THE IMPACT OF MARITAL BREAKDOWN ON THE QUANTUM AND TEMPO OF CHILDBEARING IN ENGLAND AND WALES

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The Impact of Marital Breakdown on the Quantum and Tempo of Childbearing in England and Wales

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1. Introduction

There has been an increasing incidence of both marital breakdown and divorce in England and Wales over the last three decades. The numbers more than doubled during the 1960's and continued to grow into the 1970s and 1980s, initially with a rapid increase following the 1971 Divorce Act and subsequently at a slower rate (Haskey, 1983, 1988, 1989, 1992). Even allowing for the fact that later marriage and increased cohabitation may well result in lower divorce rates, Haskey (1988) estimated that around 40% of marriages in 1988 would ultimately end in divorce.

This increasing incidence of divorce may have an impact on fertility in England and Wales which, if large enough, could have a marked effect on the composition of the future population. The impact may manifest itself in several different ways. In the case of an early breakdown of marriage a woman's ultimate fertility may be reduced relative to those women in the society who remain married as she could spend time outside of a stable sexual relationship. However, early marital breakdown is often followed by cohabitation or remarriage, with the resulting opportunity for further childbearing. If the first marriage has not involved any children it is possible that the new union will exhibit the childbearing characteristics of a first marriage and there will be no effect on the quantum of childbearing, only on the timing. On the other hand a divorced woman with one or more children from her first marriage entering into a new union may wish to bear further children with her new partner. This could lead to an increase in ultimate fertility for that woman relative to a counterpart who had remained continually married.
A further complication is the effect children may have on their mother's prospects of remarriage. Sweet (1973) reported, in the U.S.A., that women with more children from their first marriage are less likely to remarry than women with fewer or no children, possibly because the presence of children makes them less attractive to potential partners. This theory, although not necessarily the reasoning, has been supported by data from the General Household Survey (GHS) for England and Wales which shows that the independent probability of remarriage is higher for women with zero as opposed to one or two children (Clarke et al 1993). The picture does become a little cloudy for women with three or more children, but the data for such women are relatively sparse.

There has been little research on this topic. Most of the early work was done in America. Suchindran et al (1978) examined the fertility patterns of women with different marital histories using data from the 1975 U.S.A. Current Population Survey. They found that fertility in later marriages did not make up for the reduced fertility experienced in their first marriage for women born before 1930 and who had therefore completed their families at the time of the survey. Whilst much of this reduced fertility was due to childlessness in the first marriage resulting in a late onset of childbearing, it is not clear how much the Second World War would have affected the childbearing of these women nor how the higher levels of late childbearing of the 1970s and 1980s would have affected their fertility had they been born, for example, 20 years later.

More recently Griffith et al (1985) reported that subsequent fertility was related to the age of the youngest child at the time of remarriage, but not to the number of children at that time. On the other hand, Glick and Lin (1987) reported that the fewer children a woman had at remarriage the greater the probability of childbearing in the new marriage. Wineberg (1990) supports these findings, showing that the probability of
childbearing in a later marriage is highest for women with no more than one child at the time of remarriage.

In England and Wales, Clarke et al. (1993) undertook an exploratory analysis of data from the 1986-89 rounds of the GHS to investigate two aspects of the effects of marital breakdown on fertility: (i) whether there is any impact on the ultimate parity of women and (ii) whether the spacing of births to those women who experience a marital breakdown is affected. They reported that marital breakdown seemed to have little impact on ultimate fertility although the timing of childbearing was affected.

The aim of this paper is to extend the work of Clarke et al. (1993) in three ways. First, to update the original analysis using data from the 1990-1993 rounds of the GHS. These data have the advantage of having a consistent set of questions on the marital and fertility histories of female respondents in all four rounds. Second, to examine in detail the question of timing by comparing the birth intervals for women experiencing marital breakdown with those for women married continuously throughout their reproductive careers. Third, to control for the socio-economic and demographic characteristics of women making different transitions by undertaking a series of discrete time hazards models of the moves through different marital and childbearing states.
2. Methodology and Data.

