On postponement and birth intervals?

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Abstract

Much of the literature on fertility transition presumes that women birth control is practiced either to limit family size or to space births. This paper argues that women also use contraception to postpone pregnancy. Postponement is not synonymous with spacing. It arises when women delay their next birth for indefinite periods for reasons unrelated to the age of their youngest child, but without deciding not to have any more children. Postponement has a distinctive impact on the shape of birth interval distributions that differs from those of family size limitation, birth spacing, or a mixture of the two behaviours. Some populations, such as that in South Africa, have developed fertility regimes characterized by birth intervals far longer than can be accounted for by birth spacing. Postponement of further childbearing that eventually becomes permanent may be an important driver of the transition to lower fertility in sub-Saharan Africa.

The main immediate motivation for using contraception is obvious: it is to avoid pregnancy, or at least to reduce the risk of conception associated with sexual intercourse. In other words, contraception is used for birth control. The reasons why women and their partners may wish to avoid pregnancy and childbearing are many and varied. However, much of the demographic literature on fertility transition classifies motives for birth control into two mutually exclusive and exhaustive theoretical categories – the limitation of family size and the spacing of births. This paper suggests that a third important motive exists for using contraception. It is to postpone or delay pregnancy and giving birth. Birth postponement is not synonymous with birth spacing. It is conceptually distinct and has a different impact on birth interval distributions. Fertility regimes characterized by very long birth intervals cannot arise from spacing but can only be explained by widespread postponement of births achieved by contraceptive and other means. Postponement can have a substantial impact on aggregate fertility. In particular, it may be an important driver of fertility decline in Africa.

The arguments just summarized are developed in successive sections of the paper. The first of these critically reviews the literature on fertility intentions and motivations for contraceptive use. It argues that the substantive, measurement, and programmatic concerns of demography have tended to direct researchers' attention away from careful consideration of reasons for practicing birth control other than family size limitation. While the importance of distinguishing postponement of births from spacing of births has been pointed out before, it has not become part of the commonplace wisdom of everyone studying fertility transition.

The second substantive section of the paper considers birth interval distributions. It argues that the impact of contraceptive use on the duration-specific hazard of giving birth differs depending on whether contraception is being used for stopping, spacing, or postponing births. In statistical modelling of birth intervals, one can distinguish between these three motives for regulating fertility by examining whether (and how) the determinants of the propensity to adopt birth control interact with time since the previous birth.

The third section of the paper makes the case that postponement of births is not just a distinct theoretical concept from stopping and spacing, but important. It can impact on the fertility of large populations. This is argued with reference to South Africa. The transition to moderately low fertility among African women in the country is accounted for largely by the development over several decades of a pattern of extraordinarily long birth intervals. Women (and their partners) use contraception for far longer than can be explained by a desire to space

their births, yet many of them eventually have another child. In other words, they are postponing births for extended periods. Historical, sociological, and institutional reasons are invoked to explain why this pattern is observed in South Africa.

Prevention, spacing and postponement of births

The terms birth control and family planning are often used as synonyms. However, family planning has been defined as "conscious effort of couples or individuals to control the number and spacing of births" (Pressat 1985). Thus, as the dictionary from which this definition is taken emphasizes, family planning may involve proceptive as well as contraceptive measures. This paper makes little use of the term. It focuses on contraception and on birth control, which may be achieved by means of not only contraception but also induced abortion or abstinence from penetrative sex. What is of relevance about Pressat's definition of family planning is that it encapsulates the idea that only two reasons for birth control exist: family size limitation and birth spacing. It asserts that contraceptive users can be classified into two mutually exclusive and exhaustive groups: those who have decided that they do not want to have any more children (or perhaps any children) and those who do want more children, but do not want them yet. These two groups are often termed "stoppers" (or "limiters") and "spacers". In some formulations, moreover, not just contraceptive users but all women other than limiters are placed in the residual category of spacers. For example, Bongaarts declares that:

> women who want to stop children will be referred to as "limiters" and those who have not yet achieved their desired family size as "spacers" (Women who want more children typically practice behaviors such as breastfeeding, postpartum abstinence or contraception to space children at intervals of around three years, rather than the biologically feasible interval of one year). (Bongaarts 1992:103)

An important duality or ambiguity exists in such conceptualizations of stopping and spacing that is seldom made explicit in the demographic literature. On the one hand, stopping and spacing represent fertility outcomes at either the individual or aggregate level. On the other hand, they are motivations for, or strategies of, birth control.[1] The demographic literature tends to assume that one can infer the intention to control births from fertility outcomes – if people are limiting their family sizes or spacing births, it is because this is their intention. This is a particularly appealing line of argument for those studying historical populations that are no longer available for interview. It faces the objection that fertility

patterns may be shaped by aspects of family life other than reproductive preferences. Lengthy birth intervals might be the by-product of prolonged breastfeeding intended to benefit the health of young children. Equally, women may stop childbearing at low parities not because they have achieved their desired family size but because of widowhood or divorce. Nevertheless, although the other proximate determinants continue to influence fertility, once contraceptive use becomes widespread it becomes the dominant influence on aggregate fertility patterns. Contraception is used to prevent conception either permanently or temporarily and its effect on patterns of family building reflects preferences.[2]

Fertility preferences and intentions are causally intermediary to the socioeconomic and the proximate determinants of fertility. Preferences are the motivational mechanism by which women's circumstances and history act on their reproductive behaviour. Thus, stopping, spacing and, we argue, postponement constitute a set of medial determinants of fertility. Bongaarts and Potter (1983) argued that distal factors can *only* influence fertility if they produce change in one or more of a limited set of proximate behaviours. We suggest that distal factors *only* influence contraception and induced abortion via a limited set of medial birth control strategies.

The study of fertility transition is one of the central concerns of demography. Key issues include how to identify the onset of transition, how to interpret the transition, and how to promote its occurrence. Henry's (1961) distinction between natural fertility populations and those practicing parity-specific birth control has been extraordinarily influential on subsequent efforts to advance understanding of these issues. The importance of the distinction was boosted further by the development of Coale's indices of fertility and the central role they played in Princeton University's European Fertility Project (Coale and Watkins 1986). First, focusing on parity-specific birth control provided the basis of a way of detecting the onset of fertility transition from historical data. Second, it led quickly to the conclusion that fertility transition results from an innovatory behaviour that first appeared in post-revolutionary France, rather than from the adaption of a pre-existing tradition of fertility regulation to new circumstances. Third, identification of fertility transition with parity-specific family limitation suggests that the former might be brought about by providing access to effective methods of contraception – that supply can create its own demand. This view gained force in the early 1960s from the empirical finding that, as in Western populations, most of the initial demand

for contraception in Eastern and Southern Asia and in Latin America was from couples who wished to limit the size of their families.

Of course, it has always been recognised that contraception is used for purposes other than parity-specific family size limitation. Those studying Western populations in which contraception is well established have long been interested in the impact of contraceptive use on birth spacing (e.g. Whelpton 1964). Moreover, Nigerian data from one of the earliest surveys of motivations for birth control in sub-Saharan Africa showed that "the vast majority of Ibadan women contraceptors are not using contraception for 'family planning', as the term is ordinarily defined" (Ware 1976:482), which is to say to limit family size. Instead, contraception was being used largely to support traditional patterns of birth spacing, to avoid childbearing outside stable unions, or because women felt that they were too old or too unwell to continue childbearing. Despite this recognition, the central concern of demography with the measurement and explanation of the transition to low fertility has focused attention on family size limitation as the primary motivation for using contraception. As Santow (1995) points out, this is partly because diagnosis of fertility control by comparison with a natural standard has proved productive, whereas inferring spacing behaviour from data is difficult (though see the recent work of van Bavel (2004) and Alter (2007)). Thus, as she concisely states with reference primarily to the Princeton European Fertility Project, "once control became indistinguishable from limitation and was defined in terms of parity dependence, the absence of parity dependence came to be equated with the absence of contraception" (Santow 1995:23). In retrospect, it is clear that this equation has distorted, as well as advanced, understanding of the reasons for contraceptive use and its effects on fertility.

