below, separate treatment of extramarital fertility is in order. This paper documents recent levels, trends, and differentials in extramarital fertility in LMICs as provided by DHS data. Key features of this research are geographic coverage (all major LMIC regions) and the presentation of separate estimates for never-married women and formerly married women (that is, premarital and postmarital fertility). As we discuss below, premarital childbearing is straightforward to estimate with DHS, whereas marital and postmarital childbearing cannot be cleanly distinguished in DHS data. To accomplish the latter, we apply an indirect estimation approach. This is by no means the first investigation of extramarital fertility in LMICs. But many past studies have examined either premarital fertility (Harwood-Lejeune 2001; Clark, Koski, and Smith-Greenaway 2017) or postmarital fertility (John and Adjiwanou 2021), whereas this research considers both. There have been few multi-country studies. Garenne, Tollman, and Kahn (2000), Reniers (2003), Garenne and Zwang (2006), Sennott et al. (2016), and Kuang (2018) are among the numerous single-country studies, with Kuang (2018) a rare study of extramarital fertility in an Asian country. Castro-Martin et al. (2011) present fertility rates by marital status for 13 Latin American countries; their estimates of extramarital fertility do not separate births to never-married (premarital) and formerly married women. LaPlante et al. (2015) and LaPlante, Castro-Martin, and Cortina (2018) are multi-country Latin American studies that simply separate childbearing of women in formal unions from childbearing

of all other women. We have located no existing studies on LMICs that are multi-regional.

The demographic and nondemographic consequences of extramarital fertility in LMICs have been investigated in a large body of research. Premarital fertility is known to affect the timing of entrance into formal marriage, typically accelerating the timing (Hattori and Larsen 2007; Poulin, Beegle, and Xu 2021), although in some settings the dynamics are more complicated (for example, South Africa; Sennott et al. 2016). Premarital births may also affect the stability of subsequent marriages (Odimegwu, Akinyemi, and De Wet 2017). Whether premarital births truncate women's educational attainment has been intensely debated in the literature (Lloyd and Mensch 2008), with the evidence inconclusive. As would be expected, extramarital sexual exposure, and the additional sexual exposure of entering higher-order marriages, increases risk of acquiring HIV (De Walque and Kline 2012). There may also be important negative socioeconomic consequences for children born outside a marital union. This has been confirmed for Latin American societies (e.g., DeRose et al. 2017; Cuesta, Hakovirta, and Jokela 2018). Evidence is more limited for African societies (see Calves 2000). It is a topic deserving of more research.

2. Data and methods

Our analysis focuses on levels and trends in 63 LMICs with a population size above 1 million in 2015 and with at least one DHS since 1990 (excluding ex-Soviet countries). For our analyses, we rely on the most recent survey in each country, except for the trend estimates, which use the first and last available surveys in countries with more than one survey. Based on these inclusion rules, we use 31 surveys in 17 countries in Asia/North Africa, 18 surveys in 10 countries in Latin America/the Caribbean, and 66 surveys in 36 countries in sub-Saharan Africa. In the 52 countries with two surveys, the average years of the first and last surveys equal 1996.2 and 2013.9, respectively. (A list of countries and survey dates is available from the first author.)

In the DHS, women aged 15–49 are asked to report on the date of each live birth, the date of first marriage, and marital status at the time of the survey. The DHS definition of marriage encompasses women who are legally or formally married as well as women in informal but stable unions (consensual unions). What constitutes a consensual union is somewhat subjective and no doubt varies a bit between countries.

The date of first marriage is unambiguous in most societies; there is legal registration and/or a public ceremony. But in a subset of societies, especially in sub-Saharan Africa, dating of a first marriage is complicated by the fact that entrance into marriage is a multistage process (Meekers 1992; Hosegood, McGrath, and Moultrie 2009; Chae 2016).

(The classification of individual births as "premarital" in sub-Saharan African surveys is likely less accurate than in other regions because women differ in the choice of event that signifies transition to marriage. When this is not the date of a civil union or religious ceremony, in all likelihood some women report an earlier event and some a later event, thus yielding offsetting errors that reduce the amount of error in aggregate estimates of the proportion of births that are premarital.)

