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Nuptiality and Completed Fertility: A Study of Starting, Stopping and Spacing Behaviour

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1 Introduction

The relationship between nuptiality and fertility is one of the central themes in demographic literature for reasons which are easily understood. It is a simple and obvious notion that a woman's completed fertility is a result of when she starts having births, when she stops, and the length of the intervals between births. Starting, stopping and spacing are all influenced to some extent by nuptiality. Whether a woman has a birth at all will be partly a function of whether she marries or not, and the age at which a woman has her first birth is usually strongly related to the age at which she marries. Widowhood or divorce may bring an end to a woman's fertility or her spacing of births may be affected if dissolution is followed by remarriage. If a marriage is dissolved before a woman's first birth, dissolution and remarriage can even influence starting behaviour. Finally, starting, stopping and spacing behaviour may vary between different types of unions, for example between monogamous and polygamous unions or between formal marriages and consensual unions. This study, then, sets out to examine the ways in which nuptiality patterns affect starting, stopping and spacing behaviour in a wide range of developing societies included in the World Fertility Survey.[1]

Nuptiality as it affects exposure of women to the risk of pregnancy is one of the intermediate variables or proximate determinants of fertility. Patterns of starting, stopping and spacing are also influenced by other proximate determinants such as use of contraception, duration of the post-partum non-susceptible period and rates of pregnancy loss. Recent methodological approaches (Bongaarts 1980; Hobcraft and Little, 1984) attempt to apportion out the amount of fertility which is due to each one of the proximate determinants. These models follow up simpler but similar approaches which divided fertility into two components, marriage and marital fertility (Coale 1965; Coale and Trussell 1974). These procedures have greatly improved our understanding of the relative importance to fertility of the different proximate determinants. It must be kept in mind, however, that disaggregation of the components of fertility should not be regarded as an end in itself. Rather it should be seen as a means to identify how the different components form part of an integrated system of fertility behaviour. A woman's completed fertility is the end product of a reproductive lifetime of interrelated events and experiences, not the sum of a series of unrelated segments.

Disaggregation of the components of fertility derives largely from the concept of natural fertility.[2] Under a regime of natural fertility, rates of marital fertility are independent of exposure time. Differences of fertility between women in the same natural fertility society will be due simply to differences in the amount of time they are exposed to the natural fertility rates. With natural fertility, differences in exposure are determined largely by nuptiality, particularly age at first marriage, as the pattern of nuptiality is the primary determinant of fertility. The absence of fertility control within marriage means that there is no scope for individual variation of stopping or spacing patterns; control can only be achieved through variation of the starting time. The conventional view is that pre-transition fertility in the West satisfied the definition of natural fertility (see Henry 1961 for the original formulation and Knodel 1978 and Smith 1981 for recent affirmations). As a consequence, it is not surprising that analysis of high fertility in developing societies is often conducted in the natural fertility framework. Before proceeding further, therefore, it is worth giving some thought to fertility behaviour in pre-transition Western Europe.

[1] There are several comparative studies from the World Fertility Survey which focus directly on nuptiality behaviour. Understanding of the present study will be enhanced by a reading of these and other studies (see, in particular, Smith 1980; McCarthy 1982; McDonald, forthcoming; Smith, Carrasco and McDonald 1984; and Casterline and McDonald 1983).

[2] As defined by Henry (1961:81), natural fertility involves the absence of conscious control; such control exists if the behaviour of a couple is bound to the number of children already born and is modified when this number reaches the maximum which the couple does not want to exceed.

2 Nuptiality and Fertility: the Western Experience

The remarkable feature of Western demographic history is the very late ages at which women married and the high proportions who never married at all (Hajnal 1965). As under natural fertility control can only be achieved through the starting pattern, many writers focusing on population growth rates in Western European history have referred to this late age at marriage as a fertility control mechanism. It is seen as a means by which individual couples through their own volition or because of social pressure could control their completed family size. Spengler (1968) set delayed marriage for women in the context of 'rational elements in Western European culture' while Matras (1965) developed the nuptiality–fertility relation into a theory of the social strategy of family formation. The element of social control has been taken even further in recent theories of homeostasis of population growth (Lee 1973: 2—6; Lesthaeghe 1980). According to these theories, communities aimed at zero population growth and were generally able to achieve it through 'the nuptiality valve', that is control over who married and when they married. On the other hand, studies which are directly focused on explanations of the low nuptiality pattern in Western Europe never suggest that late marriage was actively pursued in order to control completed family size (at least not before the middle of the nineteenth century). Instead, these studies place emphasis on inheritance patterns, the family life cycle, agrarian and household service, apprenticeship and above all on the fact that couples almost invariably set up a new household upon marriage. Social organization was such that the setting up of a new household was a difficult task which could only be achieved after both the husband and the wife had been able to accumulate resources and to develop skills in the running of a household. This applied to both upper and lower classes, although the resources and skills required varied according to class. As the household was the joint enterprise of the couple, marriages were necessarily more companionate, particularly among the lower class. As a result, age differences between husbands and wives were small (Smith 1981; McDonald 1981).

The evidence strongly suggests, therefore, that the low nuptiality pattern was determined by factors other than fertility preferences. In making this observation, Richard Smith (1981: 618—9) goes on to conclude that English women did not have 'a determinant and determinable set of preferences for children' and that they fatalistically accepted natural fertility. In like manner, Lee (1977: 10) has contrasted the apparent lack of fertility preferences of pretransition Western women with the 'dazzling rationality' of preindustrial Japanese women as portrayed by Hanley (1977). The absence of 'controlled fertility' as measured in Henry's rather technical sense is thus often taken to mean that Western fertility was characterized by a lack of fertility preferences, by fatalism and by irrationality. These extensions of meaning, however, are not necessarily substantiated. An entirely different interpretation of Western behaviour is also possible. Having married late for reasons largely unconnected with the desired family size, couples, in the presence of high child mortality, were often concerned that they would fall short of an acceptable number of surviving offspring. During the period 1550 to 1750, the gross reproduction rate in England was around 2.3 daughters per woman (Smith 1981). After taking child mortality into account, this implies that the number of children surviving to replace their parents was quite low during this period. It could be argued therefore that Europeans prior to the nineteenth century rationally and actively pursued high, natural fertility in order to avoid the risk of having too few children. At the same time, there was little risk that they would have an unacceptably high number of children. In German villages, even women marrying under age 20 had fewer than an average of six surviving children (Knodel 1978: 493).

Thus, although there may have been isolated outbreaks of relatively lower marital fertility (Wrigley 1966; Lee 1974; Smith 1977; Lee 1978), in general there was little demand for a culture of spacing and stopping.[3] Such a culture emerged in the West only in the nineteenth century in response to significant rises in completed family size. The emergence was often tortuously slow but was an inevitable consequence of changes in economic structure, particularly the organization of labour. It is important to realize that the above argument does not preclude the operation of a 'nuptiality valve' as a temporal phenomenon affecting the rate of population growth. There is strong evidence of correlation between time series of economic indicators and the number of marriages. In bad times marriages may have been temporarily delayed. This in turn would have delayed first births. Given that overall fertility was relatively low, the delay of first births could have had a noticeable effect on rates of population growth without markedly altering completed family sizes. Cross-sectional or translation effects such as these are very frequently confused with changes in completed family size in the literature of Western demographic history.

Stopping and spacing behaviours in pretransition Western fertility stand in sharp contrast with evidence being compiled for pretransition societies today. As will be seen later in this study, women in developing countries have married at much younger ages and to a greater extent than was the case for pretransition Western women but their fertility falls a long way short of the level that would be obtained if their

[3] The evidence is still coming in on this point. As Lesthaeghe (1980: 544) has put it: 'The role of nuptiality in the seventeenth- and eighteenth-century European demographic system may have been overstressed, in part because it fits so well with the homeostatic picture'.

marriage patterns were combined with the natural fertility levels of the West. This occurs because developing countries presently display a considerable range of stopping and spacing behaviours across cultures. This has the result that both very small families and very large families (say ten or more surviving children) are relatively uncommon. The question then is whether these outcomes are an unintended by-product of 'low natural fertility' or whether over a long period of time, early-marrying societies develop fertility responses which avoid very small or very large families.[4] The latter case is of course more easily made in respect of stopping behaviour but even the prevalence of long birth intervals might be seen as behaviour which became traditional because it provided the society with a package of benefits including not only better health of the child and the mother but also the avoidance of very large families.

The implication for the present study deriving from the preceding discussion is that in investigating the nuptiality–fertility relation, we should not lose sight of the fact that starting, stopping and spacing behaviours may not be independent of one another. Rather they should be seen as part of an integrated system of fertility behaviour operating with a particular social organizational setting.

[4] It is not difficult to envisage that in most forms of social organization with the possible exception of strong, communal lineages, very large families would be unwelcome. It is likely that repeated childbearing would have been recognized as constituting a considerable threat to the life of the mother at a time when her role in socialization and production had become indispensable. It is interesting to note in this context that the Western fertility decline in the latter part of the nineteenth century began with the elimination of the very large family sizes which had become more prevalent in the preceding 50 to 100 years.

3 Links Between Nuptiality and Other Proximate Determinants of Fertility

A woman's nuptiality behaviour determines the periods of her reproductive life which she spends in marital unions, but her risk of pregnancy at any time within these unions will depend upon her sexual behaviour, her fecundity, her use of contraception and the lengths of time she spends in post-partum amenorrhoea. Further, whether a pregnancy leads to her having a live birth will depend on her susceptibility to pregnancy loss. Before we examine the results of a comprehensive model of starting, stopping and spacing, therefore, we need to consider the possible links between nuptiality behaviour and those other proximate determinants of fertility so that, where necessary, conclusions can be drawn in terms of these linkages.

3.1 MENARCHE AND FECUNDITY

In younger marrying societies, there is often a nexus between the onset of menarche and age at first marriage. The expectation would therefore be that in such societies early-marrying women would be over-representative of women for whom menarche was also early. If there is a further relation that women who have menarche early are more fecund, then their completed fertility would be higher. Hence higher fertility of young marriers may reflect the higher fecundity of women with early menarche. There is strong evidence that the onset of menarche is associated with body fat (Tanner 1968; Chowdhury, Huffman and Curlin 1977) but there is some controversy regarding whether body fat is also related to subsequent fecundity (Frisch 1976; Bongaarts 1979). There is evidence to suggest that age at menopause is not related to age at menarche (McKinlay *et al* 1972), but this conclusion refers to healthy, Western women.

Table 1 shows mean ages at menarche for ten WFS countries by age at first union groups. The conclusion from the table is that for ages at marriage from 17 onwards there is no relation between age at marriage and age at menarche. Menarche occurs somewhat earlier however for women marrying under the age of 17, a not unexpected finding given that menarche precedes marriage in most of these societies. Thus there remains a possibility, not easily investigated from WFS data, that women marrying below the age of 17 are selective of more fecund women because they are selective of women with early menarche.

3.2 PREMARITAL CONCEPTION AND FECUNDITY

Early marriers may also be selective of more fecund women if premarital conception leads to marriage or where premarital conception is a precondition of marriage. In the Caribbean countries, for example, a union often becomes a union only when the woman is pregnant or after she has given birth. In these circumstances, women who conceive more easily would become pregnant more rapidly during premarital sexual relations. This effect could even be compounded with menarche if earlier menarche leads to earlier commencement of sexual relations prior to marriage, as observed for blacks in the United States (Presser 1978). Again the World Fertility Survey does not provide much scope for the investigation of this possibility but it is of interest that in all WFS countries, the proportion of brides

Table 1 Mean age at menarche for age-at-first-marriage groups, ever-married women aged 40—49

Country	Age at first marriage						
	<15	<17	<17—20	<21—24	<21+	<25+	Total
Nepal	15.0	15.2	16.0	(16.1)	16.1	*	15.4
Philippines	13.2	13.7	14.4	14.4	14.4	14.4	14.2
Syria	13.1	13.2	13.7	13.7	13.7	13.7	13.5
Colombia	13.1	13.4	13.9	13.7	13.9	14.0	13.7
Cameroon	13.9	14.1	14.8	14.7	14.4	14.2	14.3
Ghana	14.4	14.7	15.2	15.4	15.4	(15.3)	15.0
Kenya	13.6	14.1	15.0	15.0	14.9	(14.8)	14.5
Lesotho	14.3	14.6	14.9	15.1	15.0	*	14.8
Sudan (North)	12.9	13.0	(13.8)	(13.4)	(13.4)	*	13.2
Haiti	*	14.1	15.0	15.3	15.3	(15.3)	14.9

NOTES:
( ) = 50—99 cases
* = less than 50 cases

pregnant at marriage rises, often quite dramatically, as age at marriage rises (Hobcraft and McDonald 1984). This suggests that behavioural aspects of premarital sex are likely to confound any search for a biological relation of fecundity and premarital pregnancy.

3.3 EARLY MARITAL FERTILITY AND AGE AT MARRIAGE

At young ages the main determinant of time to first conception will almost certainly be adolescent subfecundity, or more precisely, the frequency of anovulatory cycles among young women. Even for healthy, Western women it has been observed that only 62 per cent of 20—24 year olds ovulated in very cycle and this percentage rapidly becomes lower as age decreases (Metcalf and MacKenzie 1980). Adolescent subfecundity and the greater frequency of premarital conceptions or births among older marrying women combine to produce a quite dramatic relation between age at first union and the mean length of the first birth interval as shown in table 2. Cross-national comparisons of the data in table 2 are further complicated by the varying definitions of marriage or union applying in the different societies. Some countries, mainly in Asia, are characterized by delay in cohabitation or consummation following the first union. In Cameroon, the age at first marriage was the formal date of marriage, which often occurred long after consummation of the union. The net effect of all of these factors as shown in table 2 is to reduce the impact on the commencement of fertility of age at first union, that is between- and within-country differences in age at first birth are much less than differences in age at first marriage.

3.4 FECUNDITY IMPAIRMENT AND EARLY MARRIAGE

It is sometimes argued that women who give birth at an immature age may suffer physical impairment which will reduce their subsequent fertility. The period between menarche and gynaecological maturity has been estimated to be about seven years among Western women (Vollman 1977). Impairment would allegedly occur if first parturition took place early in this seven-year period. It is also suggested that early-age pregnancies might have a high risk of terminating in a miscarriage or stillbirth. The evidence from the World Fertility Survey suggests, however, that the impact of pregnancy at an immature age on subsequent fertility can only be slight. Table 3, for example, shows that the proportion of women ending with zero or one live birth is usually no greater for women marrying in the earliest age-at-marriage categories than for those marrying later.

3.5 AGE AT MARRIAGE AND FERTILITY

The net result of all of these possible linkages between early age at marriage and subsequent fertility is indicated in table 4. Women marrying under age 17 end up with at least as many births as those marrying in the ages 17—20. This means that there is little evidence to suggest that early marriage will reduce a woman's final fertility, or at least that, at the aggregate level, overall fertility will be reduced among those marrying early. On the other hand, women marrying under age 17 end up with more births than women marrying at ages 17—20 in many countries, but the difference is particularly evident in the Caribbean and Latin American countries. In contrast, in Asia with the exception of the Philippines, and in Africa, the completed fertility of these two age-at-marriage groups is rather similar. More will be said about these differing patterns across regions when the model of starting, stopping and spacing is discussed in its entirety. In the meantime, however, it can be observed that a difference is obtained in the completed fertility of women marrying under 17 and those marrying at ages 17—20 in those countries where the first birth interval for the younger marrying women is relatively short (table 2). These were also the countries in which the proportion of women marrying under age 17 was low (table 5). This means that in the Latin American and Caribbean countries and in the Philippines those marrying under age 17 were concentrated close to age 17. Furthermore, in general women marrying under 17 in Latin America were more likely to be premaritally pregnant than women marrying in the same age group in the Asian and African countries (Kenya is an exception here, Hobcraft and McDonald 1984).

Differences in fertility are much more evident at the other extreme, that is among women who marry late. Women marrying for the first time at age 25 or above are much more likely than those marrying younger to end up with zero or one birth (table 3). Their average completed fertility is also much less than for women marrying at younger ages. This no doubt is related to the shorter exposure time that these women have and to the declining levels of fecundity beyond age 30. It has also been observed, however, that infertility (inability to conceive) is related to delayed age at first coitus (Cutler *et al* 1979). Late-marrying women may also be selective in other ways of women of low fertility. For example, their late marriage may indicate that because of some health problem they were not rapidly sought in the marriage market. Late-marrying women are also much more likely to marry a husband who is younger than them (Casterline and McDonald 1983) which is an unusual occurrence in the developing country context. Unusual marriages may be marked by unusual circumstances leading to low fertility. Whatever the cause and effect, it is clear that infertility and subfecundity have an important influence on the completed fertility of women who marry at relatively late ages in developing countries.

3.6 DISSOLUTION OF MARRIAGE AND INFERTILITY

So far the discussion in this section has focused on age at first marriage, that is, on starting behaviour. Dissolution of marriage as pointed out above may influence starting, stopping or spacing behaviours. This issue will be examined in more detail using the model described in chapter 4.

In the model, dissolution affects exposure time which potentially leads to fertility reduction. It should be remembered, however, that there is a reverse causal linkage between dissolution and fertility—specifically that childlessness may be the cause of dissolution. In these circumstances,

Table 2 The mean length of the first birth interval (marriage to first birth) by age at first marriage among ever-married women aged 40—49 (months)

Country or ethnic group	Age at first marriage						
	<17	17—20	21—24	25+	<15	21+	Total
Bangladesh	72	37[a]	*	*	75	*	68
Indonesia	57	41	32	26	63	30	51
Korea, Rep. of	44	33	25	22	52	25	36
Malaysia: Malays	40	25	22	*	44	24	34
Malaysia: Chinese	27	20	18	20	*	19	21
Nepal	72	46	42	–5	83	24	59
Pakistan	40	37	30	26	42	29	38
Philippines	28	19	17	13	35	15	19
Sri Lanka	27	20	20	19	29	19	22
Thailand	40	27	22	14	48	20	27
Fiji: Fijians	26	18	13	–24	31	4	14
Fiji: Indians	34	28	21	*	35	19	30
Jordan	33	28	22	22	37	22	30
Syria	36	27	22	20	43	21	28
Cameroon	56	31	6	–75	66	–40	25
Ghana	33	29	15	–4	38	8	26
Kenya	32	24	15	–18	40	5	23
Lesotho	41	31	18	–14	44	8	29
Senegal	33	22	25	*	35	1	28
Sudan (North)	56	44	31	23	57	28	49
Dominican Republic	29	19	22	12	29	19	23
Guyana: Non-Indians	28	22	25	6	30	19	23
Guyana: Indians	29	26	18	*	37	10	26
Haiti	29	23	22	28	30	25	25
Jamaica	28	25	12	–39	33	–9	14
Trinidad: Non-Indians	32	28	24	23	32	24	28
Trinidad: Indians	29	23	*	*	32	22	26
Colombia	25	14	8	–15	26	–2	9
Costa Rica	29	15	5	–28	*	–9	6
Mexico	24	19	16	–2	30	8	18
Panama	21	21	13	–7	25	6	16
Paraguay	21	17	11	–12	25	0	12
Peru	22	16	11	–9	29	3	13
Venezuela (aged 40—44)	22	17	13	12	23	13	17

[a] Married at ages 15—20
* = less than 30 cases

the loss of exposure time due to dissolution may be largely irrelevant because the woman may be sterile. This is not necessarily always the case, however, because her husband may also have been sterile.

Where a childless marriage is dissolved in the first few years of marriage, it cannot be argued that the dissolution was due to childlessness. In this case, the reverse causal direction would probably apply. Thus to examine the impact of childlessness on dissolution we would need to confine ourselves to unions which had lasted at least three years and then see whether childless unions were more likely to be dissolved than those where there had been a birth.

Women in Indonesia provide a good case study of this situation because of their relatively high dissolution rates and because of the extended length of their first birth intervals. Among Indonesian women whose first union had lasted three or more years, the rate of termination during the fourth year was 3.9 per cent for those who had not had a child in the first three years and 2.0 per cent for those who had. Certainly, then, childlessness appears to have had a

Table 3 Proportion of ever-married women aged 40—49 with 0 or 1 children ever born by age at first marriage

Country	Age at first marriage						
	<17	17—20	21—24	25+	<15	21+	Total
Bangladesh	5	*	*	*	5	*	5
Indonesia	15	14	14	32	17	20	15
Korea, Rep. of	4	5	8	20	9	9	5
Malaysia: Malays	10	8	(12)	*	10	(22)	10
Malaysia: Chinese	5	1	3	(14)	*	7	4
Nepal	6	10	9	(17)	6	12	8
Pakistan	6	8	(7)	*	8	(7)	6
Philippines	3	3	4	17	3	9	6
Sri Lanka	4	6	8	27	3	17	9
Thailand	4	4	8	(20)	4	12	7
Fiji: Fijians	13	12	10	29	16	15	13
Fiji: Indians	4	8	2	*	4	7	5
Jordan	3	3	0	13	4	5	3
Syria	3	2	3	20	3	10	5
Cameroon	23	18	18	27	29	23	21
Ghana	3	5	4	9	3	6	4
Kenya	6	4	7	7	6	7	5
Lesotho	14	11	13	(17)	(14)	14	12
Senegal	7	9	*	*	6	(9)	7
Sudan (North)	13	9	(4)	*	13	(14)	13
Dominican Republic	6	9	(13)	*	(5)	19	11
Guyana: Non-Indians	9	14	(16)	*	*	26	16
Guyana: Indians	8	5	*	*	(7)	*	7
Haiti	11	5	8	(19)	*	13	10
Jamaica	12	15	14	28	*	20	16
Trinidad: Non-Indians	12	10	(15)	(37)	(12)	24	15
Trinidad: Indians	4	10	*	*	(6)	*	9
Colombia	3	4	5	18	3	11	7
Costa Rica	5	2	4	17	*	10	6
Mexico	4	6	7	21	6	13	7
Panama	2	7	8	(21)	4	13	7
Paraguay	4	5	9	22	*	15	9
Peru	1	4	5	19	2	11	6
Venezuela (aged 40—44)	2	2	(10)	(21)	*	15	6

NOTES:
* = less than 50 cases
( ) = 50—99 cases

strong impact on rates of dissolution. However, when this question is turned around, that is, when we look at the association between long birth intervals and dissolution, we find that among Indonesian women who did not have a birth in the first five years of marriage and whose marriage was terminated within ten years, 86 per cent had had their marriages terminated in the first three years. It is clearly evident that the significance of childlessness on dissolution is minor when compared with the impact of dissolution on extension of the length of the first birth interval. It would not be incorrect, therefore, to assume in the case of Indonesia that low fertility associated with dissolution was mainly due to loss of exposure time rather than to the association between sterility and dissolution. This conclusion can be extended to other societies which have high dissolution rates because in these societies, most dissolutions occur within the first three years of the union (Smith, Carrasco and McDonald 1984).

