

## Determinants of Fertility Decline in Botswana

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### INTRODUCTION

Botswana exhibits a medium fertility rate (i.e. 4.0-5.0 births per woman). One of the three countries in sub-Saharan Africa (Kenya and Zimbabwe are the other two) reported to be experiencing incipient fertility decline, an indication of the subcontinent's entry into the second phase of the fertility transition after undergoing significant changes in the proximate determinants of fertility over the past few decades. The magnitude and socioeconomic and demographic determinants of the declines in the three countries have become major preoccupations of researchers. This article examines some aspects of these topical issues in relation to fertility trend in Botswana. It also draws attention to the need to develop intellectual capacity for studying these phenomena and provide adequate and reliable information and appropriate tools for monitoring and evaluating demographic trends in the sub-continent.

### Fertility Decline: Evidence

The reported completed family size based on age groups 40-44 and 45-49 shows that fertility has been declining since the past decade. Birth cohort analysis also shows that completed family size has declined from 6.5 children per woman among the 1932-1936 cohort to 6.1 among the 1942-1946 cohort. The fertility trend may also be gleaned from the reproductive performance of birth cohorts at the successive age groups. For instance, 1942-1946 and 1952-1956 cohorts had the same average parity (2.8) when they were 25-29 years old but the younger cohort (1952-1956) had 0.6 children fewer than the older cohort (1942-1946) in the age group 35-39 years: 4.6 versus 5.2.

Figures for the 1947-1951 and 1957-1961 cohorts reflect similar trend in fertility: though the younger cohort had a slightly higher average parity in the age group 20-24 (1.5), its average parity in the age group 30-34 was 3.5 as compared with 4.2 for the older cohort. The reported total fertility rates of 6.1 (1981 census) and 3.7 (1991 census) are also indicative of a decline, the extent of which may have been exaggerated by reporting errors. However, the reported completed family size suggests that fertility has declined by between 6 and 10 per cent or between 0.6 and 0.7 children per woman over the past decade.

Another indication of fertility decline is the lower parity progression ratios at higher orders for the younger birth cohorts (i.e. 1941-1945 and 1946-1950 cohorts) as compared with that of the older cohorts. Analyses based on the Relational Gompertz Model and data from the 1981, 1991 censuses and 1988 BHS 11 yielded TFRs of 6.4 (1981), 5.7 (1988) and 5.1 (1991) (Udjo, 1994). Another set of estimates based on Brass P/F Ratio Method and Brass type methods of comparing period fertility rates with average parities for a hypothetical cohort produced TFR of 7.1 (1981 census) and 5.3 (1991 census) (CSO 1987; Adegboyega 1994). Both sets of estimates show that TFR of 5.2 is a plausible figure for the period preceding the current decade (1990s). However, a TFR of 7.1 for 1981 is on the high side, bearing in mind that in Southern Africa (e.g. Botswana and Lesotho) relatively late marriage, high widowhood and divorce that are not rapidly followed by remarriage and a long post-partum non-susceptible period together with low proportions of childlessness have produced general fertility levels that are on the low side by African standard (Lesthaeghe 1987). A TFR in the neighbourhood of 6.4 or 6.5 is compatible with the nuptiality and child-spacing patterns and levels of sterility and sub-fecundity during the late 1970s and early 1980s. Fertility level therefore appears to have remained fairly constant during the 1970s with TFR of 6.5 (see Report on the Population Census 1971; CSO 1972) and began the downward trend in the late 1970s and the 1980s with the TFR dropping to 5.7 in 1988 and then to 5.2 in 1991. These estimates show that fertility declined by 11 percent between 1981 and 1988 and by 8.8 percent between 1988 and 1991 or a decline of about 19 percent during the past decade, higher than the 10 per cent decline which is now "conventionally accepted as indicating an onset of irreversible fertility transition" (Caldwell et. al. 1992:211).