Consider first family limitation. The concept itself is somewhat ambiguous. The demographic dictionary consulted previously follows Henry's lead and defines family limitation as "deliberate restriction of the number of children born to couples who have reached a certain family size or parity" (Pressat 1985). Thus, it is assumed that all stoppers wish to stop childbearing because they have achieved a particular family size. This is not necessarily the case: it is fallacious to assume that intentional stopping can occur only after the onset of the fertility transition. Even in pre-transitional populations where parity-specific family limitation is unknown, women may attempt to stop childbearing irrespective of the number (and sex composition) of their children because of their age, perhaps believing that they are too old to bear children safely (Bledsoe, Banja and Hill 1998); because they have entered a stage of their

life cycle in which childbearing is inappropriate, perhaps becoming a grandmother (Tan 1983; Ware 1976); or because they have been widowed or divorced. However, the literature on fertility transition often continues to see family size limitation as synonymous with parity-specific reductions in fertility (e.g. van de Walle 1992).

Second, the distinction between family limitation and birth spacing is far from clear cut. Unless they have opted for contraceptive sterilization, both stoppers and spacers may change their mind in response to a change in their family or socioeconomic circumstances or simply with the passage of time. The distinction between limitation and spacing is also ambiguous because some apparent spacers might be delaying successive pregnancies in order to achieve their desired family size. This has been termed master schedule spacing (Bongaarts and Potter 1983).[3] Moreover, chance and the decline of fecundity with age may frustrate the intentions of master schedule spacers just as contraceptive failure may frustrate those of stoppers. Individuals' intentions are not always realized. Thus, even to the extent that the two motivations can be distinguished in the context of questions asked in a single-round survey, it is unclear that they represent a characteristic of individuals and couples that endures over time.

The way in which contraception is used is shaped in part by the methods available. In some Asian countries, government family planning programmes have focused almost entirely on contraceptive sterilization and this is the only modern means of controlling fertility that is widely available. Women who opt for it are perforce stoppers. It may be that the services provided reflect the preferences of the population, but they are also likely to have shaped them. On the other hand, the contraceptive confidence hypothesis states that women who lack access to reliable methods of contraception may space out their births in order to minimize the risk of overshooting their desired family size by having one or more accidental births (Keyfitz and Caswell 2005:424; Ni Bhrolcháin 1988; Santow 1995). In contrast, women who are confident that they can avoid becoming pregnant accidentally are more likely to want to have all their intended births within a restricted part of their reproductive lifespan. Thus, the uncertainty involved in reproductive biology and contraceptive failure does more than introduce discrepancies between intentions and outcomes. In addition, variation between contexts in the extent of this uncertainty affects which family building and birth control strategies are adopted in the first place. Moreover, the complexity of the various considerations involved in decisions about childbearing and uncertainty of the future may mean that women find it difficult to spell out to themselves their own rationale for using contraception, further

increasing the ambiguity of the distinction between birth control intended for family limitation and for birth spacing. As Cleland and Rutstein suggest: "postponement and limitation constitute a motivational continuum, rather than a sharp dichotomy, with considerable change along the continuum over time". (Cleland and Rutstein 1986:85)

Third, the theoretical and practical importance accorded to parity-specific family size limitation in the demographic literature has tended to distract attention from the careful conceptualization and investigation of other motives for using contraception. It is not only in Pressat's dictionary and by Bongaarts (1992) that all contraceptive use by women who want more children is assumed, or even defined, to fall in the residual category of birth spacing. For example, Okun (1995) states that "spacing behaviour refers to deliberate fertility control that is independent of parity" and this definition is adopted by Hionidou (1998). In other words, all parity-specific birth control is limiting, all other birth control is spacing. Thus, historical demography, in particular, often treats all contraceptive use intended to delay the next birth as use intended to space births.

Women space their births for a range of reasons. They may be concerned about the impact of short birth intervals on their own health and/or that of their children. More specifically, they may wish to avoid becoming pregnant while they are still breastfeeding their youngest child. They may wish to avoid the increased domestic workload associated with caring for more than one very young child at a time, especially if this conflicts with other activities. Alternatively, women may be concerned to avoid social censure for engaging in sex post-partum that leads to "disgustingly" short birth intervals. What all these motives for birth spacing have in common is that they imply that women's likelihood of practising birth control by contraceptive or other means, and therefore of conceiving, is related to the age of their youngest surviving child.

In addition, and centrally to the argument of this paper, like the Yoruba discussed by Ware (1976), women may postpone becoming pregnant for reasons that are unrelated to the age of their youngest child, for example because they are faced with inadequate housing, or a drop in their income, or because their marriage is in difficulties. To classify such women as spacers is inappropriate. The concept of spacing implies a concern to control the length of the birth interval. If the motivation for using contraception is unrelated to the length of the interval, it is misleading to describe the behaviour as spacing. Second, single, childless women who are contracepting are almost certainly doing so to postpone their first birth, but the only

interval they could possibly be considered to be spacing is that between their own birth and that of their first child. Third, many women who are using contraception may not have decided, or even considered, whether or not they want to bear (more) children in the future. They may only have decided that they do not want to become pregnant for the moment. Faced with an uncertain future, some women and couples have uncertain fertility intentions (Morgan 1981, 1982). In other words, some postponers are postponing not just the birth of their next child but the decision as to whether or not to have another child at all. As Ryder puts it:

> Respondents begin an interval with a decision to prevent the next pregnancy by using contraception; they may or may not have a clear intention to have another baby at some time in the future, and in any event such an intention can readily be changed, in the light of developing circumstances, provided they continue to use contraception successfully. (Ryder 1985:201-2)

Given the fluidity of intentions that Ryder points out, it is likely that some women initiate contraceptive use primarily for spacing reasons but, as this consideration becomes less pertinent, seamlessly develop into women who are delaying their next birth for other reasons.

Writing about the same time as Ryder, Lightbourne (1985) presented data from World Fertility Survey studies in a number of countries that reveal that, even after birth intervals of 5 to 10 years, many respondents still say that they want to postpone their next birth, rather than that they either want to stop childbearing or have another child soon. Arguing against the sceptical view that these figures are evidence of a desire for further childbearing among infecund women, he suggests that:

> the findings are more credible if one dispenses with terms such as 'desired spacing interval', which presupposes a degree of planning. A more appealing view is to speculate that they reflect a vague and weak desire to have additional children, coupled with a stronger motivation to avoid having one in the present. (Lightbourne 1985:176-7)

While many women who use contraception for postponement of their next birth will eventually bear another child, the "vague and weak desire to have additional children" of other women will never overcome the more pressing reasons that they have for putting this off. Instead, they will eventually decide that they want no more children or have that decision made for them by their advancing age. Such women have been termed "permanent postponers" (Lightbourne 1985).

Those writing on contemporary fertility in Western societies often use terms such as delaying births, postponement, or even perpetual postponement (e.g. Berrington 2004). However, research on populations undergoing fertility transition still largely ignores these insights from the 1980s literature. Unlike historical demographers, those interested in fertility

in the contemporary developing world can ask women and their partners about their fertility intentions. However, often they do so in a way that is predisposed to reinforce conventional wisdom. Many fertility surveys in the developing world, such as those conducted by the Demographic and Health Surveys (DHS) programme, ask respondents whether they want another birth now, later, or not at all. Unfortunately, the order and wording of the questions used by the DHS can make it difficult for respondents to report their preferences precisely. The first question on the topic is directed towards identifying "stopping", asking whether the respondent would like to have another child, or not to have any (more) children. The women that we describe as postponers may well respond "no more", meaning "no more in the foreseeable future". Such responses get interpreted as meaning "no more ever", which is not something that the question specifies. The follow-up question to a woman who answers "no more" asks whether she would be happy if she fell pregnant in the next few weeks. It seems likely that respondents who want to postpone their next birth will again answer in the negative. It is only respondents who have already stated that they want another child who are asked whether they wish to wait before they have that child and even those women are not offered the option to articulate clearly a preference for childbearing at some indeterminate, future, time. Thus, the presumption in much of the demographic literature that the primary reason for contracepting is to limit family size has been written into the skip instructions on the DHS questionnaire. Inevitably, the data that the DHS collect then tend to confirm the initial presumption.