Table 4 Mean number of children ever born to ever-married women aged 40—49 by age-at-first-marriage groups

Country	Age at first marriage						
	<17	17—20	21—24	25+	<15	21+	Total
Bangladesh	7.0	6.8	*	*	7.0	*	6.9
Indonesia	5.5	5.2	4.6	2.9	5.4	4.0	5.3
Korea, Rep. of	6.2	5.3	4.1	3.3	6.4	4.0	5.4
Malaysia: Malays	6.0	6.5	5.4	2.6	5.9	4.2	6.0
Malaysia: Chinese	7.5	7.1	5.4	3.6	*	4.7	6.3
Nepal	6.1	5.3	5.0	4.0	6.2	4.6	5.7
Pakistan	7.2	6.8	5.5	4.2	7.1	5.1	6.9
Philippines	8.7	7.7	6.2	3.8	8.6	5.2	6.9
Sri Lanka	6.9	6.2	5.1	3.0	7.1	4.1	5.8
Thailand	7.4	6.8	5.8	3.8	7.3	5.2	6.4
Fiji: Fijians	6.3	6.3	5.6	3.7	5.7	5.1	5.9
Fiji: Indians	7.5	5.9	5.5	*	7.7	5.1	6.8
Jordan	9.6	8.3	7.3	4.7	9.8	6.4	8.7
Syria	8.7	8.2	7.1	4.4	8.8	6.0	7.7
Cameroon	5.2	5.7	5.3	4.4	4.7	4.8	5.1
Ghana	7.2	6.4	5.6	4.5	7.4	5.2	6.4
Kenya	8.2	7.8	7.2	6.2	8.1	6.9	7.8
Lesotho	5.5	5.5	4.9	3.3	5.6	4.4	5.2
Senegal	7.2	6.8	4.9	*	7.1	4.9	6.9
Sudan (North)	6.2	6.1	6.4	4.2	6.5	5.5	6.1
Dominican Republic	7.6	7.2	5.1	3.4	8.2	4.5	6.7
Guyana: Non-Indians	7.4	6.2	4.7	2.8	6.1	4.0	5.9
Guyana: Indians	7.6	7.0	5.4	*	8.0	4.7	7.1
Haiti	6.3	6.8	5.5	4.0	5.9	4.9	5.9
Jamaica	6.4	6.0	4.9	3.9	7.0	4.5	5.5
Trinidad: Non-Indians	6.5	5.4	4.1	2.3	7.1	3.4	5.2
Trinidad: Indians	6.9	5.8	4.6	*	7.0	4.2	6.2
Colombia	8.7	7.8	6.4	4.2	9.1	5.4	6.9
Costa Rica	9.0	8.1	6.2	4.3	8.6	5.4	6.9
Mexico	8.4	7.6	6.0	3.9	8.3	5.1	7.1
Panama	7.5	5.9	4.7	3.3	7.5	4.2	5.8
Paraguay	8.3	7.1	4.9	3.6	7.3	4.3	6.3
Peru	8.5	7.3	6.1	4.0	8.7	5.2	6.8
Venezuela (aged 40—44)	8.0	6.8	5.1	3.0	8.1	4.1	6.3

* = less than 30 cases

3.7 FECUNDITY IMPAIRMENT, MENOPAUSE AND FREQUENCY OF INTERCOURSE

There is a strong relation between a woman's age at marriage and the age difference between herself and her husband: essentially the younger the woman's age at marriage the greater is the difference in age with her husband. This relation may have a bearing on subsequent fertility, particularly in respect of the stopping pattern (Casterline and McDonald 1983). For two women of a given age, say age 40, the one who married younger will have an older husband. Consequently the younger marrier is more likely to be a widow or to have a husband who is less able to reproduce or is less interested in intercourse. In conflict with this view, Udry *et al* (1982) have concluded on the basis of a cross-cultural comparison that decline in marital intercourse is primarily a function of female age, and to a much lesser extent of male age. They suggest a biological explanation, that declining sexual frequency is attributable to decline in female libido with age probably associated with the declining female androgen levels.

Table 5 Percentage distribution of age at first marriage: ever-married women aged 40—49

Country	Age at first marriage			
	<17	17—20	21—24	25+
Bangladesh	95	4	1	0
Indonesia	67	24	6	3
Korea, Rep. of	37	47	13	3
Malaysia: Malays	64	26	5	4
Malaysia: Chinese	21	45	22	13
Nepal	61	25	9	5
Pakistan	71	21	6	3
Philippines	18	41	24	17
Sri Lanka	34	34	17	16
Thailand	19	49	23	9
Fiji: Fijians	21	42	28	10
Fiji: Indians	62	27	8	3
Jordan	52	32	11	5
Syria	34	34	19	14
Cameroon	46	29	10	14
Ghana	35	42	15	8
Kenya	38	41	15	6
Lesotho	29	50	15	7
Senegal	67	25	6	2
Sudan (North)	61	22	11	7
Dominican Republic	37	37	17	9
Guyana: Non-Indians	26	44	20	11
Guyana: Indians	57	31	7	5
Haiti	23	35	25	17
Jamaica	24	41	20	15
Trinidad: Non-Indians	35	37	17	11
Trinidad: Indians	57	29	11	3
Colombia	21	35	23	20
Costa Rica	16	36	26	22
Mexico	32	36	18	13
Panama	33	34	20	13
Paraguay	22	40	21	18
Peru	24	38	22	16
Venezuela (aged 40—44)	29	39	17	15

Related to this is the question as to whether frequency of intercourse declines with duration of marriage irrespective of the woman's current age. If this were indeed the case, the frequency of intercourse would decline at a younger age for those marrying early. Here we shall not investigate these processes thoroughly but rather shall concentrate on the outcome, that is, we shall see whether sexual behaviour, the onset of menopause or fecundity impairment vary according to a woman's age at first marriage when her current age is controlled. Questions on sexual behaviour and menopause were asked in only a few countries included in the World Fertility Survey. A question on fecundity impairment was asked in all surveys but the question was asked only of non-pregnant, non-contracepting, currently married women. It is therefore difficult to compare levels of fecundity impairment according to age at first marriage. For example if most fecund women in a particular age-at-marriage category are using contraception, the level of infecundity among those not using contraception will be high. The best we can do is to include all pregnant, contracepting and sterilized women (or husband sterilized) in the fecund category. Table 6 therefore shows the percentage of all currently married women aged 35—44 who said it was not physically possible for them to have another child. These percentages may be misleading when compared across countries because of widely varying levels of contraceptive use. The purpose here however is to examine within-country patterns by age at marriage, but even these patterns may be confounded by a relation between age at marriage and use of contraception. Nevertheless it does seem that in many countries, particularly in Asia and Africa, there is a tendency for fecundity impairment to be reported more frequently among those who married young. It is also possible that some women reported that 'it was not physically possible for them to have another child' because they had stopped having intercourse more or less permanently. Thus table 6 may measure terminal abstinence as well as infecundity. Whatever the causal mechanism, it seems that 'physical capacity to have a birth' among women above the age of 35 is related to age at first marriage in several countries. This will mean that for these countries we could expect to find a positive relation between starting and stopping.

Some further light can be shed on this relation by examining data on sexual behaviour and menopause for those countries where the information was obtained. In six countries, women who said they were unable to have another birth were asked whether they thought they were in the menopause. In the age group 35—44 (the age group used in table 6), the percentages saying they were in menopause are higher for those marrying early. Furthermore, the differences in menopause by age-at-marriage groups account for most of the differences between age-at-marriage groups in the proportion of women describing themselves as not fecund. This relation between age at marriage and the onset of menopause is shown in table 7 for women aged 45—49.

There is a tendency for women who married early to be more likely to say that they are unable to have another birth and that they think they are in the menopause. For three African countries, it is possible to investigate the extent to which this finding may be associated with differences in sexual behaviour. All currently married women in these three countries were asked: are you having sexual relations with your husband these days? For women of a given age, the responses to this question showed no clear relation to age at first marriage. This was also the case for data on coital frequency for the Philippines. In other words, the data on sexual behaviour add little to the relations observed in tables 6 and 7. The observed relation between age at first marriage and fecundity impairment at older ages therefore remains something of a mystery. It is possible to speculate however that women with a long open interval perhaps associated with infrequent sexual intercourse are more likely

Table 6 Percentage of currently married women aged 35—44 describing themselves as not fecund by age at first union

Country	Age at first union		
	<17	17—20	21+
Bangladesh	15	*	*
Indonesia	35	23	18
Korea, Rep. of	23	15	11
Malaysia: Malays	13	11	10
Malaysia: Chinese	(21)	15	7
Nepal	25	17	20
Pakistan	20	15	16
Philippines	18	10	9
Sri Lanka	22	18	10
Thailand	27	22	18
Fiji: Fijians	36	27	21
Fiji: Indians	12	8	3
Jordan	21	14	12
Syria	21	17	14
Cameroon	22	15	15
Ghana	21	17	14
Kenya	22	11	7
Lesotho	34	22	20
Senegal	22	19	(19)
Sudan (North)	23	18	12
Dominican Republic	13	10	8
Guyana: Non-Indians	11	8	7
Guyana: Indians	10	10	(4)
Haiti	14	11	7
Jamaica	9	9	10
Trinidad: Non-Indians	8	9	8
Trinidad: Indians	10	10	(5)
Colombia	6	8	6
Costa Rica	9	11	11
Mexico	23	17	15
Panama	12	8	11
Paraguay	8	11	11
Peru	16	13	11
Venezuela	3	7	9

NOTES:
The denominator of this percentage is all currently married women including those who were pregnant, contracepting, or sterilized (or husband sterilized) despite the fact that these latter categories of women were not asked the fecundity status question.
( ) = 50—99 cases
* = less than 50 cases

to say that they are physically incapable of having another child and then, when asked directly, to attribute their incapacity to menopause. After all in clinical studies, menopause requires a precise definition but in the WFS surveys only the woman's opinion was sought. In other words, we may need to be somewhat sceptical of the

Table 7 Percentage of currently married women aged 45—49 who thought they were in menopause,[a] by age at first marriage

Country	Age at first marriage		
	<17	17—20	21+
Syria	39	30	25
Cameroon	25	18	11
Ghana	36	25	(18)
Kenya	35	26	13
Lesotho	(20)	24	*
Sudan (North)	38	—— 19 ——	
Philippines[b]	41	32	31

[a] Women were first asked if they thought it was physically possible for them to have another child. Those answering 'No' were then asked if they thought they were in menopause.
[b] The data for the Philippines were not obtained as in [a]. Instead they are the result of a question put to all women as to whether their periods were regular or irregular. These women reported that they were not menstruating.

NOTES
( ) = 50—99 cases
* = less than 50 cases

observed impact of age at first marriage on fecundity impairment at older ages. This scepticism is confirmed by the fact that the relation is more definite in Asian and African societies where there is a tradition of less regular intercourse beyond the age of 35. As we shall see below, these same societies are more likely to be characterized by an early stop to fertility among those marrying early.

3.8 FERTILITY PREFERENCES, CONTRACEPTION AND AGE AT FIRST MARRIAGE

The previous discussion has looked at the possibility of a physiological relation between starting and stopping of fertility. Now we shall look at the relation between starting and stopping from the behavioural perspective. In many if not most of the countries surveyed in the World Fertility Survey, the modern notion of fertility control has received some currency. In these countries, therefore, we might expect to find a relation between age at first marriage and the desire for additional children for women of a given age. By a given age, a woman who married young would have had more children and if fertility preference is meaningful to her, she would therefore be more likely to want fewer additional children than women who married later. This presumes, of course, roughly similar fertility preferences for all women.

This question is investigated in table 8 and the results are quite striking in most societies, that is, those marrying at older ages among women currently aged 30—34 are much more likely to want an additional child. This agrees with analysis of WFS data which shows that the number of surviving children is the most powerful determinant of whether a woman wants an additional child (Lightbourne and MacDonald 1982). If preferences can be turned into

Table 8 Percentage of currently married, fecund women aged 30—34 who want no more children by age at first marriage

Country or ethnic group	Age at first marriage		
	< 17	17—20	21 +
Bangladesh	78	*	*
Indonesia	58	36	36
Korea, Rep. of	*	88	81
Malaysia: Malays	48	36	(25)
Malaysia: Chinese	*	75	45
Nepal	48	33	(19)
Pakistan	63	53	(30)
Philippines	58	65	46
Sri Lanka	82	79	49
Thailand	(84)	76	54
Fiji: Fijians	(51)	43	31
Fiji: Indians	74	70	(52)
Jordan	54	43	(36)
Syria	53	49	32
Cameroon	n.a.	n.a.	n.a.
Ghana	10	10	9
Kenya	17	22	15
Lesotho	(30)	19	(13)
Senegal	n.a.	n.a.	n.a.
Sudan (North)	18	19	9
Dominican Republic	(59)	(67)	(49)
Guyana: Non-Indians	65	49	(30)
Guyana: Indians	80	74	(53)
Haiti	(55)	(61)	(34)
Jamaica	71	59	(45)
Trinidad: Non-Indians	(59)	52	(31)
Trinidad: Indians	(74)	(60)	(34)
Colombia	78	79	58
Costa Rica	(72)	57	44
Mexico	75	66	50
Panama	76	78	56
Paraguay	(38)	34	17
Peru	77	65	57
Venezuela	77	67	58

NOTES:
n.a. = not asked
( ) = 50—99 cases
* = less than 50 cases

Table 9 Percentage of currently married, fecund women aged 35—44 who were using contraception by age at first marriage

Country or ethnic group	Age at first marriage		
	< 17	17—20	21 +
Bangladesh	14	*	*
Indonesia	38	46	54
Korea, Rep. of	50	57	60
Malaysia: Malays	25	33	(32)
Malaysia: Chinese	(62)	64	59
Nepal	7	4	3
Pakistan	12	16	8
Philippines	41	49	57
Sri Lanka	41	49	53
Thailand	42	51	48
Fiji: Fijians	(44)	46	46
Fiji: Indians	69	72	(68)
Jordan	42	56	40
Syria	37	42	35
Cameroon	2	4	5
Ghana	13	11	16
Kenya	9	11	12
Lesotho	11	8	9
Senegal	4	5	*
Sudan (North)	6	5	(8)
Dominican Republic	42	40	50
Guyana: Non-Indians	(37)	39	(41)
Guyana: Indians	40	48	*
Haiti	22	22	35
Jamaica	33	51	45
Trinidad: Non-Indians	56	56	58
Trinidad: Indians	54	61	(62)
Colombia	44	52	50
Costa Rica	79	78	79
Mexico	33	44	53
Panama	56	70	70
Paraguay	35	50	55
Peru	34	38	48
Venezuela	53	61	64

NOTES:
( ) = 50—99 cases
* = less than 50 cases

reality, therefore, we could expect to see an earlier stop to fertility among those marrying early in all countries except the African countries. In Africa, the proportions not wanting an additional child were small for all age-at-marriage categories and in two countries, Cameroon and Senegal, the question was not asked, presumably because it had been considered to be meaningless.

Preferences can be turned into reality through the use of contraception. Table 9 shows differences in current usage of contraception according to the ages at first marriage of women. In this case we consider women aged 35—44, the ages at which stopping would normally occur for those wishing to limit their fertility. It is evident that if indeed the preferences shown in table 8 are being realized then

contraception is not the mechanism. Usage of contraception is almost universally lower among women marrying under 17 compared to those marrying at ages 17—20. This no doubt reflects the fact that both contraceptive usage and age at marriage are correlated with characteristics such as education and place of residence. Thus if the pattern of preferences shown in table 8 bears a resemblance to stopping behaviour, then the cause is not use of contraception. In fact, contraceptive usage normally works in a direction opposite to the preferences shown in table 8.

3.9 AGE AT LAST BIRTH AND AGE AT MARRIAGE

With this background we are now in a position to examine whether, because of the various influences discussed in the two preceding subsections, there is a relation between age at marriage and age at last birth. We shall examine both the means (table 10) and distributions (table 11) of age at last birth according to age at marriage.

In general the mean ages at last birth shown in table 10 indicate that age at last birth is positively related to age at first marriage. An early start is associated with an early stop and a late start with a late stop. Some of the most definite examples of this pattern are Indonesia, the Malays in Malaysia, Pakistan, Nepal, Syria, Sudan (North), the Indians in Guyana, and Haiti. There is only one counter-example, the Republic of Korea, which shows a pattern of late start with early stop and early start with late stop. This is interesting because, as we have just seen, use of contraception is positively related to age at marriage and in developing societies, contraception has generally been used as a stopping rather than a spacing mechanism. The picture we get, then, is that those who marry early cease childbearing at a relatively early age but that contraception is generally not the way by which fertility is brought to an end. On the other hand, those marrying late have a late stop to their fertility which, except in South Asia and Africa, is associated with high use of contraception. It should be pointed out, however, that there are several countries which display no relation between age at marriage and age at last birth, particularly if we exclude women marrying very late (ages 25 and over). This latter pattern is evident throughout Latin America, in the Philippines, Thailand, Jordan, and Senegal.

It could be argued that there is a necessary bias in the relation between the mean age at last birth and age at marriage, specifically that if most births occur within marriage, then those marrying younger are more likely to have their last birth at a very early age. They could in fact have had their last birth before the older marrying women had married. The bias would arise where the very early stop to fertility was involuntary. Table 11, however, shows that there are several examples which counter the suggestion of a necessary bias, that is, there are many countries in which the proportion of last births occurring below age 30 does not vary according to the women's age at marriage. These are essentially the same countries for which the mean age at last birth showed no relation with age at marriage. The interesting pattern of late start with early stop and early start with late stop for Korea is also evident in table 11. Perhaps of greatest interest, however, is the fact that the proportion of last births occurring under age 30 varies quite strongly by age at marriage in those countries which display the pattern of early start with early stop. In these countries, up to one-third of women marrying under age 17 complete their fertility below age 30. This is contrary to the proposition made by Knodel (1978) that with natural fertility, the proportion having a last birth before age 30 will not vary significantly across age-at-marriage groups.

Table 10 Mean age at last birth (years) by age at first marriage, ever-married women aged 40—49

Country or ethnic group	Age at first marriage			
	<17	17—20	21+	25+
Bangladesh	35.2	37.6	*	*
Indonesia	32.9	34.8	35.8	37.2
Korea, Rep. of	35.5	34.3	33.8	35.6
Malaysia: Malays	33.2	35.6	37.3	*
Malaysia: Chinese	33.5	34.9	34.9	36.4
Nepal	35.3	36.3	38.1	40.1
Pakistan	35.5	37.4	38.3	*
Philippines	37.2	37.3	37.2	37.8
Sri Lanka	33.4	35.3	35.4	36.5
Thailand	35.9	36.1	36.4	37.1
Fiji: Fijians	33.8	35.6	36.2	36.6
Fiji: Indians	33.3	33.1	35.7	*
Jordan	37.1	37.3	37.2	38.5
Syria	36.7	38.1	39.0	40.2
Cameroon	32.9	36.3	36.4	35.4
Ghana	36.8	37.5	37.8	38.9
Kenya	37.0	38.8	40.4	40.8
Lesotho	33.9	35.5	36.5	37.4
Senegal	36.3	37.4	35.9	*
Sudan (North)	33.7	36.4	38.5	40.1
Dominican Republic	33.3	35.1	35.1	35.8
Guyana: Non-Indians	33.2	34.0	35.4	36.5
Guyana: Indians	29.4	33.8	35.0	*
Haiti	33.2	36.6	37.6	40.3
Jamaica	32.8	34.4	34.5	34.4
Trinidad: Non-Indians	31.8	32.5	33.4	36.4
Trinidad: Indians	32.4	32.1	*	*
Colombia	34.0	35.6	35.8	36.9
Costa Rica	35.7	35.8	35.2	36.6
Mexico	35.6	36.6	36.5	37.1
Panama	33.1	33.0	34.2	35.3
Paraguay	35.9	35.3	34.8	36.8
Peru	35.8	36.4	37.1	37.5
Venezuela (aged 40—44)	33.8	34.2	33.6	36.4

NOTE:
* = less than 30 cases

Table 11 Percentage distribution of age at last birth by age at first marriage, ever-married women aged 40—49

Country or ethnic group	Age at last birth	Age at first marriage		
		< 17	17—20	21 +
Bangladesh	< 30	16	*	*
	30—39	63	*	*
	40 +	21	*	*
Indonesia	< 30	30	22	12
	30—39	53	55	61
	40 +	17	23	27
Korea, Rep. of	< 30	13	17	18
	30—39	65	70	73
	40 +	22	13	9
Malaysia: Malays	< 30	28	18	4
	30—39	58	57	70
	40 +	14	25	26
Malaysia: Chinese	< 30	28	18	14
	30—39	55	62	70
	40 +	17	20	16
Nepal	< 30	19	13	6
	30—39	60	57	52
	40 +	21	30	42
Pakistan	< 30	16	10	6
	30—39	60	53	45
	40 +	24	37	49
Philippines	< 30	9	11	7
	30—39	61	54	62
	40 +	30	35	31
Sri Lanka	< 30	22	18	13
	30—39	69	60	64
	40 +	9	22	23
Thailand	< 30	16	16	14
	30—39	55	56	56
	40 +	29	28	30
Fiji: Fijians	< 30	24	19	12
	30—39	62	53	63
	40 +	14	28	25
Fiji: Indians	< 30	23	29	12
	30—39	65	57	66
	40 +	12	14	22
Jordan	< 30	9	7	8
	30—39	62	61	61
	40 +	29	32	31
Syria	< 30	11	6	4
	30—39	57	54	46
	40 +	32	40	50

(Table continues)

Table 11 *(cont)*

Country or ethnic group	Age at last birth	Age at first marriage		
		<17	17—20	21+
Cameroon	<30	35	19	20
	30—39	44	45	44
	40+	21	36	36
Ghana	<30	14	11	8
	30—39	52	49	48
	40+	34	40	44
Kenya	<30	11	10	3
	30—39	56	39	32
	40+	33	51	65
Lesotho	<30	30	21	17
	30—39	42	46	49
	40+	28	33	34
Senegal	<30	14	11	17
	30—39	55	51	57
	40+	31	38	26
Sudan (North)	<30	26	12	7
	30—39	56	62	44
	40+	18	26	49
Dominican Republic	<30	29	20	21
	30—39	56	56	51
	40+	15	24	28
Guyana: Non-Indians	<30	26	27	14
	30—39	60	50	62
	40+	14	23	24
Guyana: Indians	<30	24	20	*
	30—39	64	68	*
	40+	12	12	*
Haiti	<30	33	16	10
	30—39	45	52	44
	40+	22	32	46
Jamaica	<30	28	22	26
	30—39	52	57	52
	40+	20	21	22
Trinidad: Non-Indians	<30	35	33	21
	30—39	55	54	67
	40+	10	13	12
Trinidad: Indians	<30	36	41	*
	30—39	52	49	*
	40+	12	10	*
Colombia	<30	25	15	14
	30—39	54	57	59
	40+	21	28	27

Table 11 *(cont)*

Country or ethnic group	Age at last birth	Age at first marriage		
		< 17	17—20	21 +
Costa Rica	< 30	11	15	16
	30—39	64	61	60
	40 +	25	24	24
Mexico	< 30	17	14	11
	30—39	56	51	59
	40 +	27	35	30
Panama	< 30	33	33	21
	30—39	51	53	61
	40 +	16	14	18
Paraguay	< 30	17	23	18
	30—39	51	48	57
	40 +	32	29	25
Peru	< 30	16	15	9
	30—39	56	53	57
	40 +	28	32	34
Venezuela (aged 40—44)	< 30	25	25	19
	30—39	62	57	68
	40 +	13	18	13

NOTE:
* = less than 100 cases

Some of the countries displaying an early stop to fertility for those marrying young are countries in which the rate of divorce and separation from the first union is high (Indonesia, Malays in Malaysia, Haiti, Sudan) but in others the dissolution rate is low (Nepal, Pakistan, Chinese in Malaysia). Dissolution rates also vary from high to low in those countries which display no relation between age at last birth and age at marriage. To examine this question more closely, the association between age at last birth and marriage dissolution is next considered.

3.10 DISSOLUTION OF FIRST MARRIAGE AND AGE AT LAST BIRTH

If a woman's first marriage is dissolved, the impact on her age at last birth will depend primarily on whether or not she remarries. If she remarries and stays married, we would expect under conditions of natural fertility that she would end her childbearing at a similar age to women whose first union remained intact. Under controlled fertility, the remarried woman may complete her fertility at a later age because she had reduced exposure time early in marriage or because she wants to have the usual number of children with her new husband. These issues are considered in table 12, but it should be noted that table 12 is based only on the status of the first union; it does not control for current marital status. Thus all women whose first union is still intact are, of course, currently married and all those whose first union was dissolved and who have not remarried are not currently married, but the third category, women remarried after their first union dissolved, includes both currently and not currently married women. The importance of this selection bias is considered below after the results of the table have been examined.