## **Impact of Labour Migration on The Family Structure**

Mine labour migration from Botswana accounted for one-quarter of the adult males aged 15-34 years from the 1940s to 1970s. And according to Cobbe (1983), one-third of the labour force was employed in South Africa. Together with missionary activities and contacts with European traders, labour migration engendered many changes in the Tswana family. The closely knit cooperative socioeconomic unit was transformed into economic dependency and became judicially and administratively dismembered (Schepara 1947). Among the various factors labour migration was the most ruinous. Though it contributed to the general welfare of the people, it undoubtedly weakened the family structure. It separated husbands and wives for long periods of time, leading to the break-down of domestic control and children were reared in often socially inappropriate environments. Labour migration also gave rise to spread of infectious diseases and laxity of sexual morals. Schapera (1947:129) observed that "It is possible however, in view of the material tabulated above, that even more children would be born were it not for migration".

The disorganization of the family and associated changes in sexual and reproductive behaviour contributed a great deal to the breakdown of the institution of marriage. In the olden days, the young women generally married soon after the initiation ceremony. In other words, they married when they were young and according to Schapera (1971:32), "Extremely few people never married, as marriage offered social status, companionship, economic cooperation and, for men, legal paternity of the children". Pre-marital sexual relations were strongly discouraged and reprehended. If lovers were caught, they were punished. "In no case is premarital pregnancy found to occur without coming under the ban of the community" (Schapera 1933:61).

By the 1970s marriage patterns had changed substantially, due primarily to the impact of labour migration. Marriage was delayed until a later age. Young women had to wait several years after puberty before they were married. The average age of marriage for the men ranged between 25 and 30 years and that of the young women from 19 to 26 years. Some were never married at all though they would prefer to marry and they remained as "Mafetwa- those who have been passed by". It was among these women that the married men often found their concubines (Schapera 1933: 86). Despite delayed marriage, courting relations and love affairs flourished. Decline of polygyny did not allow the single women to marry; proportion of polygamous marriages in Kgatleng district, for example, fell from 43 per cent in 1850 to 30 per cent in 1880 and to 4 per cent in 1932 (Schapera 1971:87). Nobles initiated between 1830 and 1860 married an average of 3.3 women and commoners 1.9 women. Since then such marriages became less and less common and men initiated after 1920 married, on average, 1.1 women (Kuper 1985). The inability to fall back on polygyny as an adaptive mechanism led to many female headed households.

## **Proximate Determinants**

The reported long duration of post-partum abstinence of 13 months as compared, for example, with 4 in Zambia, 6.5 in Tanzania, 4 in Uganda and 7 months in Mali (DHS1993, 1989), is not due largely to the absence of the husband as reported in the literature for the country as a whole. In the 1984 survey, 51 per cent of the women thought that it was customary for a woman to abstain for up to six months while 36 per cent and 13 per cent intimated that the period should customarily be between 7 and 12 months and 12 months or more respectively (C.S.O. 1985:86-89). The median duration of breast-feeding is reported to be 19 months: 18.9 months (BFHS 1 1984) and 18.8 months (BFHS 11 1988), with the result that the general non-susceptible period increased to the level of 16 months (CSO 1988:18), which is well above that of the Western, Central and Eastern African countries with relatively long post-partum taboo.

Traditionally, sub-Sahara African organizational structures encourage optimal exposure period which is adjusted through child-spacing systems or traditional preventive checks. These two variables operate in the opposite direction to influence fertility. In Botswana the general exposure period has been further delimited by labour migration.

Thus, delayed marriage with attendant relatively high age of marriage, most time lost due to widowhood and divorce not immediately followed by remarriage, a long post-partum non-susceptible

period (substantially influenced by abstinence) and fairly low proportion of childlessness (about 5 per cent) have conjointly produced a general fertility level that was on the low side by African standards. The impact of these proximate determinants has been quantified as the number of births per woman. Major effect is exercised by post-partum non-susceptible period which reduces the number of births per woman by 4.84 births followed by contraception with 2.45 births and marriage patterns by 0.74 births ( National Research Council 1993 ).