We employ Schoumaker's (2013) Stata program tfr2 to calculate two fertility measures:

- The standard total fertility rate (TFR) is based on all births occurring in the three years before the survey date. The TFR equals the sum of age-specific fertility rates calculated for each five-year age group as the number of births divided by the number of woman-years of exposure (and multiplied by 5). The numerator includes births to women of all marital statuses, and the denominator includes women of all marital statuses.
- The marital total fertility rate (MTFR) is based on all births within marriage occurring in the three years before the survey date. The MTFR equals the sum of age-specific fertility rates in which the numerator is restricted to births within marriage. As with the TFR, the denominator is based on women of all marital statuses.

Estimation of the TFR follows standard procedures, but estimation of the MTFR is not straightforward because it requires a count of births within marriage. We obtain this count as follows:

Births in the three years before the survey (B) consist of three types: (1) B_m, births to currently married women that occur after the date of first marriage; (2) B_{pre}, births that occur before the date of first marriage or to never-married women; (3) B_{post}, births reported by formerly married women (divorced, separated, or widowed) that occurred after dissolution of the marriage or between marriages:

$$B = B_m + B_{pre} + B_{post}$$

$$B_m = B - B_{pre} - B_{post.}$$

To estimate B_m with this last equation, we therefore need counts of B, B_{pre}, and B_{post}:

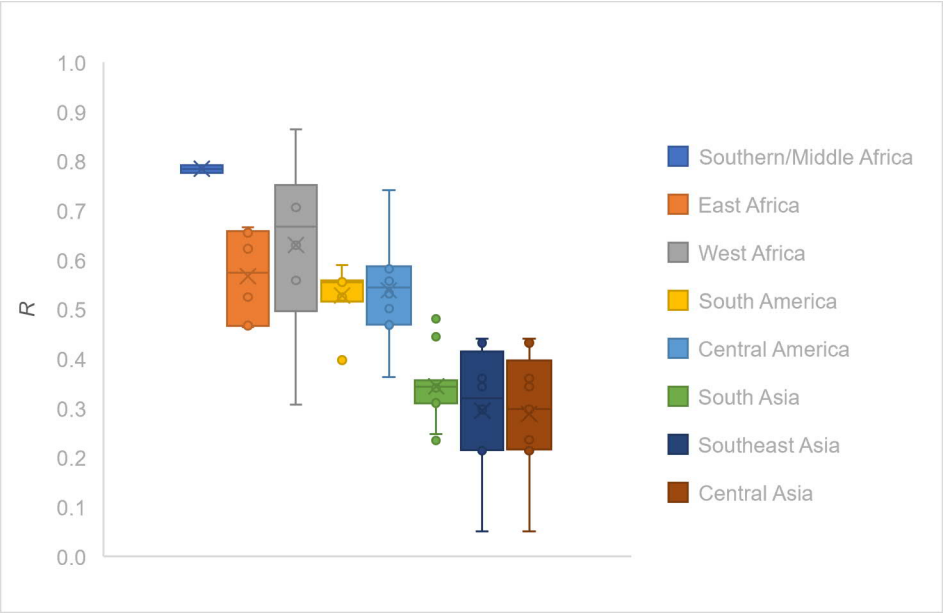
1. B is directly available from a woman's birth history.
2. B_{pre} is easily identified by knowing the date of first marriage and the dates of births, both measured in terms of calendar month. Any birth occurring before the date of marriage or to a never-married woman is classified as premarital. (Some surveys in

Asia and North Africa interviewed only ever-married women, and therefore counts of B_{pre} in these surveys exclude premarital births to never-married women, downwardly biasing the total count of premarital births. However, the decision to exclude never-married women reflects the vigorous enforcement of norms against premarital sex in these societies, and all available evidence indicates very low levels of premarital fertility. The bias is therefore likely to be small.