As expected, the age at last birth of women who did not remarry after their first union dissolved is somewhat lower, usually three to six years, than the mean for women whose first union is still intact. This group in most countries consists mainly of widows, thus explaining why the difference can be as low as two years. Divorce and separation usually occur quite early in marriage, and remarriage is very frequent. These women then dominate the remarried category. In Latin America and the Caribbean, with the exception of Haiti and the Dominican Republic, the age at last birth for remarried women is very close to that for once-married women. This is also the situation in several other countries such as Korea, Pakistan, the Philippines, Thailand, Jordan, Syria, Lesotho, and for the Chinese in Malaysia and the Indians in Fiji. In the remaining countries of Africa and Asia, the age at last birth of remarried women is somewhat lower.

Does this pattern of an earlier stop to childbearing remain after we control for the current marital status of remarried women? To examine this question, Indonesia and Sudan, both of which show a large difference in stopping behaviour

Table 12 Mean age at last birth (years) by status of first union, ever-married women aged 40—49

Country or ethnic group	Status of first union		
	Not dissolved	Dissolved	
		Remarried	Not remarried
Bangladesh	36.6	34.8	31.4
Indonesia	35.6	32.9	29.0
Korea, Rep. of	35.3	35.6	30.7
Malaysia: Malays	35.3	33.6	29.9
Malaysia: Chinese	35.3	*	32.0
Nepal[a]	37.0		31.8
Pakistan	36.8	36.1	30.4
Philippines	37.6	37.3	34.7
Sri Lanka	35.5	33.9	31.4
Thailand	36.7	36.4	32.1
Fiji: Fijians	36.1	34.0	*
Fiji: Indians	33.8	*	31.8
Jordan	37.8	37.3	32.5
Syria	38.3	37.9	35.2
Cameroon	35.7	32.4	32.8
Ghana	38.2	36.8	34.7
Kenya	39.0	36.3	36.8
Lesotho	35.8	*	34.2
Senegal	37.4	35.5	*
Sudan (North)	36.6	32.1	31.5
Dominican Republic	36.5	33.0	31.5
Guyana: Non-Indians	34.5	34.0	
Guyana: Indians	31.2	32.4	
Haiti	38.7	34.9	
Jamaica	34.6	33.7	
Trinidad: Non-Indians	33.3	32.2	
Trinidad: Indians	32.7	32.1	
Colombia	36.3	36.3	31.9
Costa Rica	35.9	36.6	33.8
Mexico	37.1	36.1	32.4
Panama	34.2	33.7	30.3
Paraguay	36.0	35.7	31.5
Peru	36.9	36.8	33.8
Venezuela (aged 40—44)	34.6	35.0	31.7

[a] Data for Nepal refer to the status of the most recent marriage.
* = less than 30 cases

for once married and remarried women, have been taken as examples. For women whose first union had been dissolved who were currently married at the time of the survey, the mean age at last birth in Indonesia was 33.5 years and in Sudan, 32.4 years. These levels are only slightly higher than the values for all remarried women irrespective of current marital status. Thus the lower age at last birth of remarried women compared to women once in a union remains after current marital status is controlled.

In the African countries, this lower age may be related to some extent to the practice of widow remarriage where a brother or relative of the deceased husband will marry the widow, often polygamously. In these circumstances, the couple may not be having sexual intercourse.

Widow inheritance would not however be a sufficient explanation of the lower age at last birth of remarried women in Africa. Thus the causes of this pattern in Africa and some Asian countries remain unclear.

Table 13 Mean length of interbirth intervals (months) by age at first marriage, ever-married women aged 40—49

Country or ethnic group	Age at first marriage			
	< 17	17—20	21—24	25+
Bangladesh	34.1	33.3	*	*
Indonesia	35.6	33.8	32.9	30.7
Korea, Rep. of	36.1	35.9	35.5	31.8
Malaysia: Malays	36.2	32.2	32.7	30.2
Malaysia: Chinese	29.1	28.4	28.9	26.7
Nepal	35.0	36.7	33.4	37.9
Pakistan	33.3	31.5	32.6	*
Philippines	29.9	29.8	29.5	29.4
Sri Lanka	33.2	33.5	31.8	32.5
Thailand	31.9	30.5	29.7	28.0
Fiji: Fijians	33.3	31.9	31.5	36.4
Fiji: Indians	29.2	29.1	30.6	*
Jordan	27.3	26.2	24.7	24.5
Syria	29.3	27.9	27.9	27.7
Cameroon	32.8	34.1	32.5	34.7
Ghana	36.2	36.0	35.1	36.9
Kenya	31.1	31.2	30.8	29.6
Lesotho	39.4	36.9	37.1	39.6
Senegal	35.0	33.1	34.6	*
Sudan (North)	32.0	31.0	28.5	29.7
Dominican Republic	28.4	27.5	29.7	25.9
Guyana: Non-Indians	28.8	29.7	29.8	29.9
Guyana: Indians	20.9	26.3	31.4	*
Haiti	34.5	32.7	32.7	32.1
Jamaica	33.3	30.0	30.7	30.5
Trinidad: Non-Indians	29.5	30.5	30.2	29.4
Trinidad: Indians	30.4	26.7	*	*
Colombia	26.1	27.1	27.7	29.9
Costa Rica	25.9	26.1	27.7	30.4
Mexico	29.6	28.9	29.5	29.8
Panama	29.6	30.2	31.6	29.7
Paraguay	30.1	29.5	33.6	34.7
Peru	30.1	30.4	31.2	34.0
Venezuela (aged 40—44)	29.1	29.0	28.7	31.4

NOTE:
* = less than 30 cases

3.11 SPACING AND AGE AT FIRST MARRIAGE

Spacing is an alternative means of fertility control to stopping, although it has been observed that in most developing countries, contraception is practised primarily when the couple wish to stop having children. Spacing is also related to traditional post-partum behaviour, especially the duration of breastfeeding. The birth interval will be about 12 months longer in a population which breastfeeds for two years compared with a population which breastfeeds for only six months. It might be hypothesized that where long breastfeeding is characteristic of traditional behaviour, it might be more fully practised by the more traditional women. As late marriers are less likely to be quite so traditional, they may have shorter breastfeeding and hence shorter intervals. Table 13, however, shows that at least for women aged 40—49 at the time of the survey, there was very little difference in the mean length of interbirth intervals among women marrying at different ages. The difference of means was rarely greater than about two or three months.

It is possible that the similarity of spacing behaviour among women with different ages at marriage is due to an

Table 14 Mean length of last closed interval (months) by age at first marriage, ever-married women aged 40—49

Country or ethnic group	Age at first marriage			
	<17	17—20	21—24	25+
Bangladesh	45	45	*	*
Indonesia	50	47	47	37
Korea, Rep. of	43	43	46	37
Malaysia: Malays	56	46	51	37
Malaysia: Chinese	39	43	41	34
Nepal	49	46	42	42
Pakistan	42	42	41	36
Philippines	41	42	42	37
Sri Lanka	48	47	43	40
Thailand	44	41	43	30
Fiji: Fijians	41	43	41	47
Fiji: Indians	46	44	43	*
Jordan	35	38	34	40
Syria	41	36	35	34
Cameroon	44	47	42	45
Ghana	46	44	42	43
Kenya	39	41	41	39
Lesotho	49	46	44	46
Senegal	45	40	48	56
Sudan (North)	45	38	37	41
Dominican Republic	39	32	38	34
Guyana: Non-Indians	44	41	42	39
Guyana: Indians	38	36	*	*
Haiti	49	45	43	46
Jamaica	51	42	44	39
Trinidad: Non-Indians	42	43	43	40
Trinidad: Indians	48	37	42	*
Colombia	42	39	42	37
Costa Rica	46	43	44	42
Mexico	43	42	44	39
Panama	36	41	39	34
Paraguay	44	40	49	45
Peru	45	42	46	45
Venezuela (aged 40—44)	47	44	38	44

NOTE:
* = less than 30 cases

Table 15 Mean length of breastfeeding in the last closed interval (months) by age at first marriage, ever-married women aged 40—49

Country or ethnic group	Age at first marriage		
	<17	17—20	21+
Bangladesh	23	20	*
Indonesia	21	20	18
Korea, Rep. of	23	20	19
Malaysia: Malays	9	8	7
Malaysia: Chinese	9	7	7
Nepal	23	24	24
Pakistan	18	18	19
Philippines	27	33	29
Sri Lanka	20	20	15
Thailand	22	20	20
Fiji: Fijians	n.a.	n.a.	n.a.
Fiji: Indians	n.a.	n.a.	n.a.
Jordan	15	13	12
Syria	21	22	19
Cameroon	31	35	33
Ghana	23	22	20
Kenya	22	22	20
Lesotho	22	21	20
Senegal	22	21	19
Sudan (North)	31	30	25
Dominican Republic	12	12	10
Guyana: Non-Indians	11	10	9
Guyana: Indians	15	12	12
Haiti	32	32	27
Jamaica	9	9	8
Trinidad: Non-Indians	9	8	6
Trinidad: Indians	13	10	*
Colombia	12	12	11
Costa Rica	10	9	7
Mexico	14	13	11
Panama	13	12	9
Paraguay	15	12	11
Peru	15	14	14
Venezuela (aged 40—44)	10	9	8

NOTE:
n.a. = not asked
* = less than 30 cases

averaging process. Those marrying late may have shorter early intervals but longer later intervals compared with those marrying early. This would be envisaged to occur in societies where early marriers stopped early and late marriers stopped late. Again, however, table 14 suggests that this is not the case. The mean length of the last closed interval varies very little and far from systematically across age-at-marriage groups. The evidence seems to be powerful, therefore, that, at least among women aged 40—49, women marrying at different ages in the same society had very similar spacing patterns. A similar result has recently been obtained by Hobcraft and McDonald (1984). This conclusion is further supported by data on the mean length of breastfeeding in the last closed interval (table 15). Although breastfeeding patterns vary widely across societies, within any given society, the length of breastfeeding is about the same irrespective of the age at which women married.

Table 16 Mean length of interbirth intervals (months) by status of first union, ever-married women aged 40—49

Country or ethnic group	Status of first union		
	Not dissolved	Dissolved	
		Remarried	Not remarried
Bangladesh	33.2	38.1	34.5
Indonesia	33.7	37.8	32.3
Korea, Rep. of	35.3	45.5	34.2
Malaysia: Malays	33.3	39.2	30.1
Malaysia: Chinese	28.6	*	27.1
Nepal	35.5	(a)	34.4
Pakistan	32.5	37.2	33.0
Philippines	29.5	33.2	28.3
Sri Lanka	32.8	37.7	32.2
Thailand	29.9	34.5	29.4
Fiji: Fijians	32.0	34.5	*
Fiji: Indians	29.0	*	30.2
Jordan	26.5	30.8	26.5
Syria	28.3	31.3	27.5
Cameroon	33.4	34.4	32.3
Ghana	36.1	35.5	35.9
Kenya	30.4	32.6	34.3
Lesotho	37.2	*	39.7
Senegal	33.1	37.5	*
Sudan (North)	30.7	34.5	31.9
Dominican Republic	26.1	31.8	27.0
Guyana: Non-Indians	27.4	30.8	
Guyana: Indians	21.4	28.3	
Haiti	31.0	35.6	
Jamaica	29.5	32.1	
Trinidad: Non-Indians	28.2	31.2	
Trinidad: Indians	28.0	31.0	
Colombia	26.2	30.2	28.4
Costa Rica	26.4	29.6	27.7
Mexico	28.7	34.1	29.8
Panama	29.7	30.8	30.4
Paraguay	30.0	33.0	33.1
Peru	30.2	32.8	31.9
Venezuela (aged 40—44)	28.5	29.4	31.2

[a] Data for Nepal refer to the status of the most recent marriage.
* = less than 30 cases

3.12 SPACING AND MARRIAGE DISSOLUTION

The average spacing pattern will be affected by marriage dissolution in cases where a woman has a child in two or more successive marriages. The interval between births would then include the time spent outside marriage between unions. In cases where the woman did not remarry after a dissolution, the average length of her interbirth intervals may be a little shorter than for women still in their first union. This would be expected because the woman whose marriage was dissolved would not have had children at older ages where intervals are generally longer. These expectations are confirmed by the data in table 16, but the impact of dissolution followed by remarriage is often not

as large as might have been expected. For example, in Indonesia, there is a four-month difference in the average interbirth interval of women still in their first union and women who have remarried following dissolution. With an average of around four birth intervals per woman, this means that dissolution and remarriage only added an additional 16 months to a woman's reproductive life (the time between her first and her last births).

3.13 SUMMARY

The main findings of this section are:

(i) in all countries there is a strong negative relation between age at first marriage and the length of the first birth interval.

(ii) there is a group of countries which shows a positive relation between age at marriage and age at last birth and another group for which the age at last birth does not vary by age at first marriage—only one country, the Republic of Korea, showed a pattern of an early start being associated with a late stop and a late start with an early stop

(iii) the spacing pattern, that is, the average length of interbirth intervals, does not vary very much according to age at marriage, and

(iv) marital dissolution leads to slightly longer average spacing when the woman has remarried and to an early stop to fertility whether the woman has remarried or not.

We have considered as far as possible whether these observed patterns have physiological or behavioural causes. It is clear that the observed patterns cannot be purely physiological because there was a relatively high rate of usage of contraception in many of the surveyed populations. It appears, however, that birth spacing can be explained largely in physiological terms, that is, through the delay of resumption of ovulation associated with the duration of breastfeeding although even in this case the practice of post-partum abstinence in parts of Africa, South Asia and Indonesia may have had an additional effect on spacing. In general, however, spacing patterns are consistent with the definition of natural fertility, in that spacing behaviour does not appear to be linked with parity.

The association between the length of the first birth interval and age at first marriage has both physiological and behavioural explanations. Adolescent subfecundity clearly has a strong impact on the length of the first birth interval of women marrying at younger ages, but its effect is supplemented by practices such as delay of consummation and irregularity of intercourse in the early years of marriage. For those marrying later, the first interval is often short or negative for behavioural reasons, that is, exposure often begins before marriage. Behavioural influences on the first birth interval thus merely reflect that marriage does not necessarily mark the commencement of exposure. These patterns then are generally also consistent with natural fertility which is based on age at first exposure to intercourse rather than age at first marriage.

Severe fecundity impairment induced by early parturition, if it exists, does not have any noticeable impact on levels of fertility. On the other hand, in some countries, particularly in Asia, Africa, and the Middle East, women who married at young ages were more likely at older ages (35 and over) to describe themselves as infecund. Where information was available on menopause it was found that women who had married earlier were more likely to say that they thought they were in the menopause. It is difficult to draw the causal chain in this apparent physiological relation. Perhaps early marriers are selective of women of low nutrition leading to early onset of fecundity decline or perhaps fecundity decline is related to the number of births that a woman has had. Both of these possibilities have little support in the literature on fecundity. Furthermore, the early decline of fecundity of young marriers is not reported in all countries. Thus in the absence of further evidence, it seems more likely that women having long open intervals have tended to report themselves as infecund, even when the long intervals were behaviourly determined. Certainly a desire to stop fertility early among those marrying early is supported by data on the fertility preferences of women in their early thirties. Although it is not evident from WFS data, it is known that there may be terminal or very infrequent intercourse in Africa, South Asia, Indonesia and perhaps also in the Middle East when a woman gets older or when her children are approaching adulthood. This seems to be the most likely explanation of the reported low fecundity of early marriers. This conclusion is perhaps further supported by the way in which the fecundity impairment question was asked: is it physically possible for you and your husband to have another child?

Interestingly, among societies where there was a low level of usage of modern contraception, there were very few instances (Senegal and perhaps Bangladesh) where the age at last birth was not positively correlated with age at marriage. Thus the apparent control over stopping behaviour was determined by more traditional practices. When we move to societies in which there was a relatively high usage of contraception, the picture is more complicated. In the cases of Indonesia, Sri Lanka, Fijians in Fiji, Syria, the Dominican Republic, Guyana, and perhaps the other Caribbean countries and Peru, early marriers stopped early and late marriers stopped late. In Latin America, and in Thailand, the Philippines, Jordan and among Indians in Fiji and Trinidad, despite relatively high levels of contraception and a positive correlation between age at marriage and use of contraception there was no variation in stopping patterns according to age at marriage.

Perhaps in these countries there was an underlying pattern of early start with early stop but the introduction of modern contraception and new fertility values was selective of women of higher socio-economic status who had also married later. The net result therefore was equivalence of stopping behaviour. This conclusion gains some support from the fact that in these countries, the average age at last birth was below the level that would be expected with natural fertility. This interpretation could be extended to the case of Korea where earlier marriers had a somewhat later stop to childbearing.

Thus stopping behaviour appears to conflict with the definition of natural fertility in virtually all WFS countries. In the following chapters we shall pursue these conclusions by examining the simultaneous effects of starting, stopping and spacing behaviour on fertility.

4 A Model of Starting, Stopping and Spacing

The average completed fertility of a group of ever-married women is a function of their starting, stopping and spacing behaviour. The relationship follows:

$$B = S\left(1 + \frac{L-M-F}{I}\right)$$

where:

B = the mean number of children ever born to a group of women

S = the proportion of the group who have at least one child

L = the mean age at last birth

M = the mean age at marriage among women who ever have a birth

F = the mean length of the interval between marriage and the first birth, and

I = the mean length of interbirth intervals.

In this formulation, starting is represented by (M+F), stopping by L and spacing by I. The final component S is an indicator of childlessness or the prevalence of permanent sterility. This formulation has the advantage that it is simple but at the same time it allows us to see the effects of starting, stopping and spacing simultaneously.

Measurement problems are most severe for the mean age at last birth, L. As, in general, the WFS samples extend only to women aged below 50, a high proportion of respondents will not have completed their fertility by the time of the survey. If the analysis is confined to women aged 45—49 at the time of the survey, the recorded age at last birth will be very close to the value which will pertain when all women have definitely completed their fertility. Such a restriction, however, has two difficulties. First, the number of respondents aged 45—49 is small and so there would be limited opportunity to carry out detailed analysis. Second, most of the WFS evaluation reports suggest that there is more misreporting of dates among women aged 45–49 than among women at younger ages. In order to overcome these two problems to some extent while still remaining close to completed fertility, the analysis in this study is based on women aged 40—49 at the time of the survey. This means that the mean age at last birth for these women will be an understatement of its final value when all these women have passed age 50. It is possible, however, to at least make allowance for women who were pregnant at the time of the survey. In such cases, it has been assumed that the pregnancy would end in a live birth at full term and so an additional child is added to the woman's fertility, her age at last birth is taken to be at the appropriate date after the survey and another interbirth interval is added.

Some idea of the degree of understatement of age at last birth can be obtained by comparing the means for women aged 40—49 with those for the subgroup aged 45—49. This is done for three countries, Indonesia, Colombia and Syria which represent respectively early, moderate and late completion of fertility.

Country	Mean age at last birth		Difference (in months)
	Ages 40—49	Ages 45—49	
Indonesia	33.7	34.4	9
Colombia	35.5	36.5	12
Syria	38.0	38.8	9

Given that a small proportion of women aged 45—49 will also go on to have another birth, the level of understatement of the mean age at last birth if it is estimated on the basis of women aged 40—49 appears to be around one year. The understatement is also similar across societies. If there are societal differences in the level of understatement, we could expect that the understatement will be greater the later is the completion of fertility. This means that if we were to draw a conclusion that group differences in fertility were attributable in part to differences in the mean age at last birth, the direction of the truncation error would be such as to strengthen rather than weaken the conclusion.

The formulation shows both the mean age at first marriage and the mean length of the first birth interval. Together, of course, they constitute the mean age at first birth. It would have been possible, therefore, in the formulation to combine M and F and hence draw conclusions only about the mean age at first birth. This was not considered to be appropriate in a study of nuptiality and fertility and in any case, as we shall see later, the division into two components provides us with a better basis for explanation. It should be noted, however, that in measuring F, allowance was made for the fact that the interval between marriage and first birth may have been negative.

If the population is divided into i subgroups, the formulation above can be rewritten as:

$$B = \sum_i p_i S_i \left(1 + \frac{\sum_i p_i L_i - \sum_i p_i M_i - \sum_i p_i F_i}{\sum_i n_i I_i}\right)$$

where p_i = the proportion of the population in group i
n_i = the proportion of total interbirth intervals which apply to group i

and S_i, L_i, M_i, F_i, and I_i are the values of S, L, M, F and I applying in the ith subgroup. Using this formula, it is possible to see the contribution to total births of the stopping, starting and spacing patterns of various subgroups. This formula would be useful in the examination of fertility trends, for example in assessing the effect of education upon changes in completed fertility. Having defined the i groups as consisting of women of i education categories, we could assess what proportion of change was due to changes in the educational composition of the population and what proportion was due to changes in stopping, starting, spacing, and childlessness patterns within educational subgroups. This possibility has not been followed up in this study because the WFS surveys contain only one cohort with completed fertility.

As the formula also applies to individual women with two or more live births (in which case, S = 1), there is also scope for use of the formula in individual level predictive models. This possibility has also not been pursued in this study.

Having defined a model, the next step is to seek out an efficient way of presenting the results. If at all possible, the method of presentation should illustrate the extent of interdependency of starting, stopping and spacing behaviour. The approach used here is a method of stepwise standardization which can be readily illustrated in graphical form. Suppose we take a standard population, W, then:

$$B_w = S_w \left(1 + \frac{L_w - M_w - F_w}{I_w} \right)$$

We can then define a new population by substituting the value of M from the given population, M_g, for the standard value. Thus:

$$B_M = S_w \left(1 + \frac{L_w - M_g - F_w}{I_w} \right)$$

In stepwise fashion, we can then define

$$B_F = S_w \left(1 + \frac{L_w - M_g - F_g}{I_w} \right)$$

$$B_L = S_w \left(1 + \frac{L_g - M_g - F_g}{I_w} \right)$$

$$B_I = S_w \left(1 + \frac{L_g - M_g - F_g}{I_g} \right)$$

$$B_S = S_g \left(1 + \frac{L_g - M_g - F_g}{I_g} \right)$$

The final substitution, B_S, yields a relation containing all the values for the given population, that is the actual mean births for the given population. The final step is to graph the ratios:

$$\frac{B_M}{B_w}, \quad \frac{B_F}{B_w}, \quad \frac{B_L}{B_w}, \quad \frac{B_I}{B_w} \quad \text{and} \quad \frac{B_S}{B_w}$$

The first of these ratios shows the extent to which fertility would be altered by the different exposure time deriving from age at marriage in the given population compared to that in the standard population. No allowance is made for the level of age-specific fecundity applying during the increment of exposure time. This factor is largely taken into account when, with the second ratio, the length of the first birth interval of the given population is included. The length of the first birth interval also encapsulates the influence of factors other than age-specific fecundity such as delay of consummation, irregularity of sexual intercourse early in marriage, and premarital births or pregnancies. The second ratio, B_F/B_w therefore shows the impact of variation of the age at first birth. With the third ratio, the additional impact of stopping is included. This ratio summarizes the impact on mean births of variation of the interval between starting and stopping. The fourth ratio adds the further dimension of how births were spaced between the stopping and starting points and the final point includes the adjustment for childlessness. The cumulative or stepwise approach is a means of drawing attention to interdependences among the five parameters of the model.