## **Nuptiality Patterns and Fertility**

As noted above, political, social and economic changes arising out of the capitalist penetration of the Tswana society over the past four or five decades gradually transformed the traditional nuptiality patterns of early and universal marriage into different types of sexual unions and relationships. The family that used to be an all-embracing unit - reproductive, economic and ritual - and the extended family that operated as an economic, emotional and social insurance corporation were dented by the social and economic changes. In Botswana, labour migration triggered off this process and made inroads into the traditional family structure with deep transformations in the nuptiality patterns.

According to the results of the 1991 census, 56 per cent of the females aged 12 years and over had never been married, 24 per cent were married and 11 per cent were living with their partners. The corresponding figures for those aged 15 years and over are 50, 27 and 12 percent. The proportion never married among the females aged 15 years and over increased from 37 per cent in 1971 to 44 per cent in 1981 and rose to 50 per cent in 1991. However, the proportions of never married females of childbearing age (i.e. 15-49 years) were much higher: 44 per cent in 1971, 54 per cent in 1981 and 58 per cent in 1991. Thus, in 1991 childbearing among six out of ten females occurred outside unions.

Similar nuptiality patterns are noted among the males except that the proportions never married are higher among those aged less than 35 years and the proportions married are higher among the older males (i.e.40-49 years). The tendency to live in a non-formalized union is therefore greater among the males aged 30-44 years. The proportion of those cohabiting rises from 18 per cent among 25-29 year-olds to a peak of 24 per cent in the 30-34 age group and then drops to 19 per cent in the 45-49 age group.

Overall, a significant feature of the nuptiality patterns is the high proportion of both men and women of the childbearing age who are either never married or are in socially unrecognized union. Among the major factors that shaped the prevailing nuptiality patterns are abandonment of polygyny, labour migration, formal schooling, and certain legal structures relating to rights to property and credit etc. These have given rise to certain social, economic and moral factors and behavioural choices that are systemic; extending the period of the marriage process, increasing its complexity and determining marriage strategies. One major observation is that it appears women in Botswana are educating themselves out of the marriage market. Gulbrandsen points out that "legitimization of the status of the unmarried mother may stem from the fact that high status women are often in the category of women who remain unmarried mothers... For instance, numerous female teachers remain unmarried, stating explicitly that they are doing so rather than being beaten by a foolish, illiterate husband" (Gulbrandsen 1986; 21).

Data from the Demographic and Health Surveys conducted in sub-Saharan Africa indicate that "high levels of education appear to be associated with greater prevalence of "outside marriages" as well as with more premarital sexual activity" (National Research Council 1993:63). For instance, in Botswana the proportion of women aged 20-24 years who engaged in premarital sex during their teenage years rose from 67 per cent among the uneducated women to 81 and 85 per cent among those who completed primary and secondary/higher education respectively.

As noted earlier on, childbearing outside unions has greatly affected the level of fertility. For instance, if all births were occurring within unions, the TFR would have dropped to 2.6. by now. Notwithstanding, the extant nuptiality patterns have also had some negative influence on the level of fertility. The impact of non-marriage or non-union on the level of fertility may be gleaned from the cross tabulation of reported average parity by age and marital status (see table 2). Average parities by age are lowest among the never married women who are the largest single group in the

childbearing age brackets: 58 per cent of all women in that age range. Average completed family size does not rise above 5 children as compared with between 6 - 7, 5.6 - 6, 6 and 5 - 5.8 among the married, "living together", widowed and divorced/ separated, respectively. The average parity of the married women is larger by nearly one child among the 20-24 and 25-29 year-olds and by about 2 children among the 40-44 and 45-49 year-olds than among their counterparts who are never married.

The current fertility data reflect virtually the same fertility pattern. One half of the births recorded in the 1991 census occurred outside unions (i.e. among never married women); 29 and 19 per cent of them were borne by married women and those living with their partners respectively. Distribution of births by age of mother unearths interesting patterns. Among the never married women, the bulk of the births (80 per cent) occurred to mothers aged below 30 years; 59 per cent were children of girls in their teens and young women in their early twenties. Among the married women, the concentration is in the 25 - 39 years age group (70 per cent) and among those living with their partners 20-34 year-olds contribute the largest number (71 per cent). Childbearing among the never married women is therefore dominated by the youth (15 - 24 years age group).