2.1 Introduction

The data used in this investigation are taken from the GHS. Data from four rounds of
the survey were used, from 1990 to 1993 inclusive, providing 15,501 useable fertility
histories for ever-married women aged 16 to 50 years. Data are available on previous
cohabitation for all marriages.

Those women who were currently widowed at the time of the survey were excluded
as it was felt that any current birth interval for them would be unrepresentative.
Multiple births were considered as one pregnancy when calculating birth intervals
although of course they are considered as multiple when calculating a woman's parity.
In addition, to avoid distortions due to apparent extended birth intervals of women
with completed families, all women still in the sample at age 45 were treated as being
censored at that age.

2.2 Methodology

In order to assess the impact of marital breakdown on parity a life table approach was
adopted using multiple decrement tables. A combined table of twenty individual life
tables was constructed to track the transitions of women as they moved between
different marital statuses and parities. The use of this life table approach enabled the
entire current status data from the survey to be used.

Separate, but connected, life tables were constructed for women in their first marriage
(M), divorced from their first marriage (D), married for a second time (RM), and
divorced from their second marriage (RD). This latter category also included all later marriages. There were very few women with more than two marriages.

The data were further subdivided by parity at each duration since first marriage. Thus the M lifetable for women in their first marriage was subdivided into M0 for childless women in their first marriage, M1 for women with one child, M2 for those with two children up to M5 for those with five or more live births. This combined table is illustrated in Figure 1.

The paper follows women for a maximum of 25 years after their first marriage. A woman can leave each table in any one of three ways: a change in parity, a change in marital status or by censoring, when a particular fertility history is terminated by the survey. Throughout this paper the term 'divorce' is taken to denote either separation or legal divorce, and 'remarriage' to denote a second legal marriage or cohabitation following the break-up of the first marriage. This terminology is used both for simplicity and to avoid the unobserved heterogeneity intrinsic in the data due to the fact that it is not possible to determine in any particular instance whether cohabitation is seen as a voluntary prelude to a possible later marriage or due to the fact that one or both partners is awaiting divorce from a previous marriage. Thus the use of the dates of separation and cohabitation are considered to give the most realistic interpretation to marital status.

The combined table commences with 15,501 women newly married for the first time, subdivided according to parity at that time. The first sector of this combined table, M0, consisting of childless women in their first marriage, has as its modes of exit the birth of a first child, divorce (or separation) and censoring by the survey. There are no possible modes of increment to this section of the table, whereas in other sections this is possible. For example in the D2 section in addition to decrements by
means of a third birth, remarriage and censoring there are increments both from the M2 sector by divorce and from the D1 sector by means of a second birth.

For each lifetable in the combined table the exposed to risk was calculated as

\[ S_n E_x = S_n (al)_x - S_n (ad)_x^c / 2 \]

where \( S_n \) denotes marital status \( S \) and parity \( n \), \( S_n (al)_x \) is the number of women in lifetable \( S_n \) at duration \( x \) since first marriage and \( S_n (ad)_x^c \) the number of women censored from lifetable \( S_n \) at this duration.

The mean number of children born to women by each duration since first marriage was calculated from the data in the combined multiple decrement table using the formula

\[ \hat{B}_x = (b_{x0} + \sum_{t=0}^{x} b_t - \sum_{t=0}^{x} e_t) / l_x \]

where \( b_{x0} \) is the total number of premarital births, \( \sum_{t=0}^{x} b_t \) is the total number of births to women at durations 0 to \( x \) inclusive, \( \sum_{t=0}^{x} e_t \) is the total number of births to women censored at durations less than \( x \) and \( l_x \) the number of women exposed to risk at duration \( x \).
3. Results

3.1 Parity

Tables 1 and 2 give the distributions of parity and marital status by duration since first marriage. Table 1 shows that most women have two or three children and that, in the main, childbearing is completed by around fifteen years of marriage. Indeed there is relatively little change in the parity distribution after ten years of marriage. However, it is shown below that the reason for this is that most continuously married women have completed their childbearing within ten years of marriage. The high levels of divorce in recent years are illustrated clearly in Table 2 which shows that within ten years of marriage almost one in five of the respondents had experienced a marital breakdown and within twenty five years almost three in ten.