3. By contrast, B_{post} is not straightforward to calculate from the information in DHS. Women's marital status at the survey is known, but not the date of marital dissolution, a feature of DHS that has frustrated analyses of marital dissolution (Clark and Brauner-Otto 2015; John and Nitsche 2022). Hence whether births to formerly married women at the time of the survey occurred before or after union dissolution is not known. We denote all births in the preceding three years to formerly married women as B_{post}*. Classifying all B_{post}* as extramarital clearly would overestimate the true count of B_{post} because a fraction of these births – possibly a majority – occurred before the marriage dissolved. There are several possible approaches to cope with this measurement limitation. Our straightforward solution is as follows: In a subset of DHS, monthly calendar data allow determination of whether births occurred before or after union dissolution. The same can be accomplished with the World Fertility Surveys (WFS) of the late 1970s and early 1980s because these surveys contained full marriage histories (dates of formation and dissolution of each marriage). Together, DHS and WFS (102 surveys) support survey-by-survey calculation of the ratio $R = B_{post}/B_{post}$* (that is, the fraction of births to formerly married women that occurred outside marriage in the three years before the survey). It should be noted that the data indicate that a substantial proportion (nearly half) of births outside marriage were conceived within marriage, but this does not bear on our analysis. Further, in these 102 surveys, we can calculate the shares of B_{post} that occur after widowhood as opposed to after divorce/separation. We do not make this distinction in the results reported here, in part because of large sampling errors in the share due to widowhood. We can report that on average about one-quarter of B_{post} is contributed by widowed women.

R values for the most recent surveys in each country (among the 102 surveys) are shown in Figure 1. *R* varies widely among countries, but much of this variation is between regions rather than within regions. (In a multivariate regression, year and type of survey explain only 3% of the variance in *R*.) The regional averages are highest in sub-Saharan Africa (0.66) and southern Africa (0.78) and lowest in Asia/North Africa (0.33).

Figure 1: Regional distribution of *R*, the fraction of births to formerly married women that occurred outside marriage



With estimates of *R* in hand for a subset of countries, we calculate regional averages of *R* and apply these to B_{post}* (which is available for all surveys) to obtain B_{post} for each survey. On the basis of these estimates of B_{post} (as well as B_{pre} and *B*), we calculate B_m, the count needed for calculation of the MTFR.

To summarize our results below, we also calculate the absolute and relative level of extramarital fertility:

- The extramarital total fertility rate (ETFR)

$$ETFR = TFR - MTFR$$

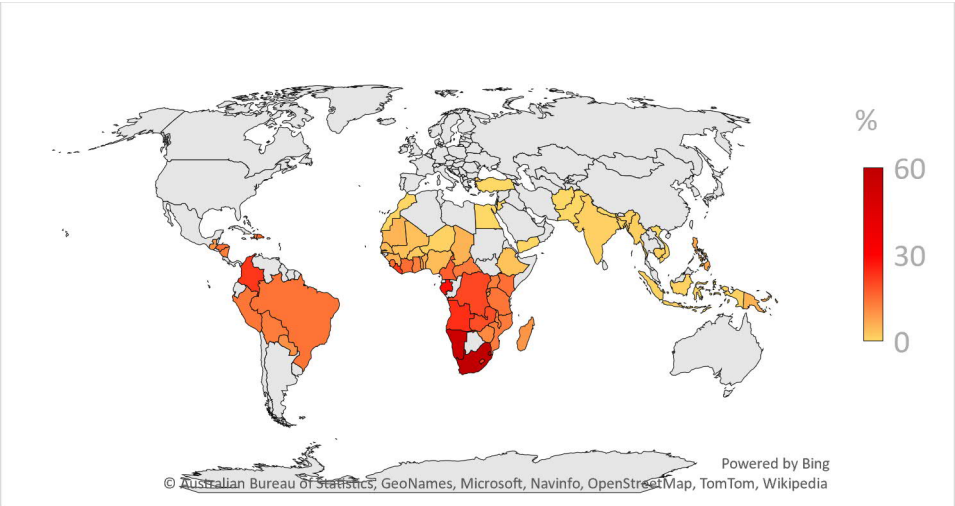
- The percent of births that are extramarital (PEM)

$$PEM = 100\ (ETFR/TFR)$$

3. Results

The map in Figure 2 portrays levels of PEM for 63 LMICs according to the most recent DHS (circa 2013).