In their discussion of the factors that might underlie the stalling of fertility transition in Kenya, Westoff and Cross (2006) point out that many respondents answered the DHS questions about fertility preferences inconsistently, stating that they did not want their last child but that they do want more children. Again, it seems more likely that such inconsistencies arise because the design of the questionnaire is unsuited to the situation of postponers, than that Kenya is populated by ex-stoppers who changed their mind. In particular, in saying that they did not want their last pregnancy "at all", women could be struggling to express a circumstance that the questionnaire does not envisage – that, at the time that they became pregnant, they had not decided that they did want another child.

A subsidiary issue concerning the interpretation of DHS fertility preference data is that in the tables in DHS survey reports, all respondents who say that they want to delay their next birth but are not using contraception are routinely classified as having an unmet need for

family planning for spacing purposes. The research literature that uses these data also tends to treat spacing and postponement as synonymous and to assume that women who want a birth later are motivated by the desire to space their births (Bongaarts 1991; Kirk and Pillet 1998; Westoff 1988). Thus, the standard description of these data does not precisely reflect the question put to the survey respondents. DHS surveys do not ask women why they want a birth later and the reports may be making an unwarranted inference about their motives. The respondents' desire to avoid a birth in the short-term may arise instead from considerations that have nothing to do with the age of their youngest child.

Because the questions that DHS and similar surveys ask about fertility preferences assume that women are limiters, spacers or trying to get pregnant, these data provide little direct evidence as to how common it is for respondents to be postponing their next birth. It is easier for researchers working outside the structure of the DHS questionnaire and their informants to escape from the pressure to classify all users of contraception into stoppers and spacers. Although not using the term, several studies of fertility and fertility intentions using qualitative methods have demonstrated the importance of postponement of childbearing as an explanation of increased contraceptive use and fertility decline in Africa. Bledsoe *et al.* (1994) suggest that contraceptors in The Gambia are better thought of as "pausing" than stopping childbearing. Moreover, while Johnson-Hanks (2004) uses the term "space" in the title of her paper on the second birth interval in Cameroon, she clearly has little use for the concept as conventionally understood. Based on her in-depth interviews, she argues that, although starting, stopping and spacing can be used to describe fertility patterns, they are of little help if one wants to explain the childbearing histories of educated women in Cameroon:

> Educated women do not have large and variable durations between their first and second births because they have early failures to achieve target fertility, but rather because the reproductive goals are themselves changing, as are the circumstances of choice, and the moral economy of alternatives. (Johnson-Hanks 2004:362)

Similarly, based on his research in Maputo, Mozambique, Agadjanian (2005) explicitly makes the point that we expand on this paper:

> Our data suggest that the dilemma of spacing versus stopping, often taken for granted in demographic research is not a choice that most individuals face in real life. Because of persistent uncertainties about the household's material conditions and about the durability of the marital bond, both objectives of fertility regulation can coexist as part of the same reproductive strategy …These complex and seemingly contradictory reproductive intentions, where stopping and spacing preferences are indistinguishable, should be better defined as *waiting*. (Agadjanian 2005:628, emphasis in the original)

Does the distinction between the spacing and waiting, that is the postponement of births, matter? We believe that it does – the misleading language brings with it unwarranted theoretical preconceptions. While one motive for postponement is to achieve preferred birth intervals, conflating it with spacing distorts reality and may conceal the existence of large numbers of women who are postponers but not spacers. Treating all postponers as spacers directs attention away from the contraceptive needs of unmarried women (and men). Second, ignoring postponement entails the assumption that all women either definitely do not want another child or definitely do. Unlike spacers, postponers may not have reached a decision about this. They may become pregnant eventually, either intentionally or by accident, or they may develop into stoppers without ever becoming pregnant again. Third, contraceptive use for stopping and spacing purposes alone cannot explain the development of very long birth intervals in some parts of the world.

Nearly two decades ago Lightbourne (1985) argued that "In the past there has been a tendency to think of the stated desire to postpone births as reflecting a desire to control the spacing interval between births. In many cases this may be a misinterpretation". It may. The current binary classification of reasons for contraceptive use is theoretically problematic and results in the inclusion of heterogeneous motives under the single label of "spacing". We propose instead that three medial motivations for birth control exist via which distal characteristics affect the practice of birth control – stopping, spacing and postponement. The next section of the paper argues that each of these motives has distinctive implications for fertility patterns.

Birth interval distributions and motives for contraceptive use

In populations in which trends and differentials in fertility patterns are shaped largely by the use of contraception for birth control, it is possible to infer the dominant motive for contraceptive use from the distribution of birth intervals. The shape of the hazard function associated with the time between births, that is the duration-specific rate of closing a birth interval, differs between women who are limiters and those who are spacers.[4] In addition, the shape of the hazard function associated with postponement is distinct from that associated with either limiting or spacing. Furthermore, it is not a combination of the two established motives for contraceptive use. This section of the paper discusses the shape and determinants of duration-specific rates of closing a birth interval; describes methods for assessing those

shapes and determinants; and shows how different strategies of and motivations for contraceptive use translate into different hazard functions.[5]

Our analytic strategy is to compare the distribution of birth rates by interval duration (the hazard function) associated with a particular characteristic that affects contraceptive use with a second distribution representing a different category of that variable. Differentials in patterns of, and motives for, contraceptive use are reflected in differences between the shapes of the two distributions.[6] Almost any distal determinant thought to affect contraceptive use can be assessed in this manner, including secular time and socio-economic indicators.

This strategy identifies which medial motive for practicing birth control accounts for the differential fertility outcomes because stopping, spacing and postponement are an exhaustive set of medial preferences by which women's distal characteristics influence those proximate behaviours intended to impact directly on fertility and because each affects birth intervals differently. Failure to control for important distal confounders might lead one to misidentify the distal factors that influence reproductive intentions. Nevertheless, it would remain evident whether women were postponing their next birth or were stopping or spacing.

The birth rate is zero for nearly a year following a previous birth as a result of postpartum infecundability and pregnancy. As the interval since the last birth extends beyond a year, the incidence of births rises and then falls. The survivorship function is one in the months immediately following a birth and then declines monotonically. It never reaches zero, as not all women close any particular birth interval (either by choice, or by dint of circumstance). The solid black line in the top panel of Figure 1 represents a typical hazard function, while the equivalent line in the lower panel shows its associated survivorship function.

A pure limiting effect on birth intervals shifts the duration-specific birth rates downwards, as shown by the dotted line in Figure 1. With perfect fertility control, the proportion of women wanting no more children at all would be unaffected by the time that has elapsed since the previous birth and the downwards shift in the birth rates would be proportionately constant. In practice, contraceptive failures mean that the population becomes increasingly select as the duration since the last birth rises. As a result, the effect of limiting is more marked at later durations, shifting the birth rate distribution to the left. Therefore, the essential characteristic of limiting is that the baseline and modified rates of giving birth do not intersect. In a regression model, scaling of the distribution occurs when an independent

variable is significant, while the leftward shift would be demonstrated by a negative coefficient of the interaction of the independent variable and duration since last birth. One predictable effect of a limiting strategy is clearly identifiable in the changed shape of the survivorship function: the proportion of women with an open birth interval ten years after their last birth increases dramatically in relative – if not absolute – terms.

<FIGURE 1 ABOUT HERE>

Birth spacing, operating on its own, shifts the birth rate distribution to the right. Because women's preferences for having a particular number of children have not changed, no change occurs in the height of the shifted distribution. The broken line in Figure 1 shows the shape of the hazard function that results if all births are deferred for six months longer than before – i.e. a pure spacing effect. In a regression model such changes occur when the effect of the explanatory variable is conditional on duration and the gross effect of the interaction is greater than the main effect at longer durations. Spacing leaves the proportion of women progressing to a subsequent parity within ten years of the previous birth almost unchanged. It produces a survivorship function that has a more pronounced bulge, and is steeper than that associated with the initial hazard function.