A question arises about the order with which the parameters are introduced into the stepwise standardization. The order chosen has the intention of following a behavioural process. Thus the first parameters inputted are the starting parameters and it is logical that they be considered together in their normal sequence. From the behavioural standpoint, there are arguments for next introducing either the age at last birth or the spacing parameter as each can have an impact on the other. If a woman has some idea that her fertility will end around a particular age from early in her marriage, then it will be more appropriate to enter L before I. However, if fertility is ended once a given parity has been achieved, the prior inclusion of I would be favoured. In the end, the inclusion of L before I has been chosen because then the L point can be interpreted as the impact of the range between starting and stopping. The S parameter is inputted last because it is more a group adjustment factor than a measure of individual behaviour. In the end, however, conclusions are not significantly varied by changing the order of input of parameters, as illustrated by the following example. In this example, the behaviour of Korean women is compared with that of women in a hypothetical standard population. The standard used is created by combining the median values of M, F, L, I and S for 34 societies included in this study. The values to be used in the example are as follows:

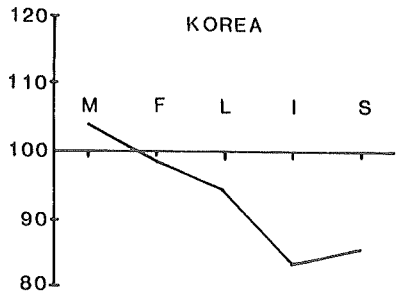
	Standard (values shown in months)	Korea, Rep. of
Age at first marriage (M)	228	219
Length of first birth interval (F)	25	36
Age at last birth (L)	424	416
Length of interbirth intervals (I)	30.8	35.9
Proportion with one or more births (S)	.965	.984
Mean births (B)	6.32	5.41

The results of the stepwise standardization are as follows:

Korean values included	Ratio of mean births to the standard (6.32), percentage
M only	104
M and F	99
M, F and L	95
M, F, L and I	84
M, F, L, I and S	86
M, F and I	87

The example shows that Korean fertility was 14 per cent below that of the standard. When L is inputted before I, four percentage points of this drop are due to the inclusion of L and 11 percentage points are due to the inclusion of I. If, however, I is inputted before L, three percentage points are attributed to L and 12 attributed to I. In either case, the relative importance of spacing over stopping as a cause of the variation from the standard is clear.

The results of this Korean example are graphed below. The impact of the particular pattern of starting, stopping and spacing is evident from the slope of the line preceding the plotted point. If the line has an upward slope then the particular parameter is contributing to higher fertility than the standard. The reverse is true for a downwardly sloping line. A relatively horizontal line indicates very little variation from the standard. It is also possible to examine the extent to which the early course of fertility (starting) is modified by stopping and spacing behaviour. Thus in the Korean example age at marriage is a little earlier than the standard but the effect is totally offset by a longer first birth interval than the standard. A slightly early stop to fertility causes a further drop to a predicted fertility level about five per cent below the standard. The steep slope between L and I indicates that Korean women had much longer spacing than the standard and this is the primary cause of their lower fertility. Finally a slight rise takes place because of the lower level of childlessness recorded for Korea.



This stepwise standardization procedure is quite robust to the systematic understatement of the age at last birth. If, in the above example, we were to assume that age at last birth was underestimated by 12 months for both Korea and the standard, then the stepwise ratios of mean births to the standard would remain unchanged.

To summarize, the methodology described above is no more than a simple descriptive tool at the aggregate level. It serves to identify the important features of the starting. stopping and spacing behaviour of a group of women. It thus represents first-stage analysis. The second stage would consist of attempting to explain the important features to which our attention has been drawn. Such second-stage analysis may often be better conducted at the individual level. Many of the findings of this study based largely on aggregate level analysis would therefore be further illuminated by more intensive investigation at the individual level. The starting, stopping and spacing approach departs from the procedures of other models which show the impact of nuptiality on fertility in that it concentrates upon how a woman's completed fertility is built up from the starting point. Most other models indicate the extent to which nuptiality behaviour reduces a woman's completed fertility from some theoretical maximum level, usually defined by natural fertility.

5 Starting, Stopping and Spacing: Cross-Cultural Comparisons

In this chapter, the methodology described in chapter 4 is applied to 34 societies included in the World Fertility Survey. The parameters of the model are shown for all societies in table 17 and the societies are compared graphically in figure 1. The standard used in figure 1 is the hypothetical population described in chapter 4 which is derived by combining the median values of each parameter for the 34 societies. To recall, the characteristics of this standard are:

Age at first union	19.0 years
First birth interval	25.0 months
Age at last birth	35.3 years
Interbirth intervals	30.8 months
Proportion with one or more births	0.965
Mean children ever born	6.32

Starting behaviour is characterized by an inverse relation between age at marriage and length of first birth interval as was the case for within-country comparisons. Considering the influence of age at marriage only (M), the range of expectations is from + 40 per cent for Bangladesh to −15 per cent for Costa Rica. Taking into account adolescent subfecundity, delay of consummation and premarital conception, all of which are reflected in the additional influence of the first birth interval (F), the range of variation is dramatically reduced. In fact, in terms of starting behaviour (F), 29 of the 34 societies have expected fertilities in a range of only ± 10 per cent of the standard level. The other five, Bangladesh, Pakistan, Senegal, Malays in Malaysia and Indians in Fiji, have expected fertility levels based on their starting behaviour ranging from 11—18 per cent above the standard. Expressed in a slightly different way, in all but five of the societies, we could have expected the completed fertility to lie between 5.7 and 7.0 births considering only the effect of age at first birth. Even more remarkably, half of the societies would have had an expected completed fertility between 6.1 and 6.4 births.

The conclusion to be drawn from this is that the timing of marriage is not related to a desire to achieve particular levels of completed fertility because the impact of age at marriage is so heavily modified by the first birth interval. As was concluded for Western societies before the nineteenth century, the timing of marriage has its own determinants exclusive of completed fertility. These determinants have been discussed at length elsewhere (McDonald, forthcoming), but the important considerations are religion and the type of family organization, in particular as they impinge on the role and status of women.

In virtually all countries, the slope of the line between F and L is quite steep, either positively or negatively. This reflects the considerable amount of cross-cultural variation in the age at last birth. A late stop to childbearing is evident in the Philippines, Jordan, Syria, Ghana, Kenya, Senegal, Haiti, Peru and Mexico, while an early stop applies in Indonesia, Panama, for all overseas Indian populations, Jamaica, non-Indians in Trinidad, and for the Malays in Malaysia. With the exception of Panama, all the societies having an early stop also had an early start. In like manner, many of the countries with a late stop had a relatively late start. Among this group, only Jordan had more than 50 per cent of women marrying under age 17 (table 5).

Table 17 also shows considerable variation in spacing patterns across cultures, but the primary purpose of the model is to look at the combined influence of starting, stopping and spacing, not to describe each separately. With this perspective, figure 1 shows that widely varying levels of fertility are achieved by a range of combinations of stopping and spacing following the relative similarity of starting patterns. This is also evident from figure 2 which shows spacing patterns in relation to the age at last birth. For example, a completed fertility of 6.2 births is obtained for Indians in Trinidad with an age at last birth of 32.5 years and interbirth intervals of 28.8 months. An almost equivalent completed fertility (6.3 births) applies in Ghana with an age at last birth of 37.4 years and interbirth intervals of 36.0 months.

On a regional level, high fertility in the Middle East results from a combination of short spacing with late completion of childbearing. Jordan also has a relatively early start, thus explaining why its fertility level is by far the highest among the WFS countries. South Asia, Nepal, Pakistan, Bangladesh and Sri Lanka all have relatively long intervals combined with a moderate age at last birth but their fertility levels vary mainly because of differences in age at first birth. Pakistan and Bangladesh both have an early start and thus end up with somewhat higher fertility than Nepal and Sri Lanka. Nepal had the oldest age at first birth among the four South Asia populations because of its very long first birth interval.

Fertility patterns in South-East and East Asia are quite variable. Korea, Indonesia, and the Malays all have relatively long spacing with a somewhat early stop to fertility. Their fertility levels are therefore low except that Malay fertility is boosted by an early start. In contrast, spacing is relatively short in the Philippines, Thailand, and for the Chinese in Malaysia. Their fertility levels then depend largely on their age at last birth. The Philippines has high fertility because of its late stop while the Chinese have moderate fertility because of their moderate age at last birth.

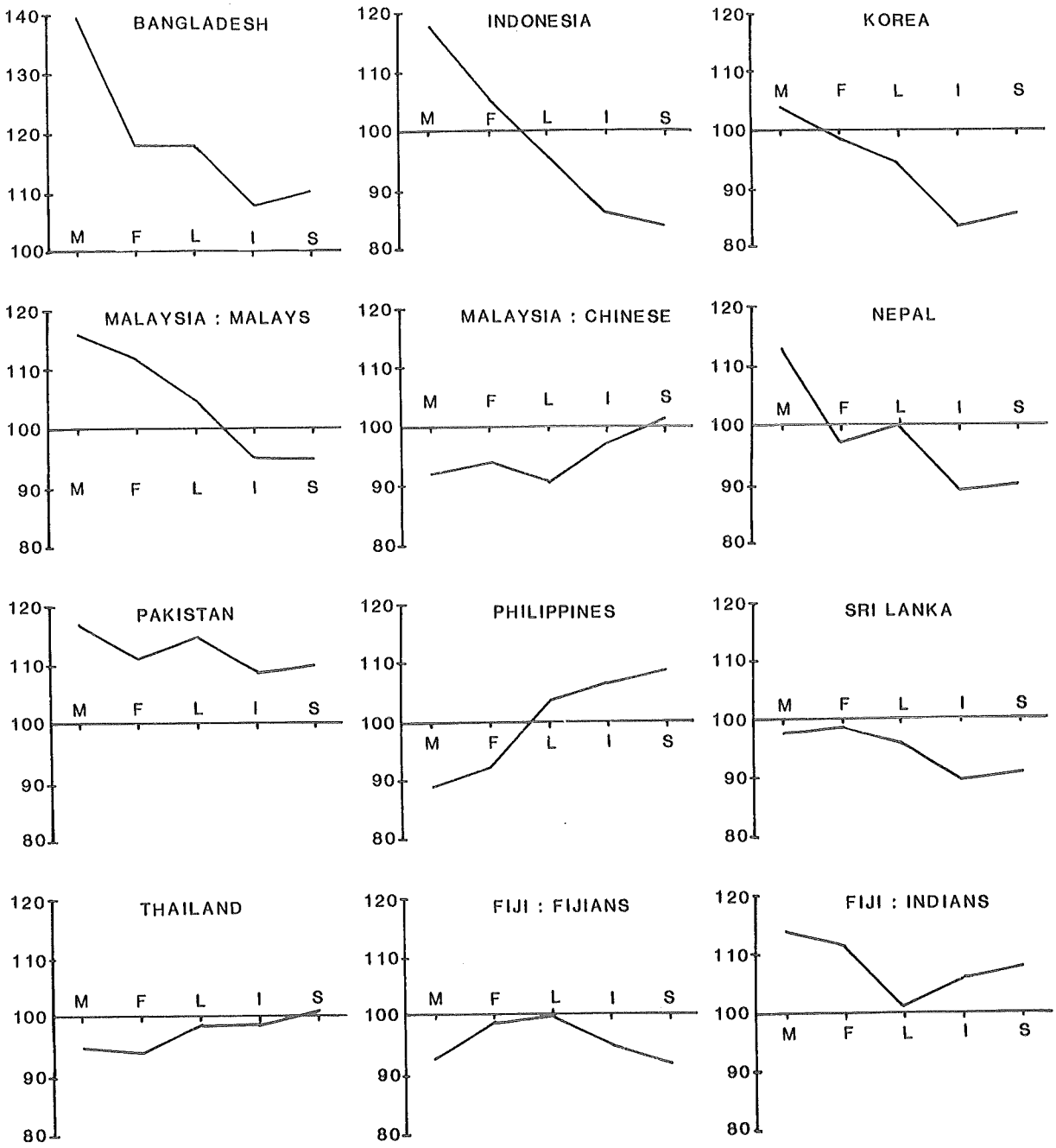
African countries are marked by long spacing and a relatively late stop to fertility. Ghana provides the archetype for this pattern. Despite this, each African country has its specific characteristics which in the end lead to a wide range

Table 17 Parameter values for the model of starting, stopping and spacing, ever-married women aged 40—49, a cross-cultural comparison

Country or sub-national ethnic group	Mean values for women aged 40—49					
	Age at first union (years)	Length of first birth interval (months)	Age at last birth (years)	Length of interbirth intervals (months)	Proportion with 1+ births	Children ever born
Bangladesh	12.3	68	35.3	34.1	.975	6.91
Indonesia	15.9	51	33.7	35.0	.934	5.26
Korea, Rep. of	18.3	36	34.7	35.9	.984	5.41
Malaysia: Malays	16.3	34	34.2	34.8	.955	5.92
Malaysia: Chinese	20.3	21	34.8	28.6	.994	6.31
Nepal	16.8	59	36.0	35.4	.961	5.64
Pakistan	16.1	38	36.1	32.9	.964	6.89
Philippines	20.8	19	37.3	29.7	.976	6.84
Sri Lanka	19.4	22	34.8	33.1	.964	5.70
Thailand	19.9	27	36.2	30.6	.974	6.34
Fiji: Fijians	20.2	14	35.5	32.4	.927	5.79
Fiji: Indians	16.6	30	33.6	29.2	.971	6.74
Jordan	17.4	30	37.3	26.7	.976	8.61
Syria	19.4	28	38.0	28.4	.965	7.60
Cameroon	19.0	25	34.6	33.4	.880	5.18
Ghana	18.8	26	37.4	36.0	.976	6.32
Kenya	18.5	23	38.4	31.0	.969	7.72
Lesotho	19.0	29	35.3	37.8	.949	5.14
Senegal	16.5	28	36.6	34.6	.965	6.89
Sudan (North)	16.8	49	35.2	31.2	.928	6.01
Dominican Republic	18.7	23	34.4	28.1	.952	6.59
Guyana: Non-Indians	19.4	23	34.3	29.4	.925	5.81
Guyana: Indians	17.3	26	31.5	23.3	.969	7.05
Haiti	20.6	25	36.7	33.0	.966	5.86
Jamaica	20.2	14	34.0	31.1	.928	5.48
Trinidad: Non-Indians	19.1	28	32.8	30.0	.932	5.14
Trinidad: Indians	17.2	26	32.5	28.8	.956	6.21
Colombia	20.9	9	35.5	27.3	.971	6.87
Costa Rica	21.6	6	35.8	27.0	.972	6.87
Mexico	19.5	18	36.3	29.3	.963	7.01
Panama	19.7	16	33.6	30.1	.967	5.80
Paraguay	20.6	12	35.5	30.8	.971	6.27
Peru	20.4	13	36.6	30.8	.978	6.74
Venezuela (aged 40—44)	19.8	17	34.3	29.1	.980	6.24

of fertility levels. Lesotho has very long birth intervals while Cameroon has a high degree of childlessness and a somewhat early stop to fertility. Both these countries fall in the low fertility band in figure 2. Sudan has both moderate spacing and stopping patterns and thus ends with similar fertility to Ghana where the late stop is counterbalanced by long intervals. Senegal has relatively high fertility because of an early start and Kenya has very high fertility because of the very late stop.

The Latin American countries in general have high fertility resulting from short birth intervals and a somewhat later stop. Panama and Venezuela, however, have a relatively



NOTE: For an explanation of the meaning of this and subsequent graphs, see chapter 4 of the text.

Figure 1 The stepwise standardization procedure: completed fertility relative to that of a standard population (standard = 100), 34 societies

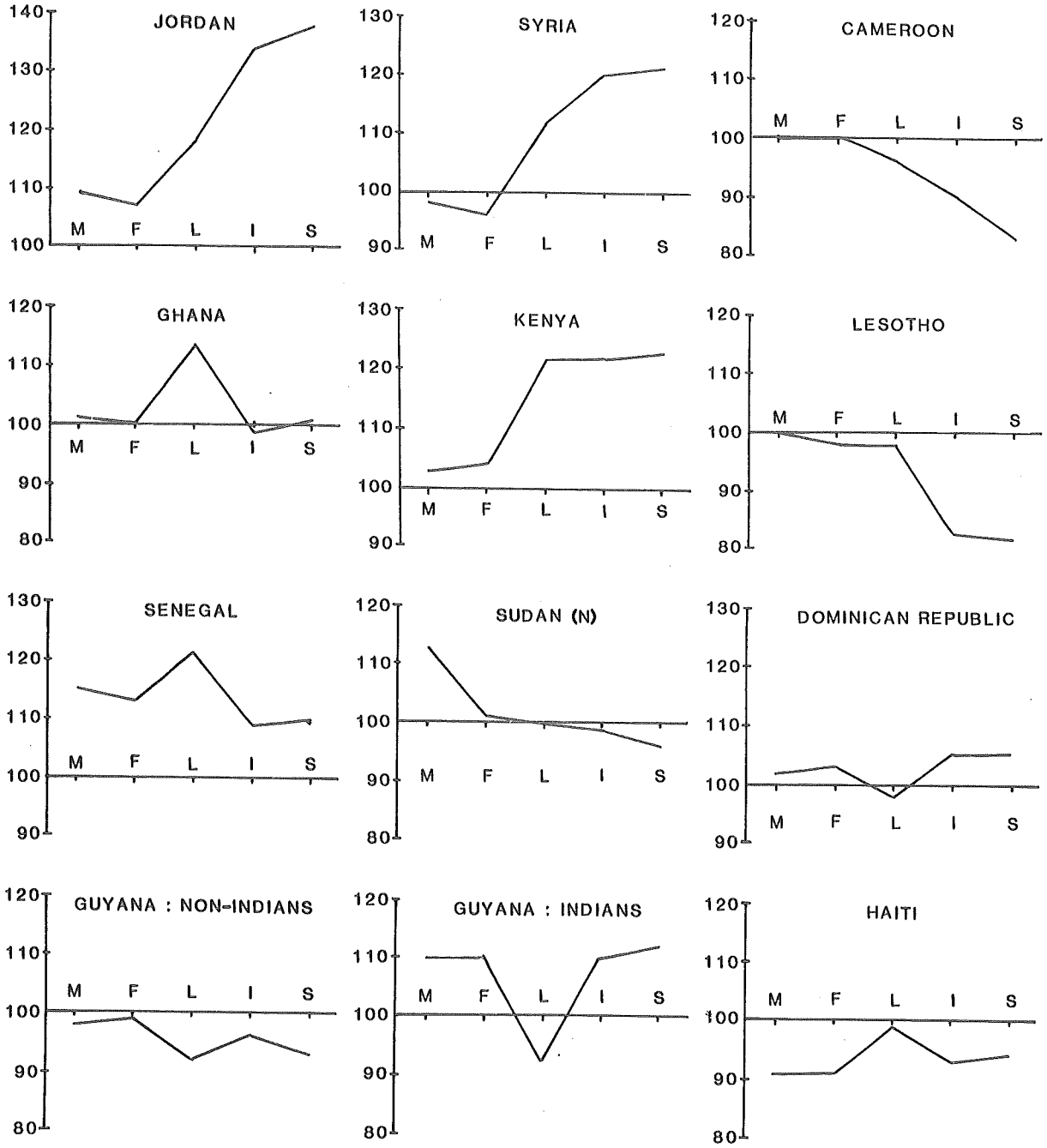
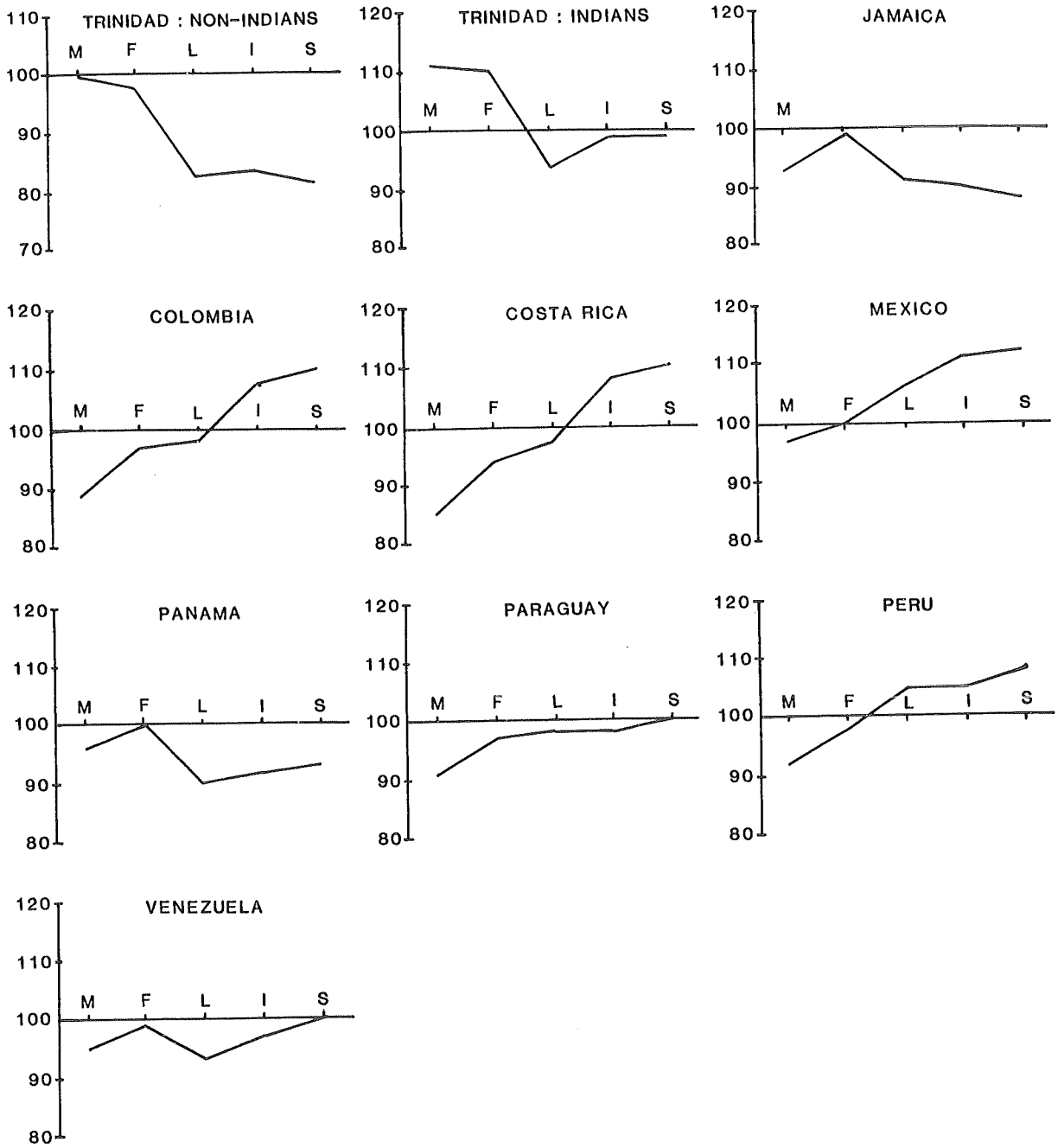


Figure 1 *(cont)*



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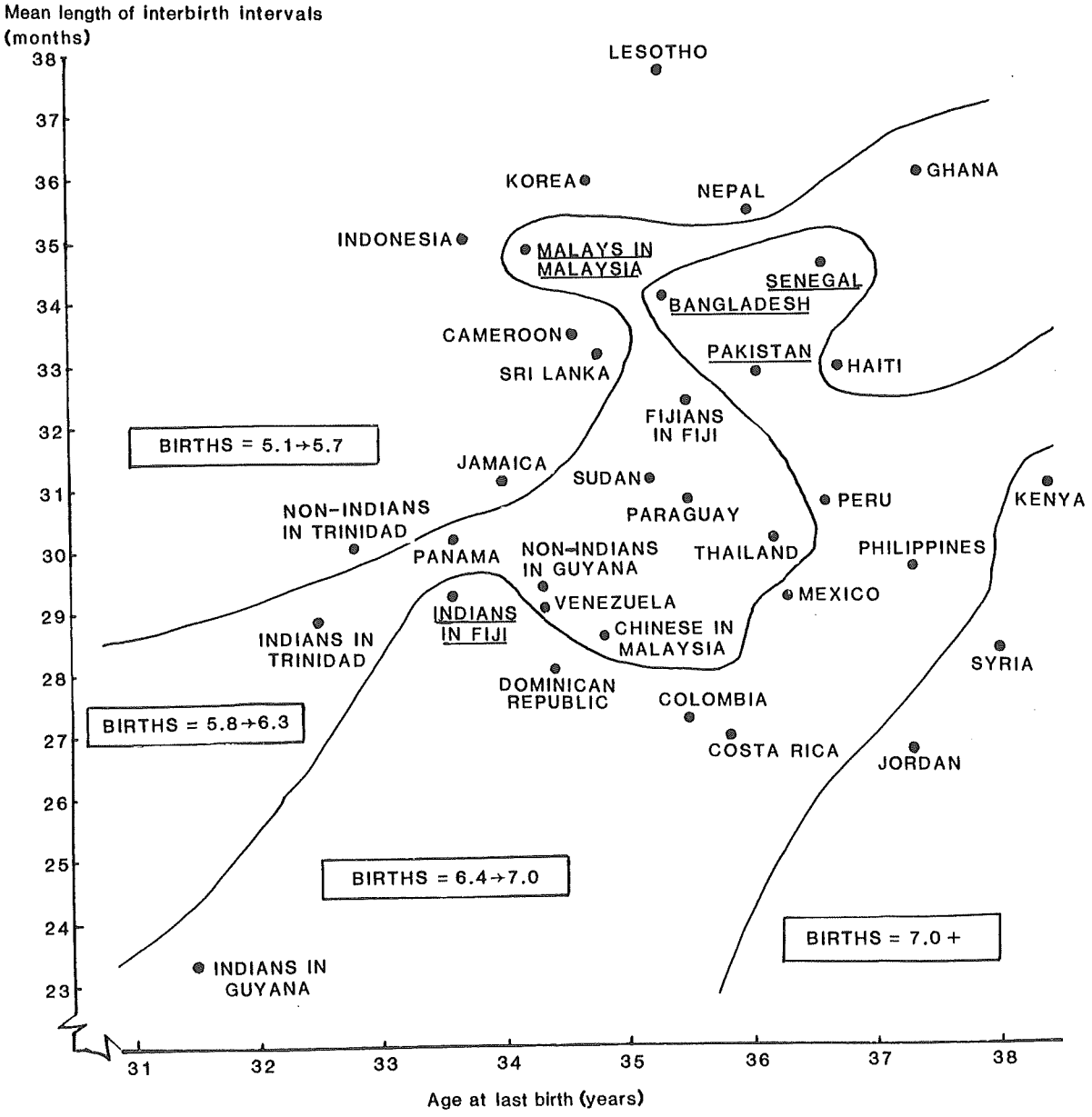


NOTE:
1 The five societies for which the age at first birth adds more than 10 per cent to expected completed fertility are underlined. See the text for further clarification.