Table 3 shows the marginal and cumulative parity distribution by marital status for a number of years. The table shows that for continuously married couples there is very little change in parity after ten years but that for those who have experienced a marital breakdown childbearing continues rather longer. This is demonstrated even more markedly by Table 4 which gives the probabilities of being in the same marriage/parity state five and ten years after a selection of durations since first marriage. These probabilities show, for example, that ten years after first marriage the chance of subsequently staying in the same state for continuously married couples is very much higher than for those who have experienced a marital breakdown.

Thus far the results have shown that women who experience a marital breakdown take, as a group, a longer time from first marriage to completing their childbearing. This is not surprising as in many cases divorce precedes or interrupts childbearing. The next important question is whether women who ultimately find themselves in
different marital states either a) have, on average, different numbers of children; or b) experience different pathways to achieving their completed families.

Figures 2-5 start to answer these questions by plotting the mean number of births for each year since first marriage for women who, on finally leaving the combined table, are either still in their first marriage, divorced, remarried or redivorced. Figure 2 gives the picture for all women while Figures 3-5 present the results for women first married in the 1960s, 1970s and 1980s respectively. It should be noted that censoring at high durations since first marriage means that the results for Figure 4 at high durations are a little unstable and for similar reasons results for the 1980s cohort are only shown to eight years since first marriage. However, the general picture is clear.

Figure 2 shows that, overall, those women who will ultimately redivorce or divorce but not remarry start to childbear early, but while those who will redivorce maintain a high level of childbearing, those who divorce but do not remarry slow down the pace of their childbearing to end up with similar levels of childbearing as those who remain continuously married.

Figure 3 for women first married in the 1960s, displays a close pattern of childbearing to that in Figure 2. The continuously married women have a slower start to their childbearing, this is most evident in the first three years since first marriage. During this first three year period the highest parity is to those women whose final marital status is divorced or redivorced. Those women reaching the end of their childbearing years in their second marriage have a tendency to higher parity after about 18 years since first marriage. When compared to those women continuously married these women start a little faster, falling behind the continuously married after three years. They continue to exhibit slower rates of childbearing for several years before increasing their rate between 10 to 15 years after first marriage, ultimately having a slightly higher parity than the continuously married women.
From the 1970s cohort of first marriages (Figure 4) we again see the tendency for those women continuously married to have a lower initial rate of childbearing, although in this particular cohort those women divorcing without remarrying show a very similar early pattern. As previously mentioned, due to censoring the data at durations above fifteen years are unstable for this cohort and consequently any results from this period should be treated with caution. However, over the ten year period beginning five years after first marriage, the continuously married women show a significantly higher parity than the other groups. This relatively high rate of childbearing then falls off with little increase in the average parity of these women more than fifteen years from the time of their first marriage. For the 1980s, Figure 5 shows that remarried women have markedly lower levels of fertility in the early years since first marriage. This clearly reflects divorce among women with no children in their first marriage. Interestingly, the divorced women have higher early childbearing.

3.2 The Timing of Childbearing

This section considers in more detail the pathways taken by women through the combined table. Figures 6-9 give the probability of having a birth of a particular order at any duration since first marriage for the woman’s specific marital status at that duration. It should be noted that these probabilities are conditional on being exposed to the risk of that order while in that particular marital status. Also, probabilities are not presented for some statuses at very short durations as it is very unlikely that a woman would reach certain marital statuses, for example remarriage or redivorce, immediately after first marriage!