Figure 2: Percent of extramarital fertility by country



The unweighted average PEM for these 63 countries is 11.3%. Large regional differences are evident in Figure 2. The lowest values of PEM – less than 2% – are found in Asia and North Africa. (Exceptions are the Philippines and Papua New Guinea with PEMs around 6%.) Intermediate values between 10% and 15% are typical for Latin American countries. PEM values are highest in sub-Saharan Africa, ranging from about 8% in Sahelian West Africa to more than 50% in the southern African countries Swaziland, Namibia, and South Africa, which stand out as having by far the highest PEM among the 63 countries. This accords with previous research focused on this exceptional feature of fertility in this subregion (Garenne, Tollman, and Kahn 2000; Reniers 2003; Garenne and Zwang 2006; Sennott et al. 2016). More generally, throughout sub-Saharan Africa, union dissolution is relatively common from a comparative perspective. Clark and Brauner-Otto (2015) estimate that one-third of first marriages end in divorce within 20 years, and John and Nitsche (2022) estimate that more than 40% are dissolved within 25 years (either through divorce or widowhood). High rates of union dissolution increase the risk of postmarital births.

Table 1 presents the breakdown of PEM into its pre- and postmarital components. On average, the former is substantially larger than the latter (7.9% versus 3.4%). By far the highest premarital percentage is found in southern Africa (43%) and the lowest in Asia/North Africa (0.9%). Postmarital fertility is least common in Asia/North Africa (0.6%) and ranges from 3.4% to 5.5% in the other regions.

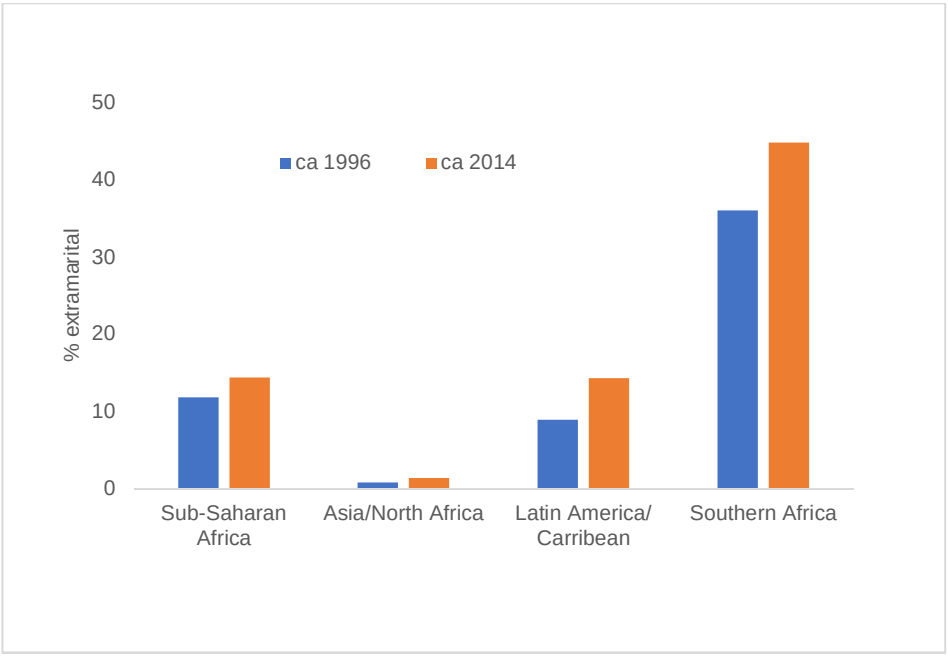
Table 1: Percent of extramarital fertility by region

Region	Premarital %	Postmarital %	Total %
sub-Saharan Africa	11.1	4.2	15.2
Asia/North Africa	0.9	0.6	1.5
Latin America	8.4	5.5	13.9
southern Africa	43.1	4.6	47.6
All	7.9	3.4	11.3

Trends in the percent of extramarital fertility are examined here by comparing values from the first and last available surveys in the 52 countries with at least two surveys. Figure 3 presents regional (unweighted) averages of PEM. The large regional differences discussed above are evident both at the time of the first survey (circa 1996) and at the time of the second survey (circa 2014). In the nearly two decades between the surveys, the PEM rises on all continents, with the largest increases in Latin America and southern Africa, while little change occurred in Asia/North Africa. The average per-decade percentage point rise in PEM ranges from low values of 1.5 in sub-Saharan Africa and 0.3 in North Africa/Asia to higher values of 4.1 in Latin America and 4.3 in southern Africa.