2 The data for Venezuela refer to women aged 40—44.

Figure 2 Mean length of interbirth intervals by mean age at last birth, showing also zones of the level of completed fertility, ever-married women aged 40—49, 34 societies

early stop to childbearing which lowers their fertility below the median for all societies. Paraguay has a similar level of fertility to Panama and Venezuela because it has both moderate spacing and stopping behaviour.

The black Caribbean populations tend to have short birth intervals but an early stop to fertility. Haiti, however, shows the exact opposite pattern of long intervals and a late stop. All three overseas Indian populations in Guyana, Trinidad and Fiji display a pattern of short spacing with an early stop to fertility even more markedly than the black Caribbean populations.

In general, spacing patterns correspond to the reported durations of breastfeeding (table 15). Societies with long interbirth intervals normally have long durations of breastfeeding (20 months or more) while those with short birth intervals have short durations of breastfeeding (15 months or less). There are some exceptions to this pattern. Long periods of breastfeeding were associated with relatively short birth intervals in the Philippines, Thailand, and Syria, while for the Malays, a short duration of breastfeeding was associated with long interbirth intervals. Like Ferry (1981), we must comment that 'it is difficult to believe that the short breastfeeding durations reported (for Malaysia) are real'. Also exceptional is the fact that the length of birth intervals was the same for Sudan and Jamaica, although Sudan had one of the longest durations of breastfeeding and Jamaica one of the shortest. As previously mentioned, in parts of Africa, South Asia, and Indonesia, breastfeeding is associated with long periods of sexual abstinence. There seems to be very little doubt that this syndrome of abstinence, breastfeeding and delayed post-partum amenorrhoea is consciously practised in these societies in order to space births. As stated by Lesthaeghe *et al* (1981):

> Women know that risking a too rapid succession of pregnancies threatens the health of the existing child, primarily through its effect on breastfeeding, and may even lead to the death of the child.

The emphasis, therefore, is on protection of the children already born rather than on limiting the total number that may be born, yet it could be speculated that these societies were aware that this approach to childbearing would in general yield a number of surviving children which was neither unacceptably low nor unacceptably high. Furthermore, total fertility could always be further controlled by permanent cessation of childbearing if the number of surviving children became too large. Spacing behaviour with its emphasis on mortality reduction could perhaps be considered, therefore, to be related primarily to the avoidance of unacceptably small families in countries having high infant and child mortality.

The very considerable variation in age at last birth across cultures cannot have purely involuntary, physiological causes, although such causes undoubtedly contribute to the observed patterns. The conclusion of chapter 3, that all societies exercise a fair degree of conscious control over the cessation of childbearing, seems to be confirmed. The following correlation coefficients derived from the cross-cultural data in table 17 are informative in this regard.

Correlation coefficients between the completed fertility level and selected characteristics of starting, stopping and spacing, based on cross-cultural data for 34 societies

Characteristic	Correlation with completed fertility
Age at first marriage	−0.09
Age at first birth	−0.19
Average length of interbirth intervals	−0.26
Time between first and last births	+0.25
Age at last birth	+0.50

To this point, we have passed over the incidence of childlessness in the population because in general its impact on completed fertility is not a major source of cross-cultural variation. Some examples of high levels of childlessness within marriage should not, however, pass without comment. Childlessness is most prominent in Cameroon and Sudan, among the black populations of the Caribbean, for Fijians in Fiji, and in Indonesia. None of these societies has a late completion of childbearing so that any disease-related causes of childlessness may also have induced early subfecundity (see Lesthaeghe *et al* 1981:7). It is also worth pointing out that childlessness appears to be under-reported in some Asian societies such as Bangladesh, Korea, and the Chinese in Malaysia. Perhaps adopted children were reported as births of the respondent or perhaps there was a tendency for childless women to be passed over in the interviewing process.

6 Age at First Marriage and Fertility: Analysis within Cultures

The results of chapters 3 and 5 indicate that conclusions, particularly about starting and spacing, vary according to whether the analysis is conducted across cultures or within cultures. Within cultures, as shown in chapter 3, starting behaviour is an important source of variation in completed fertility but spacing behaviour is not. The opposite conclusion applies across cultures. In this section, we return to analysis within cultures to examine the impact of age at marriage on fertility using the model described in chapter 4.

In figure 3, the completed fertility of women who entered unions in various selected age groups is compared with that of women *in the same population* who married in the age range 17—20. Here, then, the standard is obtained from the same society. Obviously the initial points, M, in the stepwise standardization diverge systematically because the groups have been selected on the basis of age at first marriage. Relatively broad groupings of age at marriage have been used in order to reduce the effects of misstatement of age at marriage. The values of the parameters of the model by age-at-marriage groups are given in appendix A, table A1.

The degree of interdependence of subsequent fertility behaviour upon age at first marriage is indicated by whether or not the lines in figure 3 for the various age-at-marriage groups tend to converge. If the lines remain essentially parallel through the M, F, L, I and S points, this means that subsequent fertility behaviour is independent of age at marriage. If the lines tend to converge, then there is evidence of compensation for the early or late age at marriage through subsequent fertility behaviour. Finally, of course, if the lines tend to diverge, then subsequent fertility behaviour is tending to increase the fertility differences between age-at-marriage groups. Convergence or divergence does not necessarily indicate conscious or deliberate action to achieve similar or divergent fertility levels. This is nowhere better indicated than by the convergence which almost universally occurs between the M and F points, the effect of inclusion of the first birth interval. As discussed in chapter 3, this convergence is related more to adolescent subfecundity, delay of consummation, and premarital conception than to any attempt to deliberately speed up or slow down the first birth. Small variations in the mean length of interbirth intervals, indicated by the slope of the line between L and I, might also be physiologically determined as women marrying at different ages are subjected to different segments of age-specific fecundity. Marital dissolution might also effect fertility subsequent to the first marriage.

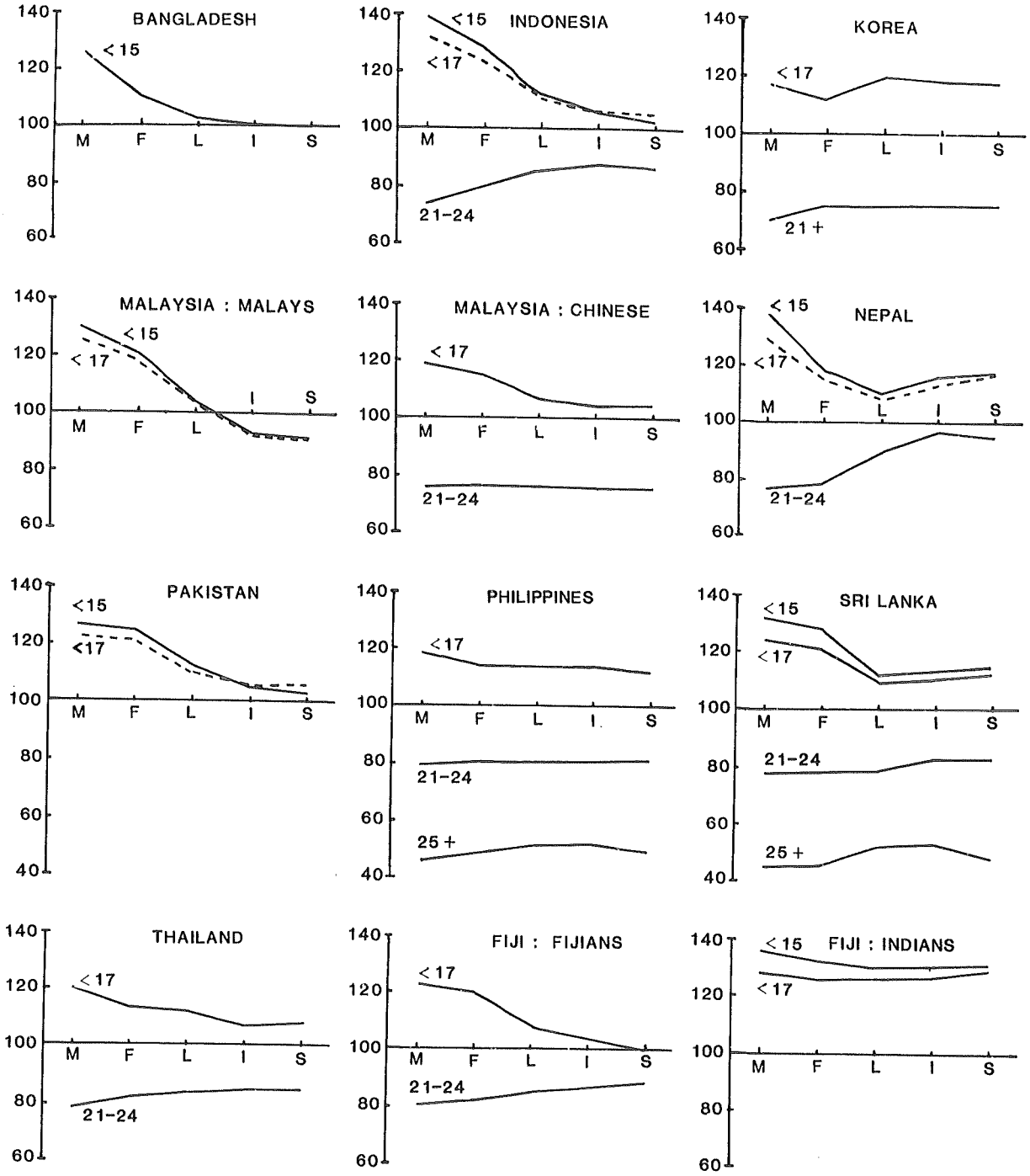
In this section, we shall be mainly concerned with whether or not stopping and spacing behaviours compensate for starting behaviour. This means, in terms of figure 3, that we shall be interested in changes between the points F, L and I. If convergence is apparent, is it due to variations of the age at last birth or of the intervals between births?

For those marrying under age 17, convergence to the fertility level of the 17—20 age at marriage group is substantial (a movement of 10 percentage points or more towards the standard) in most Asian and African countries. Ghana is an exception in Africa while in Asia convergence is not significant in the Philippines, Korea, Thailand and Nepal. Outside of these regions a significant amount of convergence occurs for young marriers in Syria, the Dominican Republic, Haiti, Jamaica, for Indians in Trinidad, for Fijians and in Mexico. In virtually all cases of significant convergence, the early age at last birth of young marriers was much more important than the spacing pattern. As concluded in chapter 3, spacing of births appears to be largely independent of age at marriage. Substantially longer birth intervals for young marriers were apparent only among the Malays in Malaysia, Jamaicans, and the Indians in Trinidad. On the other hand, young marriers among the Indians in Guyana had very short intervals compared to those marrying later. For the Malays and the Jamaicans, the longer birth intervals of young marriers may be affected by high rates of marriage dissolution among young marriers.

Convergence is not nearly so evident for those marrying at ages 21 and over as it is for those marrying under age 17, although a small amount of convergence occurred in most societies. The best examples of convergence of older marriers to the fertility of younger marriers are Nepal, Syria (25+), non-Indians in Trinidad, non-Indians in Guyana, Kenya and Panama (25+). Again convergence was achieved through the means of the age at last birth rather than through birth spacing. Of course, if the age at last birth of those marrying in the standard age group, 17—20, is already quite late, it would not be possible for those marrying at older ages to have an even later stop. It is thus generally more feasible for an early start to be compensated by an early stop than for a late start to be compensated by a late stop.

Childlessness has very little association with age at first marriage except, as already discussed in chapter 3, for those women marrying at quite late ages, 25 and over. The high rate of childlessness among women marrying at these late ages is generally sufficient to offset any compensatory effect of a later age at last birth.

An alternative, more conventional approach to the study of the impact of age at marriage on fertility is the calculation of age-specific fertility rates for age-at-marriage groups. These are shown in table 18 for three age-at-marriage groupings. This approach has the advantage that where compensation for an early or late start occurs, we can see at which ages the compensation takes place. Thus we can see, for example, that women marrying in the age-range 17—20 often have more children during their twenties than women who married under age 17. There is a strong temptation to interpret this result in terms of spacing, a so-called catch-up effect. That is, we might conclude that



NOTE: Standard for Bangladesh is women marrying at ages 15—20.

Figure 3 The stepwise standardization procedure: completed fertility of women who entered unions at various ages compared to that of women in the same population who married at ages 17—20. (Women married at ages 17—20 = 100)

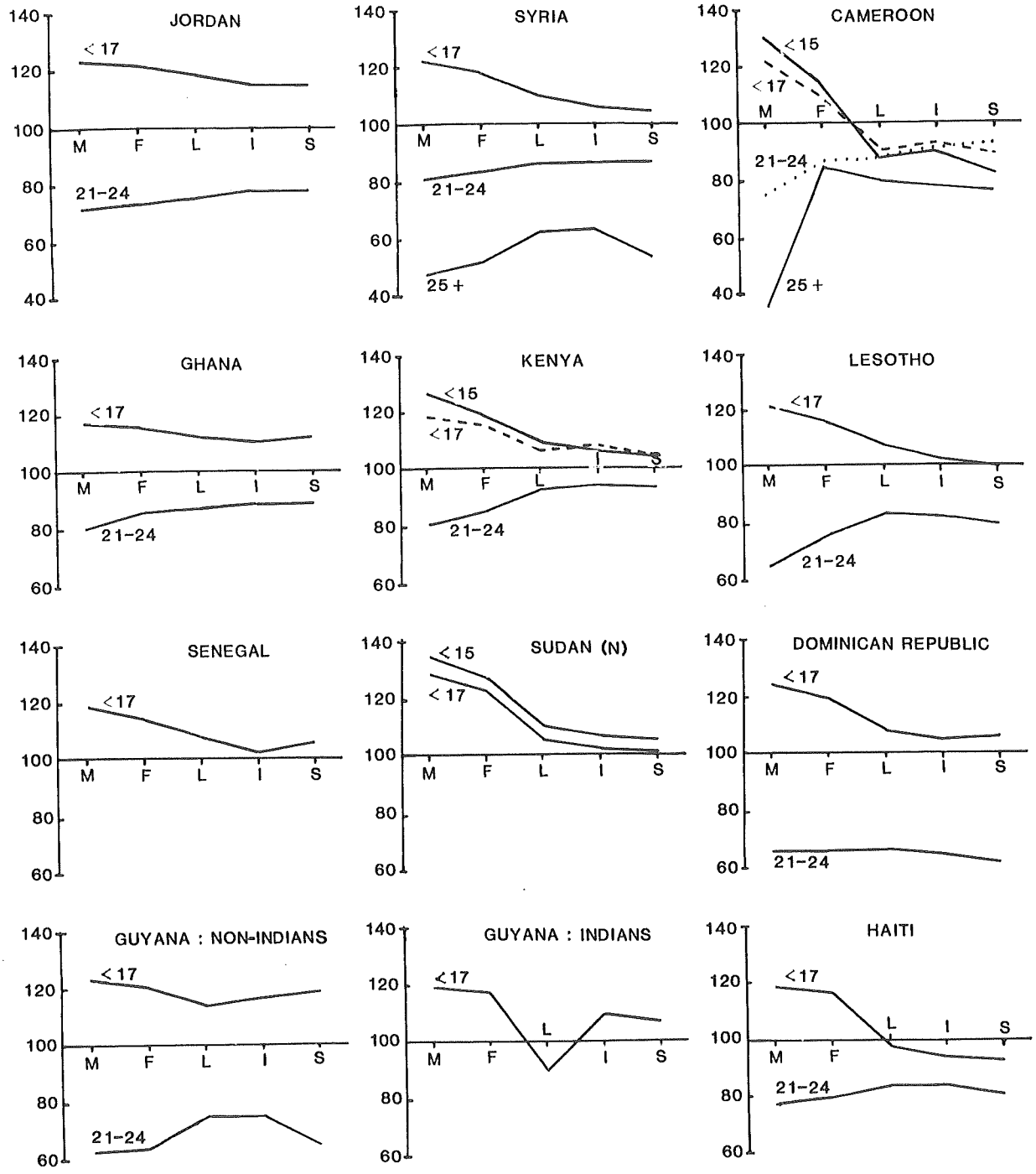


Figure 3 *(cont)*

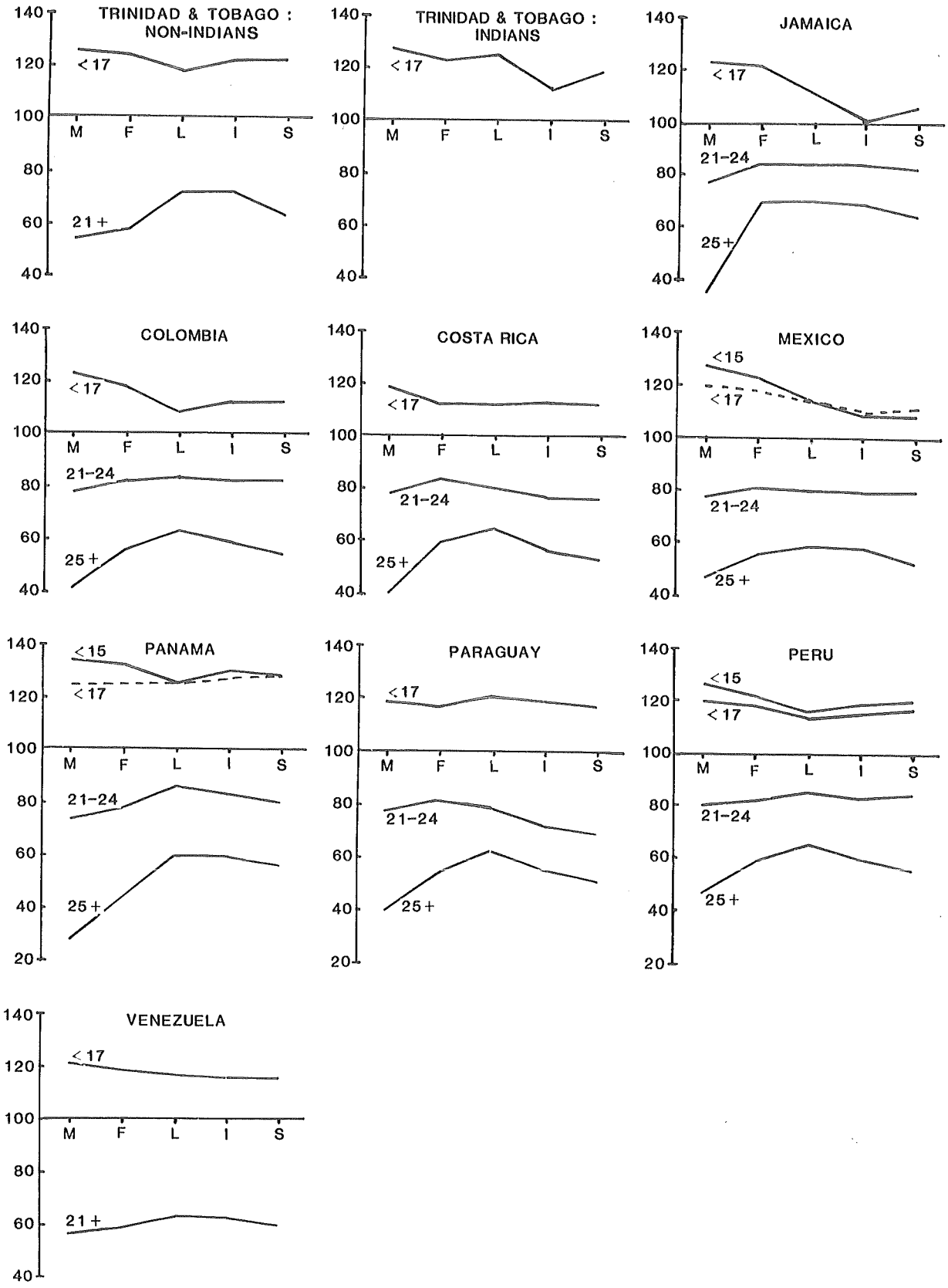


Figure 3 *(cont)*

those marrying in the age range 17—20 have shorter birth intervals than those marrying earlier. We have already observed, however, using the model of starting, stopping and spacing, that birth intervals do not vary greatly with age at marriage. In fact, the lower level of childbearing in the ages 20—29 of women marrying early is primarily due to the cessation of childbearing *before the age of 30* by young marriers (see table 11). Thus interpretation of age-specific rates is limited by the fact that these rates do not distinguish between spacing and stopping.

Table 18 also shows that between the ages of 30 and 50, the number of children born to women marrying above age 21 is roughly similar to that of women marrying in the age range 17—20. The lower completed fertility of women marrying at ages 21 and over is thus due almost entirely to their late start. Thus again we see that age at last birth acts as a compensatory mechanism for those who marry early but its effect is less in evidence among those who marry late. Age at marriage therefore may only have a small impact on completed fertility among women marrying under age 21, but its effect will become increasingly more important as age at marriage rises through the twenties. We shall return to the interpretation of these findings in the conclusion after the effects of marriage dissolution and type of union have been considered.