Figure 6 shows that the probability of a first child for women in their first marriage is high after two years and then slowly decreases. This demonstrates that, although for
many women, marriage did signal the onset of childbearing, for many others there was some delay before entering motherhood. Those women who remarry before they first become mothers have, for particular durations, higher probabilities of entry into motherhood than their continuously married counterparts, but this could very largely represent a shift in the curve with those who remarry having similar patterns of childbearing following their second marriage. Divorced women, unsurprisingly, have relatively low probabilities of becoming a mother.

There are similar patterns for the second birth (Figure 7) whereas at higher birth orders the picture is a little different. In the third and fourth birth intervals (Figures 8 and 9) the convergence to a two child norm amongst women in England and Wales is manifested by the low probabilities for continuously married women - which are very similar to those for women who are divorced. On the other hand there are some very interesting results for the remarried women who have markedly higher probabilities of a third birth and a little higher probability of a fourth birth. This could suggest that women who remarry are likely to want to have another child with their new spouse.

This possibility is investigated in Figures 10-14. These show the probability of another child given a particular parity and marital status five and ten years after first marriage. The results are extremely interesting. Women who are childless and divorced after five years are markedly less likely ever to become mothers than their counterparts who are continuously married or remarried (Figure 10). On the other hand, women who are childless after ten years of marriage are markedly less likely ever to become mothers than those who are remarried or redivorced (Figure 11). In other words, for remarried and redivorced women their marital histories have merely delayed their childbearing. To turn to second births, Figure 12 shows that for women at parity one after five years a second child is very likely if the woman is in her first or second marriage but is less likely for a woman who is divorced. The interesting point is that women who had their current child in their second marriage experienced
identical patterns of childbearing to their continuously married counterparts. On the other hand those women whose current child was born in their previous marriage took, as a group, rather longer to catch up but, fifteen years after the date of their first marriage, did so.

Of paramount interest in a two child society is the third birth, as one can hypothesise that, as a result of marital breakdown, third births could occur more frequently than would otherwise be the case because couples who remarry may wish to have a child in their second marriage. Figures 13 and 14 display, for women with two children, the probabilities of a third birth by marital status after five and ten years respectively. For those women with two children five years after first marrying, those who are divorced or remarried with at least one child from the second marriage are more likely to have a third child than those who are continuously married (there are too few women who are remarried with both their children from the previous marriage to permit estimation).

One could speculate that these high probabilities for the divorced reflect the fact that they will subsequently remarry. This is borne out by Figure 14 which shows a fascinating result. For women with two children after ten years, the probability of a third child is markedly higher for women where both children are from the first marriage or who are redivorced. There is little difference in the chance of a third child for continuously married women, remarried women where at least one child comes form the second marriage or divorced women.

It is possible that this could reflect differences in the socioeconomic and demographic characteristics of women with two children but in different marital statuses ten years after their first marriage. To control for this possibility a logistic regression of the probability of having a third birth in between ten and fifteen years after first marriage was estimated. The explanatory variables were marital status after ten years, social
class, age at first marriage, marriage cohort, education of woman and region of residence. Table 5 shows the odds ratios of a third birth for marital status first when it was included as the only explanatory variable and second when controlling for the socioeconomic and demographic characteristics above. There is one change in the ranking between the two sets of odds ratios but overall the results are consistent.

Considering the model with all explanatory variables there are four distinct groups. Continuously married women are the least likely to have a third child, the divorced and those remarried with at least one child from the current marriage are around two times more likely to have a third child than their continuously married counterparts. On the other hand the remarried with two children both from the previous marriage are around 6.4 times more likely to have a third birth than their continuously married counterparts. It is possible, of course, that continuously married women would have completed their childbearing before ten years after first marriage and so would have their third birth by this time. To address this a logistic regression for women who had two children after five years was estimated and the results are very similar to those reported above. Their is no similar result for higher birth orders.