<FIGURE 2 ABOUT HERE>

The use of contraception to postpone births produces more complex changes in the birth interval distribution (Figure 2). The hazard function reflects the fact that some women who start off not wanting a child decide to have one later. Thus, the eventual reduction in fertility may be limited (indicated by small changes in the proportion not progressing to a subsequent birth within ten years), but the birth rate distribution pivots to the left, with lower birth rates shortly after the previous birth and higher rates at longer durations. In a population of pure postponers, time since last birth has no impact on fertility decisions and the hazard function would decrease only slowly with interval duration (after its initial rise), with the decrease representing the gradual removal of highly fecund couples from the population at risk.

The fundamental difference between the effects of increased spacing and increased postponing of births on the duration-specific rates at which birth intervals are closed is that the hazard functions converge (i.e. the rate ratio tends towards a horizontal asymptote) in the case of the former, and diverge (i.e. the rate ratio tends towards a vertical asymptote) in the case of the latter. In a regression model, postponement, like spacing, produces an interaction between

the variable of interest and duration since last birth. What distinguishes postponement is that, because the hazard ratios diverge at longer durations, the sign of the duration-squared coefficient will be positive.

The changes in the shape of the hazard function associated with postponement cannot arise from a combination of limiting and spacing. As can be seen from Figure 1, neither pattern of family building produces the flattening out of the decline in the incidence rate curve at later durations illustrated in Figure 2. Twisting of the hazard function of this sort cannot arise from any combination of limiting and spacing.[7]

<TABLE 1 ABOUT HERE>

In summary, whether any characteristic (including calendar time) is associated with limiting, spacing or postponing can be determined by using a regression model to assess whether its effect on birth rates varies with duration since last birth and with the square of that duration. Which family building strategy predominates can be diagnosed using the rules in Table 1.[8] The table can be simplified still further by observing that if the coefficient of the linear interaction effect is negative (with the exception of the indeterminate case) or if none of the interaction terms are significant, then limiting is occurring; if the coefficient of the linear interaction effect is positive, then spacing; while postponing is occurring when the coefficient of interaction term with duration-squared is significantly positive.

Birth intervals in South Africa

Fertility among African South Africans has declined slowly over an extended period, from more than 6 children per woman in the late 1960s, to around 3.5 in the late 1990s (Moultrie and Timæus 2003). Our earlier research (Moultrie 2002; Moultrie and Timæus 2002) using DHS data collected between 1987 and 1989, and again in 1998, documents the lengthening of birth intervals among African[9] South African women over this period.[10] We summarize some of these results here to provide context for the discussion of the regression models and their interpretation and implications that follows.

Trends in birth intervals

Brass and Juárez (1983) propose a technique for calculating projected parity progression ratios (B_x) by chaining the differences between adjacent five-year cohorts in the proportion having progressed after truncating the data on the older one by five-years. The approach can also be

applied to equivalently truncated data to derive estimates of median birth intervals (Aoun 1989a, 1989b). Projected median birth intervals are derived in the manner used for calculating B_xs, but, instead of using the proportion of women progressing from one parity to the next, the method uses truncated data to calculate the relative changes in median intervals between births. Table 2 presents projected median birth intervals in South Africa according to women's age and parity.[11]

<TABLE 2 ABOUT HERE>

The 1998 DHS data show that projected birth intervals have lengthened dramatically among younger women. A similar trend is found in the 1987-9 data, with median birth intervals showing signs of lengthening for more recent births (i.e. earlier parities for younger women, later parities for older women). These earlier data show that the first few birth intervals of women aged more than forty were all about 33 to 34 months long. With entry into motherhood occurring around the age of 20, this means that the beginning of the increase in median birth intervals occurred approximately at the start of the 1970s. The median birth intervals in Table 2 vary rather little according to either the mother's cohort or her parity. The median interval of women aged 45-49 in 1987-9 progressing to their fifth birth is similar to that of women ten years younger progressing to their second birth, which they did at about the same time. Thus, the lengthening of birth intervals seems to have followed a secular trend, increasing with time. This pattern is suggestive of a move towards postponement of childbearing.

Birth intervals began to lengthen in South Africa at the time that contraceptive use first became common among African women. Both Kaufman (1997) and Brown (1987) report a rapid increase in contraceptive use, primarily injectables, after the formal launch of the first national family programme in 1974.[12] By the time of the 1998 DHS, 71 percent of all parous sexually-active African women were using highly-effective modern methods of contraception (injectables, sterilization, the pill or an IUD).

A further elaboration of Aoun's approach is to locate the median birth intervals in secular time, so as to understand better the trend in birth intervals in South Africa over the last forty years. One can do this approximately by adding the projected median birth interval to the mean date of birth recorded for each parity by the mother's age group at the survey (Figure 3). Each cohort of women in the 1987-9 or 1998 South Africa DHS generates a series of points.

Each point represents the median length (and approximate time location) of the birth intervals of one of these five-year birth cohorts of women at a particular parity.

<FIGURE 3 ABOUT HERE>

Figure 3 shows that cohort and parity introduce rather little scatter into the plotted median durations and that the lengthening of birth intervals has followed a period trend. The first plot demonstrates the lengthening of birth intervals was concentrated among ever-users of contraception whereas the median birth interval of women who have never used contraception only increased by about 6 months between 1965 and 1990. The second plot demonstrates that birth intervals have lengthened among both never-married and ever-married women. Few statistical data exist describing the proximate determinants of fertility in South Africa in the 1960s and 1970s. However the qualitative and other evidence available suggests that the other proximate determinants cannot account for much of the increase in the length of birth intervals.[13] In particular, a generalized epidemic of HIV only developed in South Africa in the 1990s and only the most recent of the estimates shown in Figure 3 could have been affected by AIDS. Increased use of modern contraception is the only proximate behaviour that can explain the near halving of total fertility and the doubling of birth intervals in South Africa between the 1960s and 1990s.

Spacing or postponing?

To distinguish statistically between postponing, stopping, and spacing, we apply piecewise log-rate regression models to data from the two DHS conducted in 1987-9 and 1998.[14] Together with the key variables that they require (the number of events, and the amount of exposure), the simple models presented here includes just the mother's age at birth (interacting with duration since last birth) and the child's birth order as control variables. Women who have been sterilized are treated as censored at the date of surgery. More complex models describing other correlates of long birth intervals in South Africa are described elsewhere (Moultrie 2002).

The variable of interest is a simple indicator of whether the data were collected in the 1987-9 or 1998 survey. Our hypothesis is that fertility fell in South Africa over the periods covered by the surveys largely because of postponement of births. In operational terms, this hypothesis asserts that the interaction term between the square of the duration since last birth and the year in which the survey was conducted should be statistically significant and positive.

To identify potentially significant changes in motives of contraceptive use, models were fitted in the order suggested by Table 1. Thus, we first verified that the survey indicator was significant, then allowed the effect of duration since last birth to vary between the two surveys, and finally fitted a model in which the survey indicator interacts with the square of duration since last birth. The data support the use of a postponement model over a spacing model, with a significant improvement in fit.[15] The interactions between duration and the main effect of the survey indicator (0.341, $p<0.001$) and duration squared and the main effect (0.218, $p< 0.001$) are both positive and highly significant.

<FIGURE 4 ABOUT HERE>

The coefficients in the regression model show the quadratic duration term swamping the linear duration term at later durations. This indicates that a shift towards postponing has occurred. The fitted birth rates and cumulative survival functions by duration since last birth and year in which the data were collected are shown in Figure 4. Two important features of the continued change in birth intervals can be identified in these graphs. Looking at the top panel, it is apparent that there has been a remarkable shift in the pattern of women's childbearing between the 1987-9 and 1998 DHS. The fitted distribution of duration-specific rates of having another birth documented by the 1987-9 survey looks fairly normal, and has a mode around 40 months. By contrast, the birth rates of women in the 1998 survey remain almost constant between 30 and 72 months, and subsequently fall only gradually. Thus, by the 1990s women's probability of giving birth in South Africa was only modestly affected by the age of their youngest child. The effect of this shift in family building patterns is clearly visible in the calculated cumulative survival functions, with women in the later survey progressing more slowly to a subsequent birth, particularly between 36 and 84 months.

These DHS survey data also fail to provide much evidence of any rise in family size limitation. The overall proportion of women failing to progress to another birth within 120 months of the previous birth changed only slightly between the two surveys (from 24.7 to 27.8 percent) although the distribution of childbearing within that time period has changed dramatically.