Table 18 Age-specific fertility rates by age at first marriage, ever-married women aged 40—49[a]

Country or ethnic group	Age group of child-bearing	Age at first marriage		
		<17	17—20	21+
Bangladesh	<20	1.6	*	*
	20—29	3.0	*	*
	30—39	2.2	*	*
	40—49	0.4	*	*
	Total	7.2	*	*
Indonesia	<20	1.3	0.4	0
	20—29	2.5	2.7	1.7
	30—39	1.6	2.0	1.9
	40—49	0.3	0.4	0.6
	Total	5.7	5.5	4.2
Korea, Rep. of	<20	1.0	0.4	0
	20—29	3.0	3.0	2.2
	30—39	2.1	1.8	1.7
	40—49	0.4	0.2	0.2
	Total	6.5	5.4	4.1
Malaysia: Malays	<20	1.7	0.5	(0)
	20—29	2.7	3.5	(1.8)
	30—39	1.6	2.1	(1.9)
	40—49	0.2	0.5	(0.5)
	Total	6.2	6.6	(4.2)
Malaysia: Chinese	<20	1.9	0.5	0
	20—29	3.5	4.2	2.2
	30—39	2.0	2.2	2.6
	40—49	0.2	0.4	0.4
	Total	7.6	7.3	5.2
Nepal	<20	1.0	0.2	0
	20—29	2.9	2.5	1.5
	30—39	2.0	2.2	2.5
	40—49	0.5	0.7	1.0
	Total	6.4	5.6	6.0

(Table continues)

Table 18 *(cont)*

Country or ethnic group	Age group of child-bearing	Age at first marriage		
		<17	17—20	21+
Pakistan	<20	1.7	0.3	(0)
	20—29	3.1	3.4	(1.8)
	30—39	2.3	2.7	(2.7)
	40—49	0.4	0.6	(1.1)
	Total	7.5	7.0	(6.6)
Philippines	<20	1.9	0.5	0
	20—29	3.8	4.0	2.2
	30—39	2.9	2.7	2.6
	40—49	0.6	0.7	0.6
	Total	9.2	7.9	5.4
Sri Lanka	<20	2.1	0.4	0
	20—29	3.2	3.5	1.8
	30—39	1.8	2.0	2.0
	40—49	0.2	0.4	0.4
	Total	7.3	6.3	4.2
Thailand	<20	1.4	0.4	0
	20—29	3.4	3.6	2.3
	30—39	2.4	2.5	2.5
	40—49	0.5	0.5	0.6
	Total	7.7	7.0	5.4
Fiji: Fijians	<20	(1.7)	0.5	0.1
	20—29	(2.8)	3.3	2.4
	30—39	(1.7)	2.2	2.4
	40—49	(0.3)	0.5	0.5
	Total	(6.5)	6.5	5.4
Fiji: Indians	<20	2.1	0.5	(0)
	20—29	3.7	3.7	(2.4)
	30—39	1.8	1.6	(2.5)
	40—49	0.3	0.3	(0.5)
	Total	7.9	6.1	(5.4)
Jordan	<20	2.2	0.5	0
	20—29	4.1	4.3	2.7
	30—39	3.1	3.1	3.3
	40—49	0.6	0.8	0.8
	Total	10.0	8.7	6.8
Syria	<20	2.0	0.4	0
	20—29	3.7	4.1	2.1
	30—39	2.8	3.2	3.1
	40—49	0.6	0.9	1.2
	Total	9.1	8.6	6.4

Table 18 *(cont)*

Country or ethnic group	Age group of child-bearing	Age at first marriage		
		<17	17—20	21+
Cameroon	<20	1.2	0.6	0.4
	20—29	2.3	2.6	1.9
	30—39	1.6	2.1	2.0
	40—49	0.5	0.8	0.8
	Total	5.6	6.1	5.1
Ghana	<20	1.5	0.6	0.1
	20—29	2.9	3.0	2.0
	30—39	2.4	2.4	2.5
	40—49	0.9	0.9	1.1
	Total	7.7	6.9	5.7
Kenya	<20	1.8	0.7	0.1
	20—29	3.4	3.3	2.5
	30—39	2.7	3.1	3.3
	40—49	0.7	1.1	1.5
	Total	8.6	8.2	7.4
Lesotho	<20	1.2	0.4	0.1
	20—29	2.3	2.7	1.9
	30—39	1.7	2.0	2.1
	40—49	0.5	0.6	0.7
	Total	5.7	5.7	4.8
Senegal	<20	1.6	0.5	(0.1)
	20—29	3.0	3.2	(2.2)
	30—39	2.4	2.7	(2.2)
	40—49	0.7	0.8	(0.7)
	Total	7.7	7.2	(5.2)
Sudan (North)	<20	1.5	0.3	(0)
	20—29	2.8	3.1	(2.0)
	30—39	1.8	2.4	(3.1)
	40—49	0.5	0.7	(1.5)
	Total	6.6	6.5	(6.6)
Dominican Republic	<20	2.2	0.6	0
	20—29	3.2	3.7	1.8
	30—39	2.2	2.6	2.3
	40—49	0.3	0.5	0.6
	Total	7.9	7.4	4.7
Guyana: Non-Indians	<20	1.9	0.6	0
	20—29	3.3	3.3	1.8
	30—39	2.2	2.1	1.9
	40—49	0.3	0.4	0.4
	Total	7.7	6.4	4.1

(Table continues)

Table 18 *(cont)*

Country or ethnic group	Age group of child-bearing	Age at first marriage		
		< 17	17—20	21 +
Guyana: Indians	< 20	1.9	0.8	*
	20—29	3.8	4.0	*
	30—39	2.0	2.2	*
	40—49	0.2	0.3	*
	Total	7.9	7.3	*
Haiti	< 20	1.4	0.4	0
	20—29	3.0	3.6	1.7
	30—39	1.7	2.3	2.6
	40—49	0.7	0.8	0.9
	Total	6.8	7.1	5.2
Jamaica	< 20	1.7	0.6	0.3
	20—29	2.8	3.1	2.0
	30—39	1.9	2.1	2.0
	40—49	0.4	0.4	0.4
	Total	6.8	6.2	4.7
Trinidad: Non-Indians	< 20	1.8	0.5	0
	20—29	3.2	3.3	1.7
	30—39	1.6	1.6	1.5
	40—49	0.2	0.2	0.2
	Total	6.8	5.6	3.4
Trinidad: Indians	< 20	2.0	0.8	*
	20—29	3.5	3.5	*
	30—39	1.5	1.6	*
	40—49	0.2	0.2	*
	Total	7.2	6.1	*
Colombia	< 20	2.4	0.7	0.1
	20—29	4.0	4.3	2.3
	30—39	2.2	2.6	2.6
	40—49	0.5	0.6	0.6
	Total	9.1	8.2	5.6
Costa Rica	< 20	2.1	0.7	0.1
	20—29	4.2	4.6	2.6
	30—39	2.6	2.7	2.3
	40—49	0.5	0.4	0.4
	Total	9.4	8.4	5.4
Mexico	< 20	2.1	0.6	0.1
	20—29	3.5	3.9	2.3
	30—39	2.6	2.7	2.4
	40—49	0.6	0.7	0.6
	Total	8.8	7.9	5.4

Table 18 *(cont)*

Country or ethnic group	Age group of child-bearing	Age at first marriage		
		< 17	17—20	21 +
Panama	< 20	2.2	0.6	0.1
	20—29	3.4	3.5	2.0
	30—39	2.0	1.7	1.8
	40—49	0.3	0.2	0.3
	Total	7.9	6.0	4.2
Paraguay	< 20	1.9	0.6	0.1
	20—29	3.5	3.7	2.0
	30—39	2.7	2.4	1.9
	40—49	0.7	0.7	0.4
	Total	8.8	7.4	4.4
Peru	< 20	2.1	0.6	0.1
	20—29	3.7	3.8	2.2
	30—39	2.6	2.5	2.4
	40—49	0.6	0.7	0.7
	Total	9.0	7.6	5.4
Venezuela (aged 40—44)	< 20	2.1	0.6	0
	20—29	3.7	3.9	2.0
	30—39	2.1	2.1	2.0
	40—49	0.3	0.6	0.4
	Total	8.2	7.2	4.4

[a] The rates show the average number of births (marital and ex-nuptial) occurring in the given age interval to women aged 40—49 at the time of the survey who had ever married. The rate for age group 40—49 has been adjusted so that it represents full experience to exact age 50 even though the women included in the denominator have not yet reached age 50.

NOTES:
( ) = 50—99 cases
* = less than 50 cases

7 Marriage Dissolution and Fertility

Some of the patterns that have been observed so far, such as an early stop to fertility among those who start early, may be affected to some extent by marriage dissolution. In general, women who marry young are more likely to be divorced, separated, or widowed from their first union by the time they are aged 40—49. The association between age at marriage and widowhood comes about because women who marry young have a larger age-gap between their husbands and themselves (Casterline and McDonald 1983). Also divorce and separation are frequently associated with early marriage because of special circumstances associated with young marriage such as parental arrangement, a large age-gap between the spouses, poverty, and so on (Smith, Carrasco and McDonald 1984). The observed early stop of young marriers could therefore reflect higher levels of marriage dissolution.

The extent of marriage dissolution varies quite widely across the 34 societies, as shown in table 19. It is immediately evident from this table that the pattern of early start with early stop does not correlate well with the extent of marital dissolution. For example, dissolution rates tend to be high in several Latin American countries where there was little difference in age at last birth across the various age-at-marriage categories. Of course, remarriage can confound this relation and rates of remarriage tend to be very high where rates of dissolution are high (Smith, Carrasco and McDonald 1984). Yet in chapter 3, we concluded that marital dissolution leads to slightly longer average spacing when the woman remarries and to an earlier stop to fertility whether she remarries or not. In figure 4, therefore, we set out to show the overall impact of marriage dissolution on the fertility level in the 34 societies. The standard used in figure 4 is the fertility pattern of women who were still in their first union. The fertility of all women is compared against this standard. The resulting difference is therefore due to both the level of dissolution and the fertility differences between women still in their first union and women whose first marriage has been dissolved. The contribution of each of the five parameters of completed fertility to the overall difference in fertility between women still in their first union and all women is shown in table 20. The values in table 20 are merely the successive differences between points in figure 4.

In all societies except Venezuela, non-Indians in Guyana, and non-Indians in Trinidad, the inclusion in the total of women whose first union was dissolved reduces the societal level of completed fertility (final column of table 20). In most cases, however, the reduction is only around five per cent or less. Dissolution has a major impact on fertility (eight per cent or more) only in Indonesia, Dominican Republic, Haiti, Senegal, Sudan, Malaysia, Bangladesh and Cameroon. Part of the reason for the small overall impact of dissolution is that those whose first union was dissolved usually had an earlier start to fertility because of their earlier age at marriage. This early start was often sufficient to largely offset the reducing effect of an early stop and longer average interbirth intervals. The pattern of an earlier start for those whose union was dissolved is most apparent in Latin America and the Caribbean. For non-Indians in Guyana and Trinidad, and in Venezuela, this early start was so significant that the inclusion in the total of women whose first union was dissolved actually increased the overall level of fertility.

Figure 4 and table 20 show that in general the early age at last birth of women whose marriage was dissolved contributed most to the reduction of overall fertility resulting from dissolution. The impact of longer average birth intervals for women with a dissolved union was not as significant as the earlier age at last birth except in some of the Latin American and Caribbean societies. This was largely because, as pointed out in chapter 3, age at last birth was generally early whether the woman with a dissolved union remarried or not. Spacing, however, was only influenced if she remarried.

A further decomposition of the data in table 20 was carried out to assess the impact of remarriage (appendix A, table A2). Women who did not remarry, consisting mainly of widows at somewhat higher ages, were responsible for a reduction of between one and four per cent in the completed fertility level of virtually all societies. This reduction in turn was due almost exclusively to their early age at last birth. The highest reduction due to women who did not remarry was in Bangladesh. Societal differences in the impact of dissolution on fertility were therefore mainly due to the incidence and fertility behaviour of women who remarried following dissolution. Among these women, some specific patterns are interesting. For example, in Indonesia the extended first birth interval of these women alone contributed to a six per cent decline in the societal fertility level. A similar decline was caused in the Dominican Republic by extended interbirth intervals of women remarrying. Dissolution was therefore more likely to occur before the first birth in Indonesia and between births in the Dominican Republic.

Childlessness among women with dissolved marriages usually contributed to a relatively minor reduction of overall fertility. The exceptions are Cameroon, Senegal and Indonesia.

With this background, we return to the question as to whether the convergence of fertility levels of women marrying under 17 to those of women marrying at age 17—20 might be due to the higher rates of marriage dissolution among young marriers. This question is examined in figure 5 through a comparison of the convergence phenomenon for all women to that for women still in their first union in a selected group of countries. It emerges quite clearly that convergence to the fertility of women marrying at ages 17—20 occurs in almost the same pattern for women still

in their first union as for all women. The simple conclusion then is that where fertility of those marrying under age 17 converges to that of those marrying in the ages 17—20, the convergence is not due to differing rates of marriage dissolution. The same phenomenon occurs among women who are still in their first union when they complete their fertility. This is not an insignificant conclusion, for if the observed pattern of convergence is not due to marriage dissolution or to fecundity impairment, although there remains some doubt about the latter, then we must conclude that the fertility of young marriers was voluntarily reduced in many countries.

Table 19 Percentage distribution of status of first union, women ever in a union aged 40—49 (ranked according to percentage still in first union)

Country or sub-national ethnic group	Status of first union			Country or sub-national ethnic group	Status of first union		
	Still in union	Union dissolved			Still in union	Union dissolved	
		By death	By divorce or separation			By death	By divorce or separation
Philippines	86	10	4	Paraguay	71	6	23
Syria	86	9	5	Sudan (North)	70	13	17
Jordan	85	11	4	Trinidad & Tobago: Indians	70	*	*
Fiji: Indians	85	9	6	Colombia	66	13	21
Malaysia: Chinese	83	14	3	Cameroon	65	17	18
Pakistan	81	15	4	Bangladesh	64	28	8
Nepal[a]	80	18	2	Ghana	60	11	29
Guyana: Indians	80	*	*	Senegal	58	18	24
Sri Lanka	79	14	7	Venezuela (aged 40—44)	58	7	35
Kenya	77	12	11	Panama	56	5	39
Korea, Rep. of	76	18	6	Malaysia: Malays	54	18	28
Mexico	75	11	14	Dominican Republic	48	8	44
Costa Rica	75	7	18	Haiti	47	*	*
Peru	74	10	16	Indonesia	46	18	36
Thailand	73	12	15	Guyana: Non-Indians	42	*	*
Fiji: Fijians	73	9	18	Trinidad & Tobago:			
Lesotho	72	20	8	Non-Indians	41	*	*
				Jamaica	37	*	*

[a] The data for Nepal refer to the most recent marriage rather than to the first marriage.

* Not available. For these Caribbean groups, the data shown refer to the status of the union with the woman's first partner irrespective of whether the type or union changed during the course of the partnership.

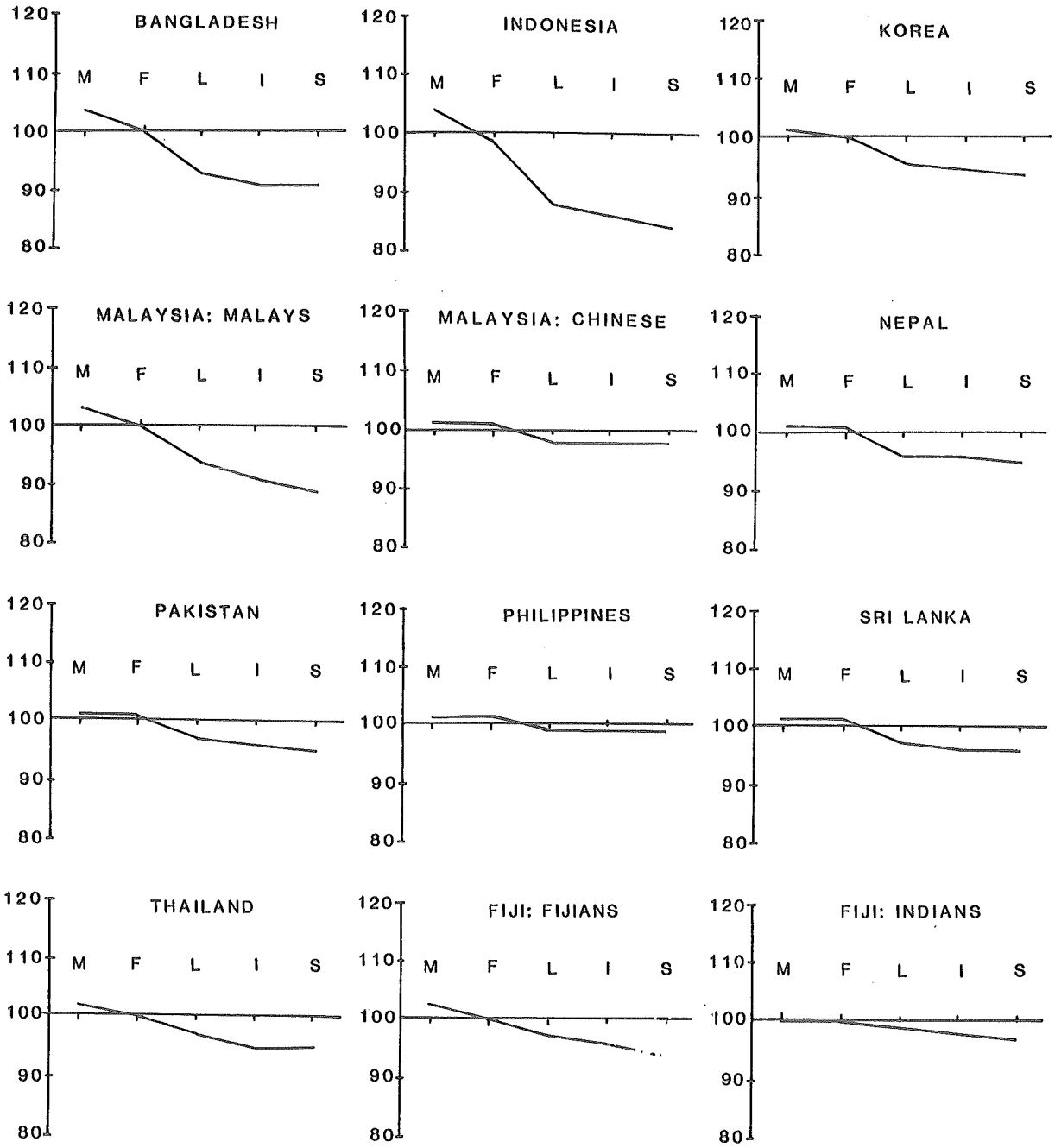


Figure 4 The stepwise standardization procedure: completed fertility of all women relative to that of women still in their first union. (Women still in first union = 100)