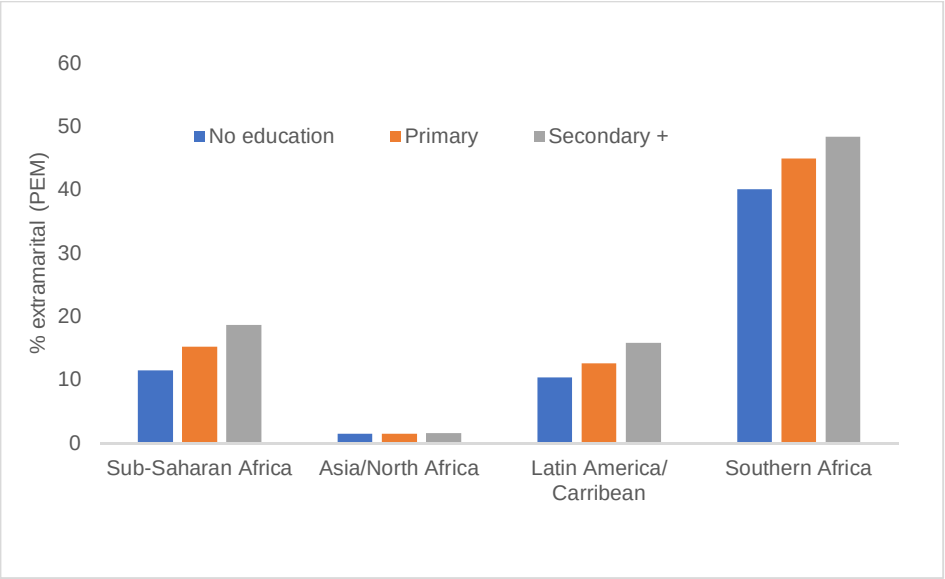
Note that our results for sub-Saharan Africa for premarital fertility are similar to the findings reported by Clark, Koski, and Smith-Greenaway (2017) for 27 countries: on average, a modest increase in premarital fertility, albeit with considerable heterogeneity among countries.

Figure 3: Trend in percent of extramarital fertility by region



Education of women is known to have strong associations with all facets of reproduction. Figure 3 presents (unweighted) averages of PEM by level of education for each of the four regions. (Values of *R* are assumed to be the same for all education groups within each country based on the assumption that *R* depends on country-specific norms and practices.) These results show somewhat higher PEM at higher levels of education in sub-Saharan Africa, Latin America, and southern Africa. This finding could be the result of several factors: (1) higher age at marriage for more educated women, leaving more years at risk of premarital birth; (2) more knowledge and use of contraception among better-educated women, lowering the risk of extramarital birth. These two factors offset one another, leading to approximately equal absolute levels of ETFR for different education groups (data not shown). However, even with the same ETFR for education groups, PEM is still higher among more educated women because TFR is lower, and PEM equals the ratio of ETFR to TFR.

Figure 4: Percent extramarital fertility by level of education and region



4. Conclusion

Extramarital fertility has social and economic consequences – for women, for their households, and for their children – that have been examined by other scholars. Our goals in this brief piece are to document the magnitude of the phenomenon in contemporary LMICs; to note how this magnitude varies across region, across time, and by educational strata; and to highlight implications of the existence of extramarital fertility for conventional fertility analyses.

In excess of 10% of total fertility in both sub-Saharan Africa and Latin America is contributed by unmarried women, and this fraction has grown in recent decades. It is exceptionally high in a set of southern African countries – in excess of 40% of total fertility. Clearly, childbearing outside of marriage is an important feature of contemporary reproductive regimes in these two major regions. By contrast, less than 2% of fertility is extramarital in Asian and North African societies (although premarital fertility is non-negligible in a few Asian countries, such as the Philippines).

Fertility analyses that do not explicitly acknowledge the existence of extramarital fertility can produce misleading results. For example, the common practice of relating

total fertility to contraceptive prevalence (CPR) is unsound if one measure includes extramarital reproductive behavior (TFR) while the other does not (CPR). In addition, extramarital fertility is a function of sexual exposure outside of marriage, and this has direct implications for the design of family planning and reproductive health services.

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