As not all women close their birth intervals, Guilkey and Rindfuss (1987:282) suggest that a "conditional expectation of survival" calculated in the same way as a singulate mean age at marriage offers an appropriate manner of summarizing the derived life tables. This measure shows that, among those women who did close their birth interval within 120 months, women

interviewed in the 1987-9 survey did so, on average, 46.5 months after their previous birth. Between the two surveys, this conditional expectation increased by almost 14 percent, or 6.5 months.

Accounting for the fertility transition

In many respects, the South African fertility transition has proceeded as Caldwell, Orubuloye and Caldwell (1992) hypothesised the African fertility decline would, that is at all ages and parities simultaneously. Projected median birth intervals were approximately 33 months for both rural and urban women until 1970 (Moultrie, 2002) but have increased massively since. Among younger women, these intervals are now substantially longer than 60 months - markedly longer than in any other sub-Saharan African country (Moultrie 2005a). This suggests that South Africa is following a new variant of the African fertility transition, characterized by both lengthening birth intervals and low parity progression ratios.

By themselves, the data just presented cannot explain why women chose to use contraceptives to postpone their childbearing, seemingly without limit. However, Moultrie (2001) marshals evidence to argue that the pattern of fertility decline and increasing birth intervals is the path-dependent consequence of the institutional structure of South Africa under apartheid. In particular, the slow pace of the South African fertility decline is attributable to a range of institutional and structural factors.

First, as a result of internal contradictions and changes over time in its policies, the state was never able to establish a firm grip on the African household economy and thereby manipulate the economics of the supply and demand for children. Government social and economic policies (particularly those relating to influx control, education and urbanisation) often adopted the rhetoric of modernisation and demographic transition theory but were generally inimical to rapid fertility decline and had the effect of attenuating the potential benefits of modernisation.

Second, apartheid institutions had the (unintended) effect of precipitating an irrevocable transformation of gender relations between African men and women. Migrant labour, restrictions on urbanisation and forced removals distorted and disrupted the formation of stable households and relationships. By the early 1980s large numbers of African women were living in households headed by themselves or by other women, and – in many respects – viewed men as superfluous (see, for example, Kaufman (2000), Vukani Makhosikazi Collective

(1985), and van der Vliet (1991)). This change in gender relations both stimulated and facilitated women's adoption of modern contraceptive methods in the face of male opposition based on political and patriarchal considerations (Moultrie 2005b).

The family planning programmes launched in 1974 and 1984 increased access to modern contraception methods for African women and were effective, at least insofar as they assisted the rapid uptake of contraception by African women. However, while the apartheid government's intention was to precipitate a rapid decline in African fertility, the programmes offered their clients a way to exert a greater degree of control over their lives and their reproduction in a setting where the state and its institutional structures exercised huge power over individuals. Women's tenuous urban livelihoods and poverty in rural areas, coupled with the state's inability to fundamentally alter the conditions of African household economics, meant that women sought modern contraceptive methods neither to limit nor to space their childbearing, but as an economic survival strategy that had as one of its key supports the desire to avoid pregnancy in the present while being potentially amenable to pregnancy in the future.

The methods of contraception made available to African women in South Africa were also influential. From the beginnings of the South African family planning programme, injectable contraceptives were the main method used by African women.[16] It is debatable whether birth intervals could have lengthened by as much if such a method of contraception had not been available. Certainly, the tentative evidence offered by Moultrie (2005a) for other countries in the region – which have not experienced as extensive or widespread use of modern contraception, let alone injectables – supports this contention.

We do not deny the existence of stopping and spacing in South Africa. By the time of the 1998 DHS, fertility had been falling for about three decades and almost one in five African women with four or more children were protected by sterilization. Nevertheless the pattern of change in birth intervals in South Africa is inconsistent with the hypothesis that parity-specific fertility limitation has been the dominant force driving the South African fertility transition. Most women's decisions to avoid childbearing have been contingent neither on their parity (i.e. limitation) nor on the age of their youngest child (i.e. spacing in the conventional sense). In a society where marital relationships have been (and remain) as severely disrupted by institutional dynamics as they have in South Africa, it is unsurprising that a pattern of fertility has developed that hinges on women's desire to delay pregnancy and its associated costs *sine die*, without consideration for parity or age of other children. In aggregate, African women in

South Africa use contraception primarily as a mechanism for postponing childbearing, rather than for limiting or spacing births.

The predominance of postponement also explains why the widespread adoption of contraception in South Africa had less effect on the overall fertility than might be expected. The increasing numbers of women adopting contraception for this reason set in motion a chain of increasingly delayed births. Period total fertility fell because this produced both a quantum decline in completed family sizes and a sustained attenuation of the tempo of childbearing. It is this process that has driven the slow decline in South African fertility.

Conclusions

This paper ranges widely across various aspects of demography concerned with fertility transition, birth intervals, and contraceptive use. It begins by re-examining the binary classification of motives for practicing birth control that dominates the demographic literature on populations undergoing fertility transition. Picking up on ideas developed in the mid-1980s, we have suggested that this typology is both logically and operationally flawed by virtue of its assignment of all women practicing birth control who are clearly not limiters to the category of spacers. On theoretical grounds, we argue that there are at least two groups of women in this latter category: women who practice birth control to achieve a birth interval contingent on the ages of their youngest children, and women whose intentions are simply to avoid any further pregnancy in the present. It might make sense to regard spacers as a particular group of postponers, but treating postponers as an odd sort of spacer does not.

Lightbourne's idea of "permanent postponement" has not found favour in the literature on fertility transition. Like most historical demographers, those working on the developing world tend to classify all contraceptive users into stoppers and spacers and all demand for contraception into demand for stopping and demand for spacing. In part, this may be because the ill-defined service needs of postponers tend to confuse the clear cut policy messages liked by programme managers and lobbyists concerned to promote family planning and reduce the rate of population growth in poor countries (Szreter 1993).

Conceptual refinements such as distinguishing postponement from spacing are only of value if evidence of their relevance to actual fertility patterns can be found. The distinction has shown itself to be useful in illuminating trends and differentials in birth intervals among African South African women over the last few decades. Fertility is moderately low in South

Africa. It is also only weakly related to women's parity and (after rising in the second year post-partum) to the age of their youngest child. This pattern is consistent with postponement but not with either family size limitation or the spacing of births by a preferred interval. When they are interpreted as the result of birth spacing, median birth intervals as long as 60 months seem bizarre. Our alternative account amplifies the "vague and weak desire" for more children hypothesised by Lightbourne, and juxtaposes that desire with the "stronger motivation" to avoid having children in the present.

The importance of postponement of births by both childless and parous women is not only recognised, but a major focus of the literature on post-transitional fertility. We have argued that its neglect in the literature on fertility transition in both historical and contemporary populations was linked originally to the limitations of the data available to the Princeton European fertility project. Following Coale (1973), many students of fertility transition view awareness that means exist to control fertility, the development of clear cut family size preferences and fertility transition itself as a series of inextricably interlocked changes (see, for example, van de Walle, 1992). As one of the authors of this paper has argued previously, we should retain an analytic distinction between the desire to limit family sizes, the contraceptive means used to achieve this, and the aggregate fertility outcomes that result (Onuoha and Timæus 1995).

The evidence that parity-specific family size limitation was the main driver of fertility transition in the Western countries, Asia, and Latin America is fairly clear cut. Caldwell, Orubuloye and Caldwell (1992) argued that fertility decline in Africa is following a different path, with declines in fertility observed across the reproductive lifespan. They comment that one cannot "neatly divide this contraceptive behaviour into that which merely changes the timing of birth by postponing it and that which controls family size". Brass, Juárez and Scott (1997) are inclined to agree, further pointing out that fertility decline is occurring at all parities in Africa, and is not concentrated in the middle-order births as in Asia and Latin America. The most plausible explanation of this pattern is not family size limitation, with women within African populations having an extraordinary range of preferred family size, but widespread postponement of births, with women eventually becoming perpetual postponers at a wide range of family sizes. Some Africans undoubtedly have clear family size preferences; others are using contraception to space their births. However, both our own (Moultrie 2005a) and the earlier research on parity progression and birth intervals in Africa and the qualitative evidence

of Johnson-Hanks (2004), Agadjanian (2005) and others, suggest that in many African countries postponement of childbearing that eventually becomes permanent postponement, not family size limitation, has been a major factor driving the transition to lower fertility. In the longer run, when the children of the current generation of Africans grow up, a clear preference for small families may become entrenched in African societies. So far it has not.