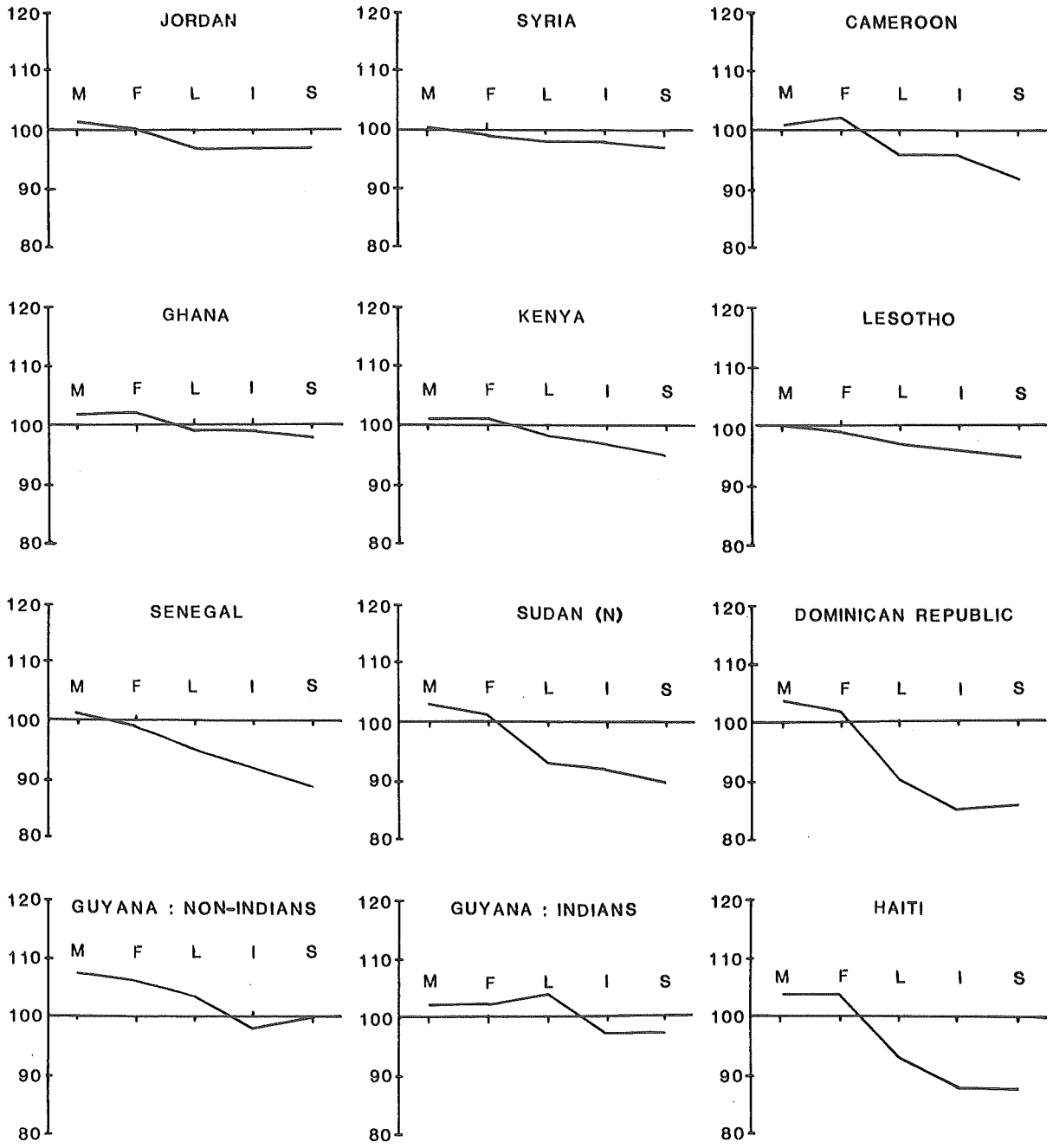


Figure 4 *(cont)*

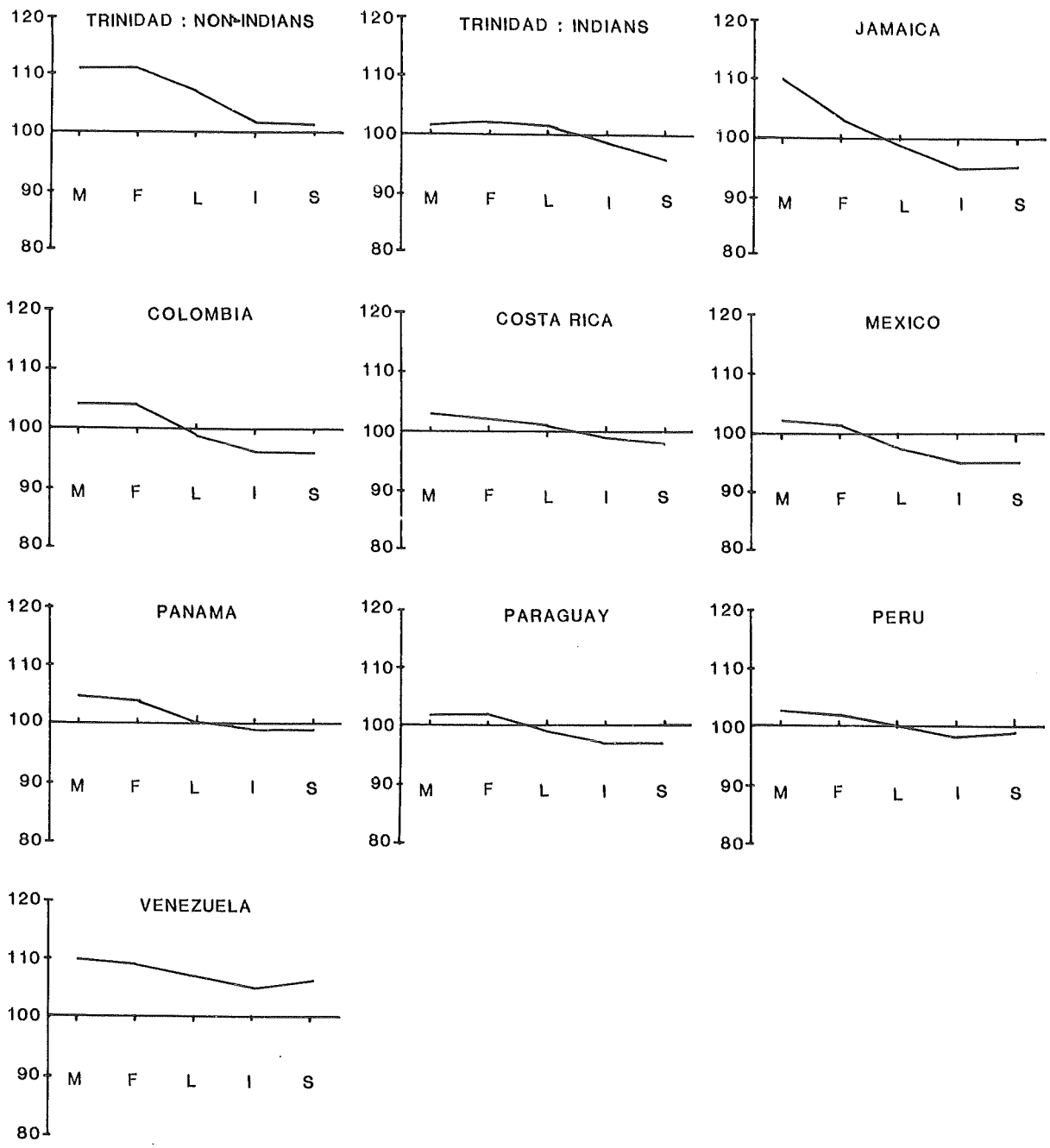
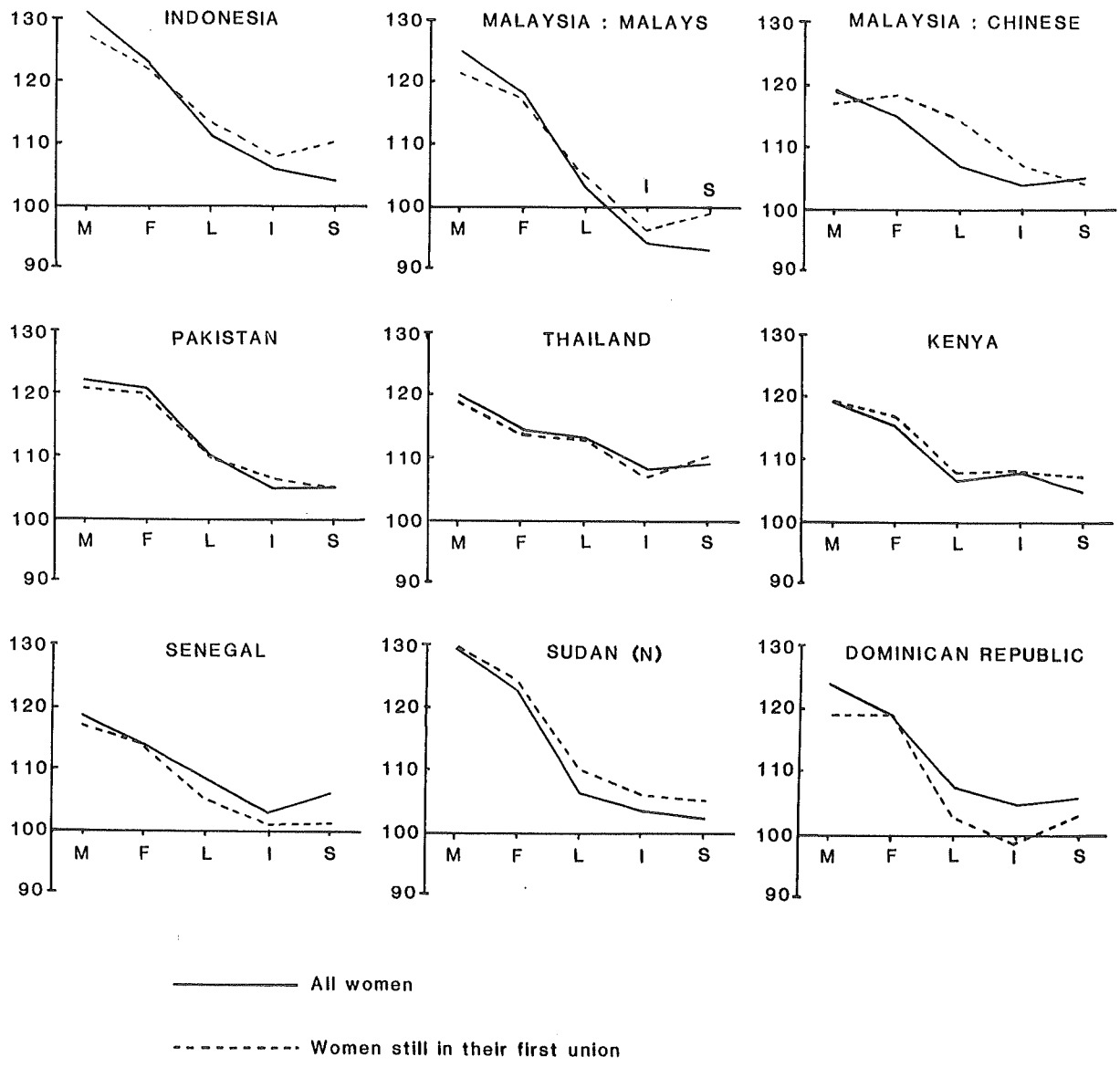


Figure 4 *(cont)*

Table 20 Decomposition across the model parameters of fertility of the percentage change in completed fertility due to the inclusion of women whose first marriage was dissolved, 34 societies

Country or sub-national ethnic group	Percentage points of change due to					
	Age at first marriage	First birth interval	Age at last birth	Average interbirth interval	Proportion having at least one child	Total
Bangladesh	+2.8	−3.4	−6.1	−1.9	−0.7	−9.3
Indonesia	+3.8	−5.4	−10.2	−2.8	−1.9	−16.5
Korea, Rep. of	+1.0	−0.9	−4.0	−1.4	−0.5	−5.8
Malaysia: Malays	+3.0	−2.7	−6.1	−3.7	−1.0	−10.5
Malaysia: Chinese	+1.8	−0.8	−3.0	−0.1	+0.1	−2.0
Nepal	+1.6	0.0	−5.8	+0.4	−0.8	−4.6
Pakistan	+1.0	−0.5	−3.8	−0.8	−0.9	−5.0
Philippines	+1.3	−0.4	−1.3	−0.6	−0.4	−1.4
Sri Lanka	+1.0	0.0	−4.4	−0.5	−0.2	−4.1
Thailand	+2.0	−1.9	−2.9	−1.8	−0.4	−5.0
Fiji: Fijians	+2.6	−2.3	−3.9	−1.0	−1.8	−6.4
Fiji: Indians	+0.3	−0.3	−1.2	−0.6	−0.8	−2.6
Jordan	+0.8	−0.9	−2.5	−0.7	−0.3	−3.6
Syria	+0.4	−0.9	−1.4	−0.3	−0.3	−2.5
Cameroon	+1.2	+0.2	−6.2	−0.1	−3.5	−8.4
Ghana	+2.3	−0.1	−3.8	+0.1	−0.4	−1.9
Kenya	+1.0	−0.5	−2.8	−1.7	−0.8	−4.8
Lesotho	−0.2	−0.6	−2.2	−1.1	−0.5	−4.6
Senegal	+0.6	−1.2	−3.9	−3.8	−2.4	−10.7
Sudan (North)	+2.9	−1.6	−8.0	−1.5	−1.7	−9.9
Dominican Republic	+3.4	−1.6	−11.4	−5.5	+1.1	−14.0
Guyana: Non-Indians	+7.0	−1.1	−1.7	−6.1	+2.2	+0.3
Guyana: Indians	+2.4	−0.6	+2.5	−7.4	−0.2	−3.3
Haiti	+3.7	0.0	−11.2	−4.7	−0.2	−12.4
Jamaica	+9.6	−6.5	−3.8	−4.3	+0.5	−4.5
Trinidad: Non-Indians	+10.7	+0.7	−4.6	−5.3	−0.5	+1.0
Trinidad: Indians	+1.6	+0.6	−1.1	−2.4	−2.6	−3.9
Colombia	+3.6	−0.2	−4.6	−3.1	+0.4	−3.9
Costa Rica	+2.9	−1.3	−1.2	−1.6	−0.3	−1.5
Mexico	+1.9	−0.7	−4.1	−1.8	−0.1	−4.8
Panama	+4.7	−0.5	−4.2	−1.1	+0.2	−0.9
Paraguay	+2.6	+0.1	−2.9	−2.4	−0.2	−2.8
Peru	+2.7	−0.6	−2.1	−1.5	−0.1	−1.6
Venezuela (aged 40—44)	+10.1	−0.6	−2.1	−1.8	+0.7	+6.3



NOTE: In this figure, the standard for women still in their first union is those marrying at ages 17—20 among women still in their first union, while the standard for all women is those marrying at ages 17—20 among all women.

Figure 5 The stepwise standardization procedure: completed fertility of women marrying under age 17 compared to that of women marrying in the same population at ages 17—20 by status of the first union, ever-married women aged 40—49. (Women married at ages 17—20 = 100)

8 Type of Union and Fertility

Before concluding this study, we shall examine the impact on completed fertility of the type of marital union. In Asia and the Middle East, the World Fertility Survey only recognized one type of union, formal marriage, as virtually all marital unions were of this type. Also in these regions, the incidence of polygamy is low. On the other hand, in Latin America and the Caribbean, many women, sometimes a majority, began their married life in an informal union while in Africa, the incidence of polygamous unions is very high. In this section, then, we shall examine whether a woman's completed fertility is influenced by her type of marital union.

In Latin America, women were asked in respect of each of their unions whether the union was formal or informal. If the union had started in the informal type but the couple had later married, the change was not recorded. In these cases, therefore, it is most likely that the union would have been reported as formal because the couple would still have been married at the time of the survey. The interesting question here is whether in reporting the date of commencement of the union, women gave the date of informal or formal union. Evaluation studies of the World Fertility Survey in Latin America usually stress the fact that the more detailed form of questioning about union type used in the surveys produced far more reliable data on informal unions than was obtained by censuses. On the other hand, even in the surveys, there appeared to be a small amount of under-reporting of early, informal unions by older women. As this study is based on the fertility of older women, given the possible sources of inaccuracy, it is probably better to rely more on the reported age at first birth than the reported age at first union.

The percentages of first unions reported to be informal unions among women aged 40—49 in the various Latin American countries are as follows:

Colombia	22.4
Costa Rica	16.2
Dominican Republic	51.9
Mexico	12.3
Panama	48.5
Paraguay	27.3
Peru	21.1
Venezuela (aged 40—44)	35.5

The impact of union type on fertility using the model of starting, stopping and spacing is shown in figure 6. A diversity of results applies across the various countries. In Venezuela and Panama, both countries with a relatively high incidence of informal unions, the completed fertility of women whose first union was informal is considerably higher than that of women in formal unions. The higher fertility is partly due to the earlier start of those in informal unions but the primary cause is the much later age at last birth of those in informal unions. This result is associated with both patterns of contraceptive usage and place of residence. In Panama, for example, women in informal unions were more likely to live in a rural area (47 per cent compared with 38 per cent among women in formal marriages) and were less likely ever to have used an efficient method of contraception (46 per cent compared with 63 per cent among women in formal unions). At the same time, age at last birth was earlier in urban than rural areas and was earlier for contraceptors than for non-contraceptors. The implication is that interpretation of differences in fertility by union type requires a multivariate analysis.

In contrast to Venezuela and Panama, women in informal unions in Colombia and Mexico ended with considerably lower fertility than women in informal unions both because of an earlier stop to childbearing and longer average interbirth intervals. This would be the expected result if an initial informal union was followed by marked marital instability. As informal unions are indeed highly associated with marital instability (Goldman 1981) it is surprising that this result has only been observed in two of the countries, although there is evidence of a similar pattern applying in Paraguay and the Dominican Republic. As suggested above, the answer probably lies in the confounding of results by other characteristics of women in formal and informal unions.

In the Caribbean countries normally three union types were recognized in surveys, specifically formal marriage, common-law and visiting unions. In Haiti, visiting unions were divided into three types, but in this analysis the three types will be treated as one. In contrast to Latin America, in the Caribbean countries changes in the type of union were recorded even when there was no change of partner. Investigation shows that the most common form of change of union type without changing partner is the formal marriage of couples who began in a visiting union. Thus for the purposes of the analysis, we have divided union types into four categories:

(i) women formally married in their first union
(ii) women entering a common-law union in their first union
(iii) women who entered a visiting union in their first union but then married formally, and
(iv) women who entered a visiting union in their first union who did not enter formal marriage in their second union.

The distribution of women aged 40—49 across these four categories is shown in table 21. The table shows that Guyana and Trinidad have similar distributions and Haiti and Jamaica are also similar. Among women of Indian origin

in the Caribbean, most unions are formal marriages.

The results of the starting, stopping and spacing model for these four types of union are shown in figure 7. Like the Latin American countries, the results by union type vary from country to country. One common feature is that age at marriage and age at first birth are somewhat later for women who first enter a formal marriage among the black populations. The reverse situation applies among the Indians. This is because age at marriage was traditionally low for women of Indian origin so that those entering an informal union, inevitably breaking with tradition, married somewhat later. Generally, also, spacing patterns did not vary greatly among the various union types but there were some notable exceptions. Non-Indian women entering common-law unions in Trinidad had somewhat shorter intervals. In Haiti, however, relatively longer intervals were the main reason for the lower fertility of women who had entered a common-law union or who had not formally married following an initial visiting union. The pattern of age at last birth, however, was quite variable by union type across societies. In Jamaica, a late age at last birth contributed to higher fertility among all women who started in an informal union while the reverse generally applied among non-Indians in Guyana. Overall, however, with the exception of Haiti, the fertility of women who commence in an informal union is higher than that of women who begin in a formal marriage, as concluded by Lightbourne and Singh (1982). Lightbourne and Singh (1982) also conclude that the situation regarding fertility and union type is in a state of transition and that use of contraception is now playing a major role in reducing the fertility of women in formal unions. The state of transition is probably the main reason for the variety of patterns observed in figure 7.

Another topic of some interest is the impact on fertility in African societies of the high levels of polygamy. In the World Fertility Survey, only the current status of a woman in terms of polygamy was collected. Thus some women who had previously been in a polygamous union may have been recorded as monogamous while some women who will be in a polygamous union in the future were also recorded as monogamous. Despite this limitation, the model of starting, stopping, and spacing yields interesting and generally consistent findings on the level of fertility of polygamously married women (figure 8). The percentage of currently married women aged 40—49 who were in a polygamous union at the time of the survey is as follows:

Cameroon	47
Ghana	51
Kenya	40
Lesotho	10
Senegal	67
Sudan (North)	33

Figure 8 shows that the completed fertility of women in polygamous unions was lower than that of monogamous women in all six countries despite the fact that there was very little difference between the two categories of women in terms of age at marriage or age at first birth. The lower fertility of polygamous women was due to the fact that they completed their fertility at a younger age and they were more likely to be childless. Both of these causes of lower fertility may have been due to the fact that polygamy is selective of sterile or subfecund women. The practice of widow inheritance where a man marries his dead brother's wife without necessarily having sexual relations with her may also account for the early stop to fertility of polygamously married women. These explanations involve an involuntary lower level of fertility among polygamously married women in which case, if polygamy were removed, there would be no change to the societal level of fertility. It is also possible, however, that the early cessation of childbearing of women in polygamous unions was due to infrequent intercourse or terminal abstinence, that is, to voluntary causes, at least from the husband's side. Here, again, we find another instance of total fertility being curtailed by early cessation of childbearing.

Table 21 Percentage distribution of women aged 40—49 who had ever been in a union by type of first and second unions, Caribbean countries

Country or ethnic group	First union formal marriage	First union common law	First union visiting but second union formal marriage	First union visiting but not formally married in second
Guyana: Non-Indians	28	13	29	30
Haiti	8	22	15	55
Jamaica	8	20	17	55
Trinidad: Non-Indians	24	10	31	35
Guyana: Indians	89		11	
Trinidad: Indians	77		23	

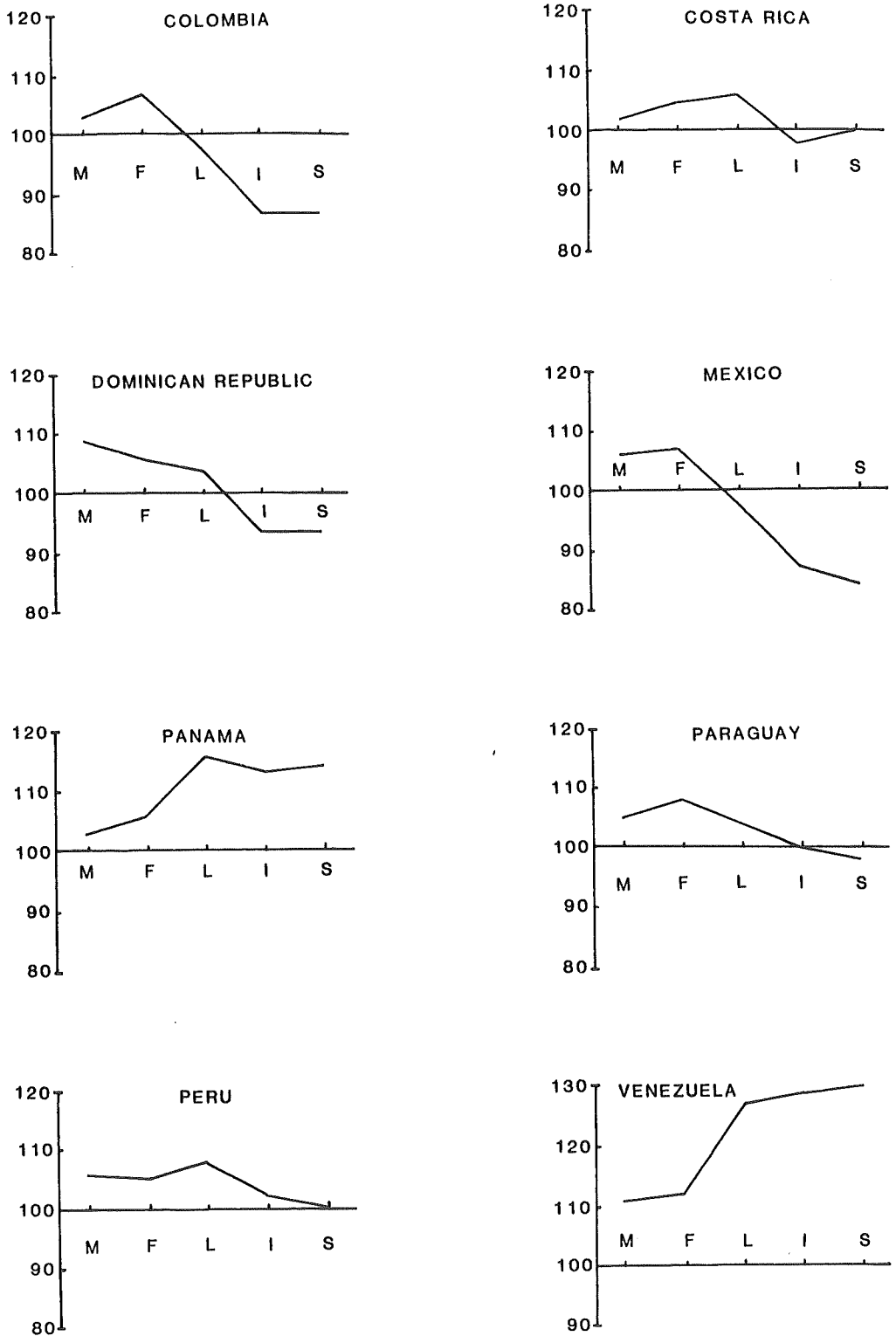


Figure 6 The stepwise standardization procedure: completed fertility of women whose first union was an informal union compared to that of women in the same population whose first union was a formal union. (Women in formal unions = 100)

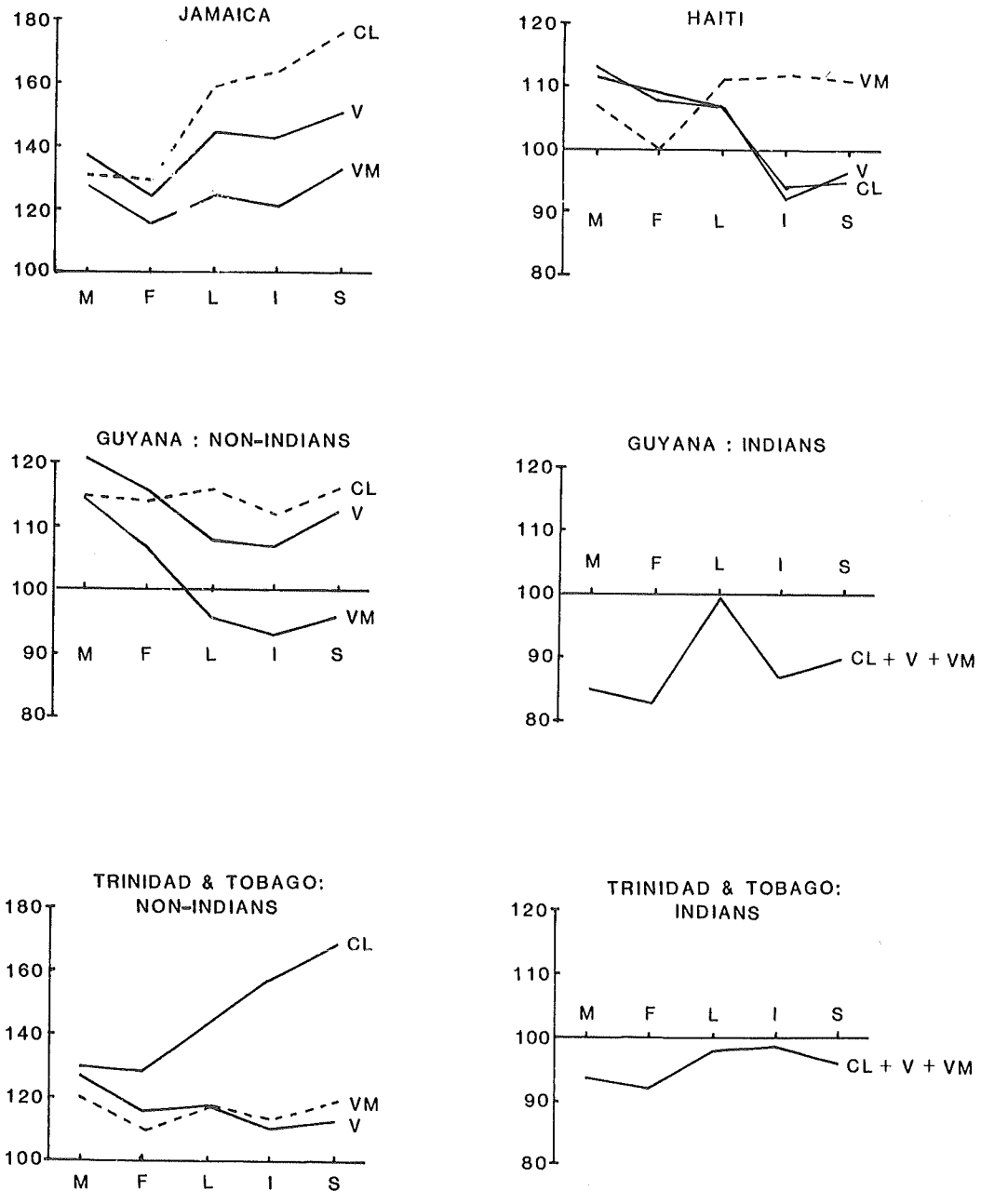


Figure 7 The stepwise standardization procedure: completed fertility of women of various union types compared to that of women in the same population whose first union was a formal marriage, ever-married women aged 40—49. (Women with first union formal marriages = 100)