However, the timing measure - mean age of childbearing (  $m$  ) - suggests that the never married women tend to start childbearing at later ages than those who are married and living with partners. The mean (  $m$  ) of the age specific fertility distribution of the never married women is higher (30.5 years) than that of the latter groups - 28.6 years and 28.5 years respectively. The median ages of childbearing reflect the same pattern - 24 years among the never married women and 21.8 years and 22.7 years among the married and living the groups living together, respectively. The relatively high mean age of childbearing reflects, among other things, postponement of the initiation of childbearing for a number of reasons including uncertainty about entering into stable sexual union. Active sexual life is therefore pursued with some protection against the risk of pregnancy.

The reported TFR for the never married women is lower than that of the other marital groups by 27 per cent: 2.7 and 4.3 children per woman respectively. However, if the TFRs or even the General Fertility Rates (GFRs) are standardized for differences in age composition, level of fertility exhibited by the never married women (TFR of 2.1) is about half that of the women in union (TFR of 4.4) and those "living together" (TFR of 4.5). The corresponding GFRs are 55.5, 118.1 and 118.4 children per 1000 women.

The extent of restriction of family size is reflected in the relatively low probabilities among the never married women of bearing a fifth or a sixth child. There is therefore a greater tendency among women outside unions to limit higher-order births by effective practice of contraception.

The reproductive behaviour is examined further with data on number of children ever borne by parity. All the computed parity progression ratios (PPRs) for the birth cohorts of the married women are higher than that of the never married women. The analysis shows that there is greater tendency among the women outside union to restrict child bearing (figures not shown). This phenomenon is also clearly reflected in the parity progression ratios for the youngest birth cohort (i.e. 1966-1970). For instance, the probability of a married woman bearing a second child has declined from 97 per cent among the 1946-1950 birth cohort to 65 per cent among the 1966-1970 birth cohort; the corresponding figures for the never married women are 92 per cent and 37 per cent. Though the PPRs do not reflect the final fertility of the 20-24 year olds, the greater probability among the never married women to limit family size at higher birth orders is firmly established. Notwithstanding differential under-reporting of births that may affect the levels of fertility noted above, the impact of the reproductive behaviour on the general fertility of the never married women who constitute the bulk of the women of childbearing age on the general level of fertility in the country cannot be overemphasized. The fertility differentials among the marital groups under discussion are suggestive of effects on fertility levels by the prevailing nuptiality patterns - e.g. age at marriage and proportions of women in unions.

Though Singulate Mean Age at Marriage (SMAM) increased from 24.8 years in 1971 to 26.2 years in 1981 and marginally to 27 years in 1991, age at marriage does not seem to have any significant impact on the general level of fertility since the majority of women bear children outside unions. The median age at marriage is higher than the median ages at first sexual intercourse and first birth by 7

and 5 years respectively; a strong indication of the fact that age at marriage is not closely related to childbearing.

Proportion of single females at ages 15-19 years is usually regarded as a good indicator of age at marriage. Table 2 shows that the proportion single has always been higher than the proportion childless at ages 15-19 years, indicating a weak relationship between age at marriage and proportion having children (see Table 1). The same table shows that though there have been significant increases in the proportions single at ages 15-19 and 20-24 years over the past two decades, there has been little change in the number of children ever born. Thus, age at marriage is not a good index of exposure to the risk of childbearing and neither reflects the beginning of exposure in the society under study.