This paper has been able to provide only limited direct evidence in the form of data on reproductive preferences to show that the desire to postpone births is an important reason for using contraception. The reason for this is that the questions on intentions used in most fertility surveys cannot readily distinguish spacing from postponement. Much of the "birth spacing" documented in DHS reports may be an artefact of the design of the questionnaire and somewhat misleading labelling of the tables. These data do not provide a strong empirical basis for claiming that *all* contraceptive use by those who have not achieved their desired family size is intended for birth spacing. This assumption should no longer be accepted uncritically by those studying populations undergoing fertility transition.

This paper therefore offers a challenge to the existing classification of women's motivations for contraceptive use. The current dichotomy is theoretically problematic and results in the inclusion of heterogeneous motives under the single label of "spacing" that have very different implications for fertility patterns. The impact that birth spacing can have on total fertility is inherently limited. By contrast, postponement can produce a fertility transition that follows a very different pattern from one produced by parity-specific family size limitation. In South Africa at least, but we suspect also some other populations, the use of contraception to postpone births has had a major impact on fertility.

Notes

An early version of this paper was presented at the 2003 PAA Annual Meeting in Minneapolis. Since then, the analysis has benefited hugely from interaction and discussion with colleagues on several continents. We particularly thank Gigi Santow for her insightful comments on a draft version of the paper. Where we have failed to act on her and others' suggestions, this is primarily because we felt ourselves unqualified to do so adequately.

[1] Hajnal (1947) makes this point in a typically insightful piece that is the earliest discussion of postponement of which we are aware. His paper is largely concerned with distinguishing what are now termed tempo and quantum effects on fertility. Hajnal states that: "by 'postponement' of childbearing I mean a fall in fertility rates balanced by a subsequent rise so that the size of the family remains relatively

constant" (p. 151), though he later accepts that some postponed births may never occur. He continues "the requirement that fluctuations in fertility rates should be regarded as 'postponed' or 'anticipated' births does not involve any knowledge of people's intentions to have children. It is not even necessary to suppose that at the time the 'postponement' takes place … people have the idea clearly in their minds that they will later have the children they are 'postponing' ". We thank an anonymous referee for drawing our attention to Hajnal's paper.

[2] One exception would be a population in which barrier methods are used widely for the prevention of sexually transmitted infections *despite* their contraceptive effect and in which use of other methods of birth control is rare.

[3] It has been argued that spacing of this sort played an important role in the initial decline in fertility in at least some populations (Anderton and Bean 1985) although this has been disputed (Knodel 1987) and the evidence for it is far from clear cut (Anderton 1989; McDonald and Knodel 1989).

[4] We do not consider the entry of young women into motherhood. The choice of a point at which a woman is considered to have opened that first interval is arbitrary and materially different from the markers of the opening and closing of subsequent intervals (i.e. births). Moreover, it seems to us commonsensical that most childless women are postponing childbearing, not spacing, and that the rest must wish to stop building a family before they start.

[5] To simplify the argument, this section of the paper ignores the other proximate determinants of birth intervals and only considers changes and differences in birth interval distributions in a population that are achieved by contraceptive means.

[6] A similar analytical exercise using hazards to identify stopping and spacing behaviour is proposed by Alter (2007) – the important distinction from our perspective being that his work does not admit the possibility of postponement as a possible fertility control strategy.

[7] It is likely, of course, that postponers are increasingly select with increasing duration since last birth. Therefore, we investigated whether the shape of the hazard function for postponers can be reproduced by varying the combination of limiters and spacers by duration since last birth. This showed that duration-varying combinations of the spacing and limiting incidence rates exist that can lead to a hazard function that is indistinguishable from that hypothesised to be associated with postponement. However, the combinations that mimic postponing are implausible: to emulate postponement requires a population comprised almost exclusively of limiters at early durations and of spacers at the longest durations.

[8] The table is designed for comparison of populations with more fertility control with those with less fertility control: by reversing all the signs, the inverse comparison can be made. Note that only one of the nine possible combinations of the two interaction terms fails to lead to a clear inference as to whether limiting, spacing or postponement is the dominant medial determinant of fertility. In this instance, the relative magnitude of the duration and duration-squared interaction effects will determine whether the birth rate distributions intersect or not. If they do, postponing is indicated; if not, limiting.

[9] The term "African" is preferred in South Africa to "Black", which tends to signify non-"White" to those who opposed apartheid. Use of apartheid-era classifications based on population group or skin colour should in no way be taken as condoning that system. However, the unfortunate legacy of apartheid and segregationist policies is such that important demographic outcomes (especially mortality, but also some of the proximate determinants of fertility) differ in crucial ways according – broadly – to racial categorisations.

[10] The 1987-89 Demographic and Health Survey was conducted by the South African Human Sciences Research Council. It was not part of the program of surveys implemented by Macro International Inc.

with funding from USAID, although its design and questionnaire were based on those developed by MEASURE DHS.

[11] The Brass-Juárez method only produces reasonable results when the proportion of women who have experienced the parity progression of interest is high . Table 2 only presents estimates for ages and parities at which more than 65 percent of women have progressed to the next birth.

[12] While the official family planning programme was launched in 1974, contraception was available unofficially before that time, and data from studies in metropolitan areas conducted around 1970 show a small, but significant, amount of contraceptive use (Moultrie 2001).

[13] This evidence is reviewed by Moultrie and Timæus (2002). Some or all of induced abortion, secondary infertility resulting from sexually-transmitted infections, and increases in spousal separation and marital breakdown may have contributed to the decline in fertility in South Africa. None of them can have had a large impact on fertility trends. According to the 1998 Demographic and Health Survey, only 68 percent of parous African women were living with a sexual partner on a day-to-day basis or otherwise regularly sexually active. However, this figure must have been well below 100 percent even at the onset of fertility transition as high levels of widowhood and marital breakdown and frequent separation of spouses by labour migration are a long-established features of South African society. Moreover, improvements in the transport infrastructure mean that labour migrants have become increasingly likely to rejoin their spouses regularly at weekends instead of just for holidays.

[14] The measurement of birth intervals presents demographers with substantial challenges. Of the three techniques commonly used to pursue the kind of enquiries envisaged here, we use piecewise log-rate models in preference to logistic regression or Cox proportional hazards models (Trussell and Hammerslough 1983; Yamaguchi 1991). A first advantage of such models is that assumptions of proportionality can be made, but are not essential. The proportionality assumption results in an unnecessary (and undesirable) constraint on the shape of the hazard function: by assuming proportionality, the increasing selectiveness of the population at risk is ignored. Second, they allow the presentation and calculation of results in terms familiar to demographers, since the estimated incidence rates arising from the model can, with minor algebraic manipulation, be transformed into probabilities, and thence into familiar life table measures. A strong case can be made at the individual level that the closing of birth intervals follows a Poisson process. According to Dobson (1990), the number of events can be assumed to be Poisson-distributed if "the variability [of the count variable] increases as the number of events increases" and Greene (1998) uses this simple rule-of-thumb to justify making the Poisson assumption in her cross-national investigation of the relationship between contraceptive use and children ever borne in sub-Saharan Africa. However, at the aggregate level, unobserved heterogeneity and autocorrelation between women's birth intervals means that data on birth intervals are likely to suffer from over-dispersion of their variance. Consequently, the piecewise-negative binomial variant of Poisson regression is to be preferred to the Poisson model for our purposes.

[15] A log likelihood of -1280.5 versus -1292.8 for the loss of one degree of freedom.

[16] There is extensive debate as to the extent to which this "choice" was imposed by limited availability of alternative methods of contraception offered by the family planning programme - for which the evidence is not particularly convincing - or because, as an "invisible" method, injectables offered women a contraceptive method that made sense to them given the (particularly) gendered nature of sexual relations in apartheid South Africa (Burgard 2005; Kaufman 2000). What is not controversial, however, is that women had easy access to a contraceptive method that readily allowed them to postpone their childbearing efficiently, perhaps covertly, and with a very low risk of failure.