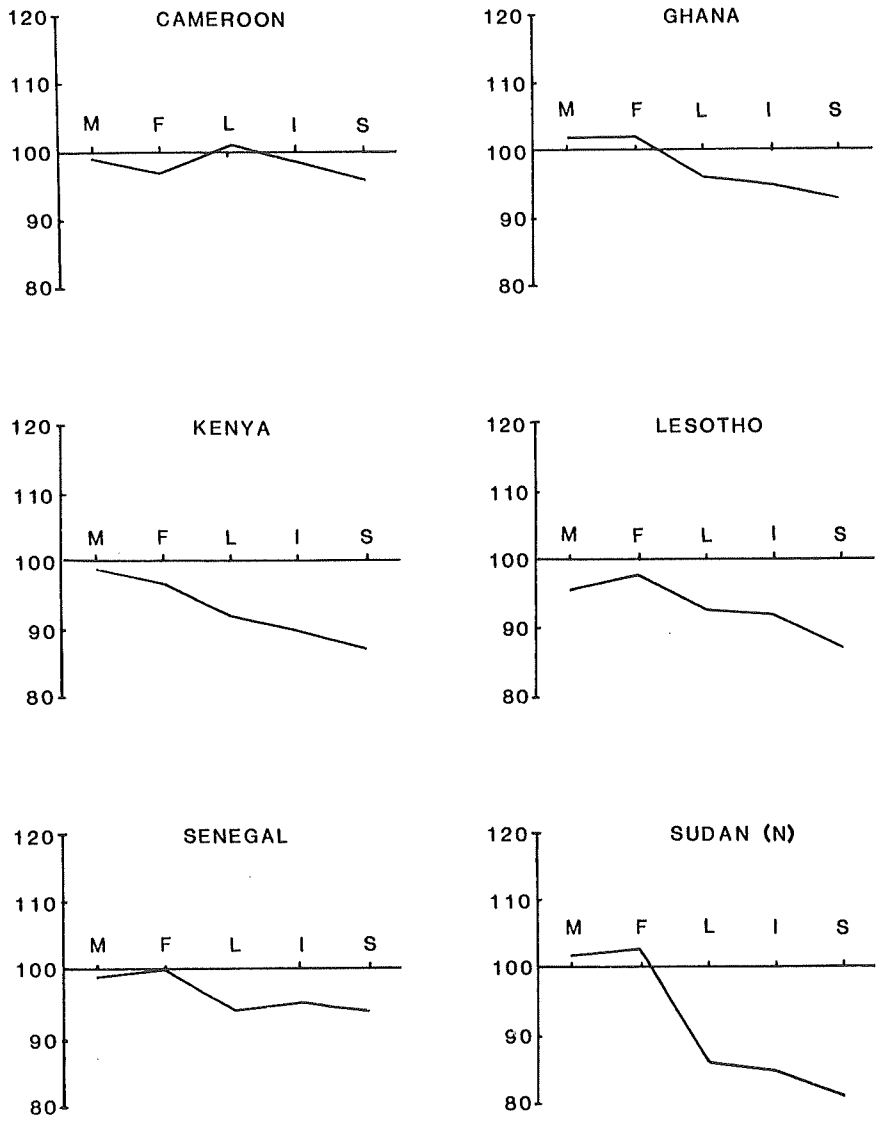


Figure 8 The stepwise standardization procedure: completed fertility of women currently in a polygamous union compared to that of women in a monogamous union, ever-married women aged 40—49. (Women in a monogamous union = 100)

9 Conclusion

Theories about demographic transition have been developed primarily on the basis of experience in Western Europe. In the context of very late marriage and high marital fertility, the idea of natural versus controlled fertility suited the situation well. It has been argued in this study that the late age at marriage in Western Europe was not a strategy to control a couple's completed fertility. The timing of marriage had its own specific determinants related to social organization and perhaps also to religion. When we turn to the developing countries analysed in this study, we find generally early and near universal marriage. I have argued at length elsewhere (McDonald, forthcoming) that these nuptiality patterns are also steeped in the particular culture as an integral part of the social organization. Women in these societies do not marry early in order to have a very large number of children. In fact, their marital fertility rates are usually substantially less than those which applied historically in Western Europe. More intensive study has revealed that, particularly in Africa and Asia, birth intervals are much longer than they had been in Western Europe and that these longer intervals are associated with long durations of breastfeeding and post-partum abstinence. As this spacing behaviour appears not to be parity specific, this pattern has become known as low natural fertility.

This study has confirmed the rather long spacing of births in African and Asian societies, and that spacing behaviour tends to be a societal rather than an individual phenomenon. Within societies, therefore, couples do not adjust their fertility by varying their birth spacing. For example, we have seen that variation of spacing behaviour is not used to compensate for early or late commencement of childbearing. The Caribbean populations, in particular the Indians in Guyana and Trinidad, may be an exception to this conclusion; that is, spacing may vary according to the number of children already born. I have argued here that in the context of high mortality long spacing is primarily motivated by a desire to ensure the survival of children already born, that is, to avoid the possibility of having unacceptably few surviving children. The adage, a bird in the hand is worth two in the bush, appears apposite to this behaviour. At the same time, there must have been a realization in societies with long spacing that most women, through spacing, would avoid having a very large number of children.

At the societal level, completed fertility is determined by combination of the average patterns of starting, stopping and spacing of childbearing. This study has shown that across the developing societies, this combination varies quite remarkably, so much so that the correlation at the societal level between age at marriage and completed fertility is close to zero. The best societal-level predictor of completed fertility is the mean age at last birth. It appears also that age at last birth in most Asian and African societies is voluntarily used as an individual level mechanism to compensate for relatively early commencement of childbearing. This type of behaviour was generally not evident in Latin America and the Caribbean with the exceptions of the Dominican Republic, Haiti, Jamaica and Mexico. In the Middle East, the early start with early stop pattern applied in Syria but not in Jordan. The evidence appears overwhelming that early cessation of childbearing in a large number of developing societies is in conflict with the definition of natural fertility. Rather it seems to be rationally determined behaviour taken to avoid having very large families.

As this study has been based almost exclusively on women of near complete fertility, that is those aged 40 and over, its conclusions are representative of relatively more traditional behaviour; in particular, behaviour applying before modern methods of contraception had had much impact. The import of this statement is that if demographic transition is to take place in these societies, then, at least in Asia and Africa, the transition will be from a system of starting, stopping and spacing which is totally different from that which applied in pre-transition Western Europe. The early start to childbearing will only change in concert with changes in social organization having a bearing on the role and status of both married and single women. This is a long-term process probably related mainly to Westernization through the channel of education, although, as in China, more specifically local approaches may apply. Within marriage, population programmes should be concentrated on stopping rather than spacing behaviour, again particularly in Asia and Africa. Initially at least, couples may welcome the replacement of currently less comfortable approaches to the stopping of childbearing by modern methods of family limitation. We have seen that even without modern contraception up to one-third of women marrying under the age of 17 complete their childbearing before age 30 in many countries. The idea of cessation of childbearing at a relatively young age is thus well established. In the end, however, these women cease childbearing because they believe that they already have a sufficient number of surviving children, but that number may still be quite high. Fertility will therefore only decline when the social supports to high fertility are weakened.

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Appendix A – Detailed Tables

Table A1 Parameters of the model of starting, stopping and spacing by age at marriage, ever-married women aged 40—49

Country or ethnic group	Age at marriage group	Age at first union (years)	Length of first birth interval (months)	Age at last birth (years)	Length of interbirth intervals (months)	Proportion with 1+ births	Mean births
Bangladesh	<15	11.4	75	35.1	34.2	.975	6.93
	15—20	16.5	40	36.5	33.1	.977	6.91
Indonesia	<15	12.6	63	32.3	35.7	.923	5.39
	<17	13.8	57	32.9	35.6	.933	5.45
	17—20	18.6	41	34.8	33.8	.945	5.23
	21—24	22.6	32	35.8	32.9	.929	4.53
Korea, Rep. of	<17	15.8	44	35.5	36.1	.979	6.21
	17—20	18.6	33	34.3	35.9	.988	5.27
	21+	23.3	25	34.1	35.0	.988	3.97
Malaysia: Malays	<15	13.1	44	32.8	37.0	.952	5.92
	<17	14.1	40	33.2	36.2	.960	5.97
	17—20	18.5	25	35.6	32.2	.969	6.40
Malaysia: Chinese	<17	15.8	27	33.5	29.1	1.000	7.40
	17—20	18.8	20	34.9	28.4	.966	7.05
	21—24	22.8	18	34.9	28.9	.993	5.34
Nepal	<15	12.6	83	34.9	34.9	.970	6.12
	<17	13.9	72	35.3	35.0	.971	6.06
	17—20	18.8	46	36.3	36.7	.954	5.24
	21—24	22.6	42	38.1	33.4	.936	4.96
Pakistan	<15	13.5	42	35.0	33.9	.957	7.09
	<17	14.4	40	35.5	33.3	.965	7.13
	17—20	18.6	37	37.4	31.5	.965	6.79
Philippines	<17	15.4	28	37.2	29.9	.980	8.68
	17—20	18.8	19	37.3	29.8	.989	7.66
	21—24	22.8	17	37.2	29.5	.979	6.17
	25+	29.2	13	37.8	29.4	.933	3.84
Sri Lanka	<15	13.3	29	32.5	33.0	.988	7.04
	<17	14.7	27	33.4	33.2	.984	6.88
	17—20	18.9	20	35.3	33.5	.975	6.10
	21—24	22.7	20	35.4	31.8	.974	5.07
	25+	28.6	19	36.5	32.5	.883	2.94
Thailand	<17	15.4	40	35.9	31.9	.984	7.33
	17—20	18.9	27	36.1	30.5	.976	6.72
	21—24	22.5	22	36.4	29.7	.982	5.72

(Table continues)

Table A1 *(cont)*

Country or ethnic group	Age at marriage group	Age at first union (years)	Length of first birth interval (months)	Age at last birth (years)	Length of interbirth intervals (months)	Proportion with 1+ births	Mean births
Fiji: Fijians	<17	15.0	26	33.8	33.3	.894	6.22
	17—20	19.1	18	35.6	31.9	.941	6.24
	21—24	22.5	13	36.2	31.5	.952	5.54
Fiji: Indians	<15	13.3	35	32.9	29.5	.980	7.61
	<17	14.4	34	33.3	29.2	.979	7.46
	17—20	18.6	28	33.1	29.1	.961	5.80
Jordan	<17	14.5	33	37.1	27.3	.979	9.49
	17—20	18.8	28	37.3	26.2	.979	8.27
	21+	24.2	22	37.6	24.7	.964	6.45
Syria	<17	14.8	36	36.7	29.3	.981	8.58
	17—20	18.8	27	38.1	27.9	.989	8.18
	21—24	22.7	22	39.0	27.9	.980	7.09
	25+	28.8	20	40.2	27.7	.844	4.39
Cameroon	<15	13.3	66	31.8	33.2	.833	4.68
	<17	14.8	56	32.9	32.8	.867	5.15
	17—20	18.8	31	36.3	34.1	.895	5.64
	21—24	22.9	6	36.4	32.5	.905	5.22
	25+	30.2	–75	35.4	34.7	.873	4.35
Ghana	<17	15.4	33	36.8	36.2	.986	7.06
	17—20	18.8	29	37.5	36.0	.977	6.30
	21—24	22.7	15	37.8	35.1	.973	5.60
Kenya	<15	13.5	40	36.6	31.7	.959	8.14
	<17	14.8	32	37.0	31.1	.959	8.16
	17—20	18.8	24	38.8	31.2	.978	7.74
	21—24	22.6	15	40.4	30.8	.965	7.21
Lesotho	<17	15.1	41	33.9	39.4	.943	5.37
	17—20	18.8	31	35.5	36.9	.958	5.37
	21+	24.8	8	36.8	37.6	.935	4.30
Senegal	<17	14.8	33	36.3	35.0	.972	7.19
	17—20	18.5	22	37.4	33.1	.939	7.76
Sudan (North)	<15	12.9	57	33.6	32.0	.929	6.47
	<17	13.9	56	33.7	32.0	.924	6.16
	17—20	18.8	44	36.4	31.0	.937	6.03
Dominican Republic	<17	14.8	29	33.3	28.4	.971	7.55
	17—20	18.9	19	35.1	27.5	.959	7.12
	21+	24.6	19	35.3	28.8	.915	4.40
Guyana: Non-Indians	<17	15.2	28	33.2	28.8	.927	7.31
	17—20	18.8	22	34.0	29.7	.961	6.16
	21+	24.7	19	35.7	29.8	.829	3.98
Guyana: Indians	<17	15.2	29	29.4	20.9	.969	7.58
	17—20	18.3	26	33.8	26.3	.984	6.99

Table A1 *(cont)*

Country or ethnic group	Age at marriage group	Age at first union (years)	Length of first birth interval (months)	Age at last birth (years)	Length of interbirth intervals (months)	Proportion with 1+ births	Mean births
Haiti	<17	15.3	29	33.2	34.5	.983	6.25
	17—20	18.9	23	36.6	32.7	.994	6.75
	21—24	22.9	22	37.6	32.7	.956	5.45
Jamaica	<17	15.3	28	32.8	33.3	.974	6.29
	17—20	18.9	25	34.4	30.0	.929	5.94
	21—24	22.5	12	34.5	30.7	.925	4.88
	25+	29.0	–39	34.4	30.5	.861	3.80
Trinidad: Non-Indians	<17	15.2	32	31.8	29.5	.967	6.46
	17—20	18.8	28	32.5	30.5	.971	5.31
	21+	25.0	24	34.4	30.1	.837	3.34
Trinidad: Indians	<17	14.9	29	32.4	30.4	.988	6.90
	17—20	18.6	23	32.1	26.7	.935	5.80
Colombia	<17	15.0	25	34.0	26.1	.988	8.67
	17—20	19.0	14	35.6	27.1	.986	7.71
	21—24	22.7	8	35.8	27.7	.984	6.30
	25+	29.3	–15	36.9	29.9	.914	4.17
Costa Rica	<17	15.7	29	35.7	25.9	.984	8.98
	17—20	19.0	15	35.8	26.1	.989	8.03
	21—24	22.7	5	35.2	27.7	.986	6.14
	25+	29.7	–28	36.6	30.4	.917	4.27
Mexico	<15	13.6	30	34.7	30.1	.973	8.19
	<17	15.1	24	35.6	29.6	.978	8.31
	17—20	18.8	19	36.6	28.9	.975	7.52
	21—24	22.7	16	36.5	29.5	.977	5.96
	25+	28.7	–2	37.1	29.8	.874	3.91
Panama	<15	13.8	25	32.0	29.1	.973	7.43
	<17	15.1	21	33.1	29.6	.984	7.47
	17—20	18.8	21	33.0	30.2	.977	5.82
	21—24	22.7	13	34.2	31.6	.947	4.66
	25+	29.5	–7	35.3	29.7	.928	3.33
Paraguay	<17	15.5	21	35.9	30.1	.981	8.29
	17—20	18.8	17	35.3	29.5	.993	7.06
	21—24	22.6	11	34.8	33.6	.967	4.90
	25+	29.3	–12	36.8	34.7	.915	3.58
Peru	<15	13.9	29	35.3	29.8	.998	8.66
	<17	15.3	22	35.8	30.1	.999	8.47
	17—20	19.0	16	36.4	30.4	.985	7.23
	21—24	22.8	11	37.1	31.2	.990	6.07
	25+	28.8	–9	37.5	34.0	.914	3.98
Venezuela (aged 40—44)	<17	15.1	22	33.8	29.1	.990	7.92
	17—20	18.8	17	34.2	29.0	.993	6.81
	21+	25.7	13	34.8	29.5	.955	4.09

Table A2 The percentage change in the fertility of ever-married women aged 40—49 due to the inclusion of women with a dissolved first union, components of the change shown separately for women who did not remarry following dissolution of their first union and those who did remarry

Country or ethnic group	Behaviour after dissolution	Age at first marriage	First birth interval	Age at last birth	Length of interbirth intervals	Proportion with 1+ births	Total
Bangladesh	Not remarried	+0.8	−0.6	−4.8	−0.4	−0.2	−5.2
	Remarried	+2.0	−2.8	−1.3	−1.5	−0.5	−4.1
	All dissolutions	+2.8	−3.4	−6.1	−1.9	−0.7	−9.3
Indonesia	Not remarried	0	+0.1	−4.3	+0.2	−0.2	−4.2
	Remarried	+3.8	−5.5	−5.9	−3.0	−1.7	−12.3
	All dissolutions	+3.8	−5.4	−10.2	−2.8	−1.9	−16.5
Korea, Rep. of	Not remarried	+0.4	0	−4.1	+0.3	−0.1	−3.5
	Remarried	+0.6	−0.9	+0.1	−1.7	−0.4	−2.3
	All dissolutions	+1.0	−0.9	−4.0	−1.4	−0.5	−5.8
Malaysia: Malays	Not remarried	+0.1	+0.2	−2.9	+0.6	−0.3	−2.3
	Remarried	+2.9	−2.9	−3.2	−4.3	−0.7	−8.2
	All dissolutions	+3.0	−2.7	−6.1	−3.7	−1.0	−10.5
Malaysia: Chinese	Not remarried	+0.9	−0.3	−2.8	+0.5	+0.1	−1.6
	Remarried	+0.9	−0.5	−0.2	−0.6	0	−0.4
	All dissolutions	+1.8	−0.8	−3.0	−0.1	+0.1	−2.0
Nepal (refers to most recent union)	Not currently in a union	+1.6	0	−5.8	+0.4	−0.8	−4.6
Pakistan	Not remarried	+0.4	−0.2	−3.6	0	−0.6	−4.0
	Remarried	+0.6	−0.3	−0.2	−0.8	−0.3	−1.0
	All dissolutions	+1.0	−0.5	−3.8	−0.8	−0.9	−5.0
Philippines	Not remarried	0	+0.1	−1.1	+0.2	0	−0.8
	Remarried	+1.3	−0.5	−0.2	−0.8	−0.4	−0.6
	All dissolutions	+1.3	−0.4	−1.3	−0.6	−0.4	−1.4
Sri Lanka	Not remarried	+0.2	+0.2	−3.8	+0.2	−0.3	−3.5
	Remarried	+0.8	−0.2	−0.6	−0.7	+0.1	−0.6
	All dissolutions	+1.0	0	−4.4	−0.5	−0.2	−4.1
Thailand	Not remarried	+0.4	−0.5	−2.5	+0.1	0	−2.5
	Remarried	+1.6	−1.4	−0.4	−1.9	−0.4	−2.5
	All dissolutions	+2.0	−1.9	−2.9	−1.8	−0.4	−5.0
Fiji: Fijians	Not remarried	+0.2	−0.1	−1.5	0	−0.4	−1.8
	Remarried	+2.4	−2.2	−2.4	−1.0	−1.4	−4.6
	All dissolutions	+2.6	−2.3	−3.9	−1.0	−1.8	−6.4
Fiji: Indians	Not remarried	+0.2	+0.2	−1.1	−0.3	−0.7	−1.7
	Remarried	+0.1	−0.5	−0.1	−0.3	−0.1	−0.9
	All dissolutions	+0.3	−0.3	−1.2	−0.6	−0.8	−2.6

Table A2 *(cont)*

Country or ethnic group	Behaviour after dissolution	Age at first marriage	First birth interval	Age at last birth	Length of interbirth intervals	Proportion with 1+ births	Total
Jordan	Not remarried	+0.3	0	−2.4	0	+0.1	−2.0
	Remarried	+0.5	−0.9	−0.1	−0.7	−0.4	−1.6
	All dissolutions	+0.8	−0.9	−2.5	−0.7	−0.3	−3.6
Syria	Not remarried	−0.2	−0.1	−1.3	+0.2	−0.1	−1.5
	Remarried	+0.6	−0.8	−0.1	−0.5	−0.2	−1.0
	All dissolutions	+0.4	−0.9	−1.4	−0.3	−0.3	−2.5
Cameroon	Not remarried	+0.4	+1.0	−2.3	+0.3	0	−0.6
	Remarried	+0.8	−0.8	−3.9	−0.4	−3.5	−7.8
	All dissolutions	+1.2	+0.2	−6.2	−0.1	−3.5	−8.4
Ghana	Not remarried	+0.2	+0.2	−1.7	+0.1	−0.1	−1.3
	Remarried	+2.1	−0.3	−2.1	0	−0.3	−0.6
	All dissolutions	+2.3	−0.1	−3.8	+0.1	−0.4	−1.9
Kenya	Not remarried	+0.4	+0.1	−1.3	−1.1	−0.4	−2.3
	Remarried	+0.6	−0.6	−1.5	−0.6	−0.4	−2.5
	All dissolutions	+1.0	−0.5	−2.8	−1.7	−0.8	−4.8
Lesotho	Not remarried	−0.5	−0.2	−2.2	−1.0	+0.2	−3.7
	Remarried	+0.3	−0.4	0	−0.1	−0.7	−0.9
	All dissolutions	−0.2	−0.6	−2.2	−1.1	−0.5	−4.6
Senegal	Not remarried	−0.2	0	−0.3	−0.2	0	−0.7
	Remarried	+0.8	−1.2	−3.6	−3.6	−2.4	−10.0
	All dissolutions	+0.6	−1.2	−3.9	−3.8	−2.4	−10.7
Sudan (North)	Not remarried	+1.0	+0.3	−3.6	−0.4	−0.6	−3.3
	Remarried	+1.9	−1.9	−4.4	−1.1	−1.1	−6.6
	All dissolutions	+2.9	−1.6	−8.0	−1.5	−1.7	−9.9
Colombia	Not remarried	+0.8	+0.5	−4.6	−0.8	+0.2	−3.9
	Remarried	+2.8	−0.7	0	−2.3	+0.2	0
	All dissolutions	+3.6	−0.2	−4.6	−3.1	+0.4	−3.9
Costa Rica	Not remarried	+0.9	−0.4	−1.7	−0.4	−0.3	−1.9
	Remarried	+2.0	−0.9	+0.5	−1.2	0	+0.4
	All dissolutions	+2.9	−1.3	−1.2	−1.6	−0.3	−1.5
Dominican Republic	Not remarried	−0.1	0	−4.0	−0.1	−0.1	−4.3
	Remarried	+3.5	−1.6	−7.4	−5.4	+1.2	−9.7
	All dissolutions	+3.4	−1.6	−11.4	−5.5	+1.1	−14.0
Mexico	Not remarried	+0.6	+0.2	−3.6	−0.3	+0.1	−3.0
	Remarried	+1.3	−0.9	−0.5	−1.5	−0.2	−1.8
	All dissolutions	+1.9	−0.7	−4.1	−1.8	−0.1	−4.8
Panama	Not remarried	−0.2	+0.2	−2.9	−0.1	−0.1	−3.1
	Remarried	+4.9	−0.7	−1.3	−1.0	+0.3	+2.2
	All dissolutions	+4.7	−0.5	−4.2	−1.1	+0.2	−0.9
Paraguay	Not remarried	−0.8	+0.5	−2.5	−0.6	+0.2	−3.2
	Remarried	+3.4	−0.4	−0.4	−1.8	−0.4	+0.4
	All dissolutions	+2.6	+0.1	−2.9	−2.4	−0.2	−2.8

(Table continues)

Table A2 *(cont)*

Country or ethnic group	Behaviour after dissolution	Age at first marriage	First birth interval	Age at last birth	Length of interbirth intervals	Proportion with 1+ births	Total
Peru	Not remarried	+0.1	0	–1.9	–0.3	+0.1	–2.0
	Remarried	+2.6	–0.6	–0.2	–1.2	−0.2	+0.4
	All dissolutions	+2.7	–0.6	–2.1	–1.5	–0.1	–1.6
Venezuela	Not remarried	+2.2	–0.1	–2.9	–1.0	–0.1	–1.9
	Remarried	+7.9	–0.5	+0.8	–0.8	+0.8	+8.2
	All dissolutions	+10.1	–0.6	–2.1	–1.8	+0.7	+6.3