Degree of exposure and frequency of sexual intercourse are therefore two of the crucial underlying factors of fertility differentials noted among the various marital groups. The results of the 1988 BFHS II show that among the 53 per cent of the women interviewed who had never been married, 85 per cent had ever had sexual intercourse; the proportion rises from 64 per cent among the 15-29 year-olds to 98 per cent in the 20-24 age group and 100 per cent among the older women. However, the proportion of women who had sexual intercourse in the month preceding the survey is higher (70 per cent) among the women in unions than among the never married (47 per cent) and those who were formerly in unions (46 per cent). The proportion among the married increases from 65 per cent in the 15-19 age group to 74 per cent among the 45-49 year-olds whereas that of the never married climbs up from 41 per cent among the 15-19 year-olds to a peak of between 57-59 per cent in the middle of the age range and then drops to 37 per cent in the oldest age group (45-49 years). The never married therefore are comparatively less sexually active than the other marital groups and variations in degree of exposure to the risk of childbearing among them may be inferred from the survey results though we are not unaware of the limitation of this type of information.

According to BFHS II results, 27 per cent of the never married as compared with 32 and 29 per cent of the married women and those formerly in unions, respectively were using family planning methods. Nearly all the never married women were using modern methods: seven out of ten were using the pill while the majority of the remainders were using either IUD or injection. Contraceptive prevalence rates are higher among the young never married women (i.e. 20-24, 25-29 and 30-34 year-olds) than among their married counterparts. The older women exhibit the opposite pattern. The BFHS II results suggest a greater tendency among the young unmarried women to use modern contraceptives to avoid becoming pregnant for a number of reasons including uncertainty regarding marriage and/ or stable unions, opportunities for schooling and employment while the older married women use them to restrict family size. The relatively low prevalence rates among the older never married women may be partly due to lack of exposure. In fact, the reason given during the interview by the highest proportion of non-pregnant women who were not using contraceptives method and who would be unhappy if they became pregnant was "infrequent sex".

The contraceptive patterns have the greatest effect in the middle age group (i.e. 20-39 years); the years that childbearing is at its peak. Bearing in mind that 58 per cent of the women of the childbearing ages are never married and 54 per cent of them are aged 20-39 years, nuptiality patterns and the level of contraceptive use among the never married have the greatest inhibiting-fertility effect. The increasing proportion of young unmarried mothers over the past two decades and relatively high contraceptive prevalence rates among them, account in large part for the comparatively low levels of fertility exhibited by them. This changed reproductive behaviour is no doubt a major determinant of the fertility decline in the country; a classic example of effective control of fertility outside marriage.

## **Development and Fertility Change**

The impact of economic development is manifested in various aspects of life. Per capita GDP increased by seven times since independence, rising from 578 Pula in 1966 to 4,115 Pula in 1988/1989 (NDP7: 13). Per capita GNP nearly quadrupled between 1980 and 1992, increasing from US \$792 to US \$2,790 at an annual growth rate of 6.1 per cent (UNDP and World Bank 1989, World Bank 1994), the highest in Africa besides Gabon.

Since the attainment of political independence, the government has been investing millions of pula a year in providing infrastructural facilities such as roads, electricity, water, telecommunications, sanitation, transport, education and health. For example, in 1991, the proportion of females aged five years and over who had "left school" increased from 22 per cent in 1971 to 35 and 41 per cent in 1981 and 1991 respectively. The proportion of females completing secondary education increased from 8 per cent in 1971 to 23 per cent in 1991.

There have also been sharp increases in the labour force participation rates over the past decade. The age specific activity rates increased during the same period with the middle segment of the childbearing age range exhibiting the highest rates: 54, 60, 56 and 53 per cent for the women aged 20-24, 25-29, 30-34 and 35-39 respectively - an age range where childbearing is at its apogee.

A sizeable proportion of women are still employed in the professional and semi-professional and technical occupations. According to the 1991 census results, 40 and 66 per cent respectively of these occupational groups were women. The socioeconomic development has been accompanied by shifts of women in occupational groups with little motivation to groups with strong motivation for family limitation. It is important to note that it is the shift in the occupational structure and not the increase in income that motivates a reduction of fertility. Motivation for family limitation is much stronger among working women than among the unemployed. Opportunities for women to work either in family enterprise or outside the home are likely to have contributed significantly to the fertility decline. The dramatic increase in other infrastructure services such as access to potable water, health facilities in the rural areas, tarred roads and telephones has directly or indirectly made substantial contribution to the creation of conditions for fertility decline in the country.