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FIGURE 1 Hazard and cumulative survival functions associated with differential limiting and spacing of births

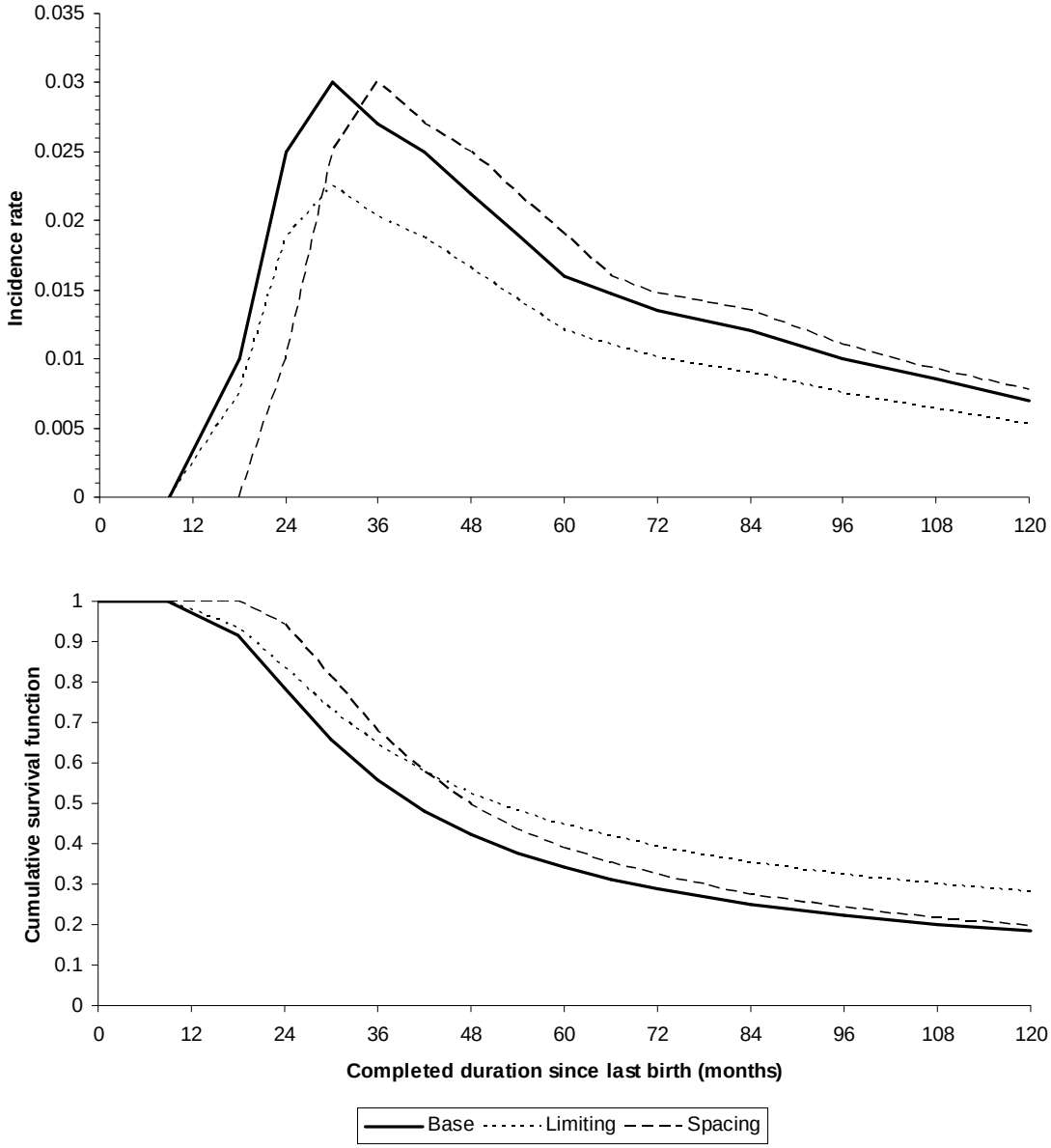


FIGURE 2 Hazard and cumulative survival functions associated with differential postponement of births

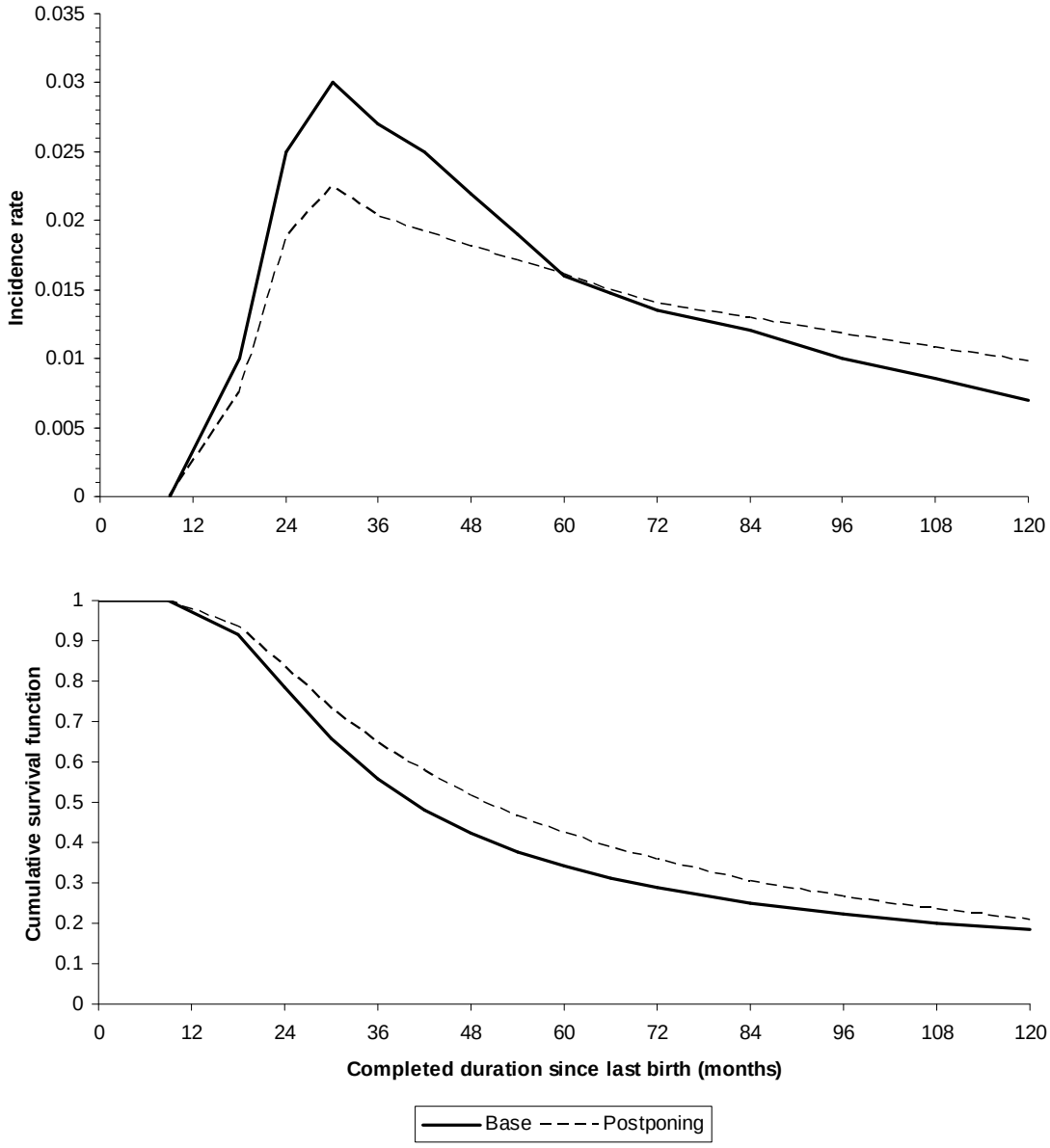
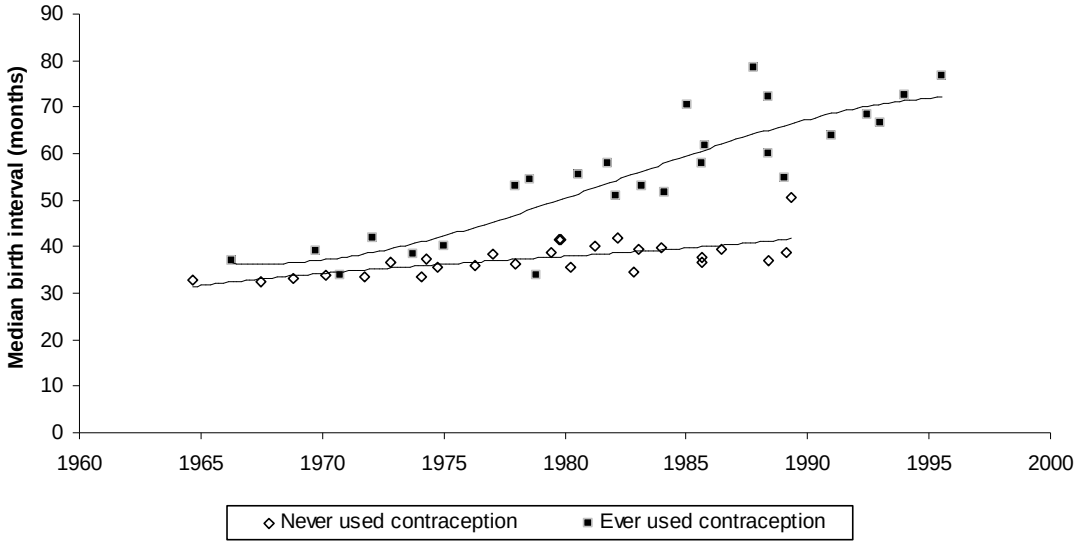


FIGURE 3 Estimated trend in projected median birth intervals in South Africa, 1987-9 and 1998 Demographic and Health Surveys by whether women have ever used contraception and ever married



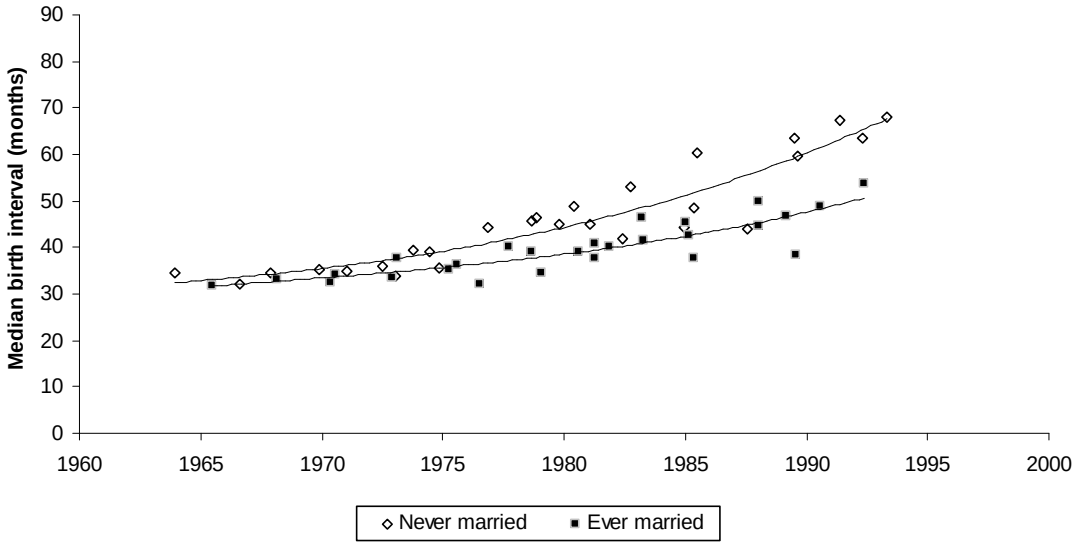


FIGURE 4 Fitted duration-specific hazards of giving birth and cumulative survival functions by year of survey, South Africa

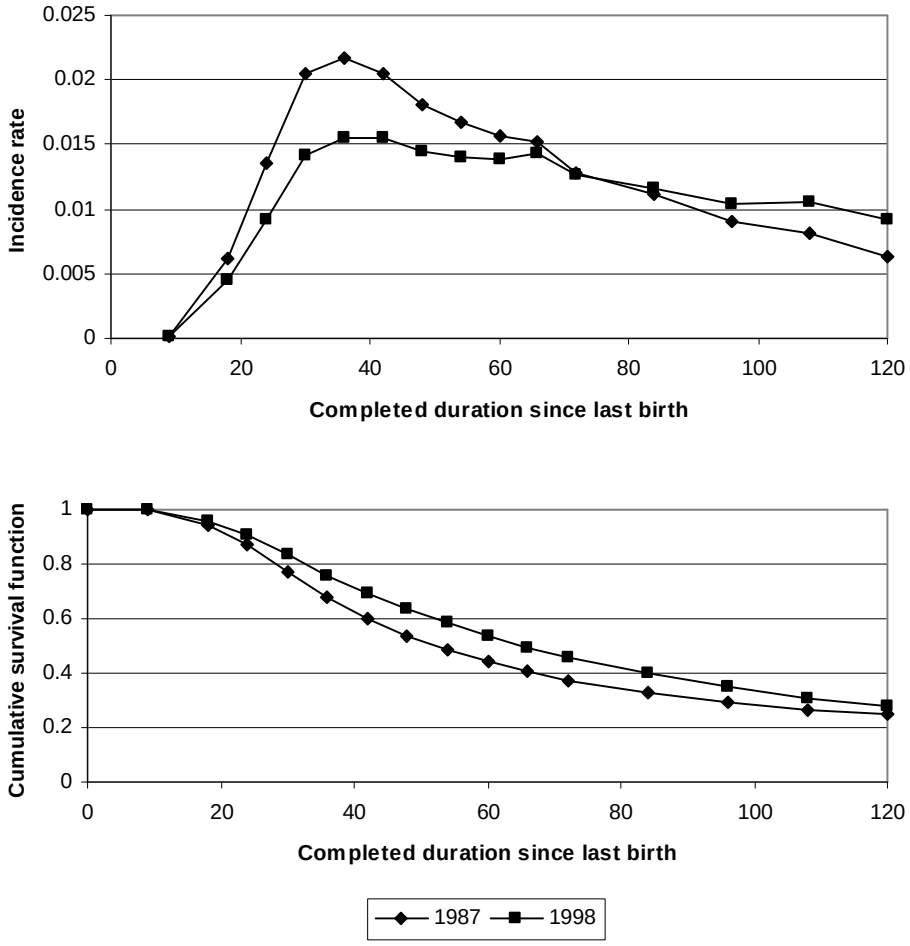


TABLE 1 Rules for diagnosis of the motivations underlying lower fertility in an index compared with a comparison population

Indication	Main effect	Main × Duration	Main × Duration^2
Limiting	-	-	-
	-	-	..
	-	..	..
Spacing	-	+	-
	-	+	..
	-	..	-
Postponing	-	+	+
	-	..	+
Indeterminate*	-	-	+

KEY: + positive and significant; - negative and significant; .. insignificant
* see endnote 8.

TABLE 2 Projected median birth intervals (months) using the truncation approach, South Africa*

	Parity Progression						
Age group	1-2	2-3	3-4	4-5	5-6	6-7	7-8
1998 Demographic and Health Survey							
30-34	55.4						
35-39	43.7	*49.3*	*56.7*				
40-44	44.3	49.9	*50.4*	*50.2*			
45-49	35.4	39.0	40.5	*42.7*	*50.3*		
1987-9 Demographic and Health Survey							
30-34	*42.3*	*45.0*					
35-39	38.4	40.5	*42.5*	*46.0*			
40-44	33.3	33.9	35.1	*38.8*	*49.2*		
45-49	33.3	32.9	34.5	*37.1*	*45.4*	*44.9*	*55.2*

* Estimates in italics are for combinations of age and parity at which 65 to 80 percent of women have progressed to the next birth. Estimates based on lower levels of progression omitted.