In addition to the provision of infrastructural facilities, the government also adopted various measures that have facilitated the achievement of individual demographic goals though it does not have an explicit population policy at the moment. Botswana's family planning programme is rated as the strongest in Africa and one of the strong programmes in developing countries, being ranked eighth after China, Republic of Korea, Taiwan, Thailand, Sri Lanka, Indonesia and Mexico (Ross et al. 1992:80). The second half of the decade witnessed an intensification of training of health and family planning personnel, development of family planning guidelines and service standards and manuals for family planning etc (see CSO 1984; 1988). It is therefore not surprising that significant incipient decline in fertility began in the 1980s.

The MCH/FP programme made a substantial contribution to the fertility decline. It assisted in facilitating the changes in the reproductive behaviour by engendering a significant shift from traditional to modern methods. Proportion of all women who ever used at least one modern method increased from 34 per cent in 1984 to 54 per cent in 1988; the corresponding figures for women in unions are 37 and 60 per cent. During the same period the proportion of women currently using modern methods rose from 16 per cent to 29 per cent.

## **DISCUSSION AND CONCLUSION**

It is quite evident from history that fertility decline is a matter of motivation.

The incipient fertility decline in Botswana, Zimbabwe and Kenya would not have occurred without some fairly reasonable levels of economic infrastructure stocks including that of health and education. The nature of the political, economic and social changes that these two countries have undergone, especially during the colonial period, played a major role in preparing the ground for the decline in fertility. Profound changes in the traditional nuptiality patterns and subsequent social and/or economic developments since the 1970s have been the principal causes of fertility decline in the country. The expansion of MCH/FP services was timely and the programme provided the highly motivated female populace with the new technology.

Botswana's experience shows that a firm economic base that provides a sustainably adequate standard of living for the people and a well organized family planning programme can, to a large extent, jointly narrow the gap between fertility and mortality and establish a greater stability in population growth. But we must not lose sight of the Asian experience which underscores the fact that

different mix of factors triggers off and sustains fertility decline in different socioeconomic contexts ( Leete and Alam 1993). These experiences are worth noting by policy-makers and government programmers.

**Table 3: Mean Number of Children Ever Born By Age and Marital Status: Botswana**

Age Group	Total	Married	Living Together	Never Married	Divorced Separated	Widowed
12-14	-	0.04	0.09	-	0.08	0.09
15-19	0.18	0.58	0.68	0.15	0.62	0.41
20-24	1.12	1.70	1.48	0.95	1.89	2.00
25-29	2.27	2.78	2.50	1.89	3.02	4.12
30-34	3.49	3.93	3.67	2.90	3.72	4.65
35-39	4.60	5.10	4.72	3.76	4.62	5.25
40-44	5.56	6.09	5.64	4.45	5.26	5.99
45-49	6.05	6.61	6.01	4.87	5.55	6.26
50-54	6.28	6.88	6.17	4.98	5.82	6.35
55-59	6.35	7.01	6.00	4.88	5.60	6.45
60-64	6.11	6.77	5.17	4.62	5.54	6.19
65 +	5.36	6.19	5.08	3.60	4.09	5.46

Source ; 1991 Population and Housing Census , Administrative and Technical

**Table 4 : Proportion Never Married, Children Ever Born(CEB) and Proportion Childless, Women Aged 15-19 and 20-24 Years : Botswana 1971-1991.**

Year	Never Married		CEB		Childless	
	15-19	20-24	15-19	20-24	15-19	20-24
1971	87	56	0.1	1.0	77.1	28.8
1981	93	69	0.2	1.2	77.9	23.6
1988	94	70	0.3	1.2	76.5	25.4
1991	94	72	0.2	1.0	81.0	29.3

Sources: 1971, 1981, 1991 censuses and 1988 BFHS 11

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