To examine fully the impact of marital breakdown on the timing of childbearing requires an analysis of birth interval length. There is always a problem with an event history analysis of birth intervals because a proportion of women will never have the event and so will always be censored. Such women will be contributing a lot of years to the risk set thus reducing the probability of an event. For the initial analysis it was decided to overcome this problem in a rather unsatisfactory way by considering closed birth intervals. This is done simply to permit an initial exploratory analysis. Figures 15-18 give box plots of closed birth interval length for the first three birth intervals. In each figure there are separate box plots for different combinations of marital status, for example whether the woman was continuously married or whether she had experienced a divorce during the interval. The key group is that on the extreme right of each figure. These are the women who started the interval married
but experienced a marital breakdown during the interval. For each birth interval this group have a longer birth interval than any other group. It is notable that there is no difference in the birth intervals for those who are continuously in their first marriage and those who are continuously remarried. In summary, marital breakdown increases the length of the birth interval in which the breakdown occurs but has no impact on any other birth interval.

Finally, the duration spent in each of the marital status/parity states is considered. To calculate the expected time in a state requires the use of multiple state modelling and this will be considered in future work. In this is paper a competing risks model is estimated for each of the marital status/parity states. The model is a discrete time competing risks model which can be estimated using log linear models.

The basic form of the model is

$$\ln\left(\frac{\Pi_{rit}}{\Pi_{git}}\right) = \beta_{r0} + \beta_{r1} Z_{rit} + \beta_{r2} X_{rit}$$

(1)

where $\Pi_{rit}$ is the hazard of an event of type $r$ occurring at time $t$ for an individual with explanatory variables $X_{rit}$. In this case $r (=1,2,3)$ can be having a birth, changing marital status by divorce or marriage, or staying in the same marital status/parity state. $Z_{rit}$ is a function of time; $\beta_{r0}, \beta_{r1}, \beta_{r2}$ are unknown parameters.

Essentially this can be estimated as a multinominal logistic regression where a woman contributes to each discrete time interval until she either has another child, divorces or marries, or is censored by the survey date.

For a particular set of explanatory variables and duration since she first entered into any given state it is possible to transform the system of equations described by
equation (1) to calculate estimated probabilities of leaving the particular life table as a result of having a baby or divorcing/marrying. These estimated probabilities are given by

$$\Pi_{rit} = \frac{\exp(\beta_0 + \beta_{11} Z_{rit} + \beta_{12} X_{rit})}{1 + \sum_{k=1}^{2} \exp(\beta_{k0} + \beta_{k1} Z_{krit} + \beta_{k2} X_{krit})}$$  \hspace{1cm} (2)

The models were estimated after a number of exploratory analyses to determine the most appropriate time intervals. With very short time intervals the data set becomes extremely large and there are problems of sparse data in each of the time intervals. On the other hand if the intervals are too broad the assumption of constant probabilities within a time interval is not satisfied. After some consideration it was decided to use six intervals: 0-1;2-3;4-5;6-9;10-13;14+. The explanatory variables used were similar to those described above for the analysis of third births. They include: the time from first marriage to entering the current state; education; whether the woman had a premarital birth; marriage cohort; social class; and the age at first marriage. Effectively, the models estimated in this paper are discrete time proportional hazards models and the explanatory variables serve to increase or decrease the chance of an event happening by the same proportion at each time interval. In this paper the major interest is in the probability of having another child, changing marital status or staying in the same state, and so estimated probabilities as described in equation (2) were calculated for each time interval holding all the explanatory variables at their mean value. (In the case of categorical variables the proportion in each category were used.)

These estimated probabilities are presented in Figure 19 for durations from two years onwards. The key points are first, that the probability of leaving the current state through having a baby starts relatively high and then progressively decreases and second, that the probability is higher at almost all durations than is the probability of
leaving due to a change in marital status. The probabilities of leaving due to changes in marital status are typically very low and variations over time are not reflected in a graph such as Figure 19. To summarise, they do tend to peak in the intervals 2-4 and 4-6 years but it should be pointed out that these effects, although statistically significant, are not reflected in high probabilities of divorce. In other words, one is much more at risk of having a baby than of changing marital status until one has been in a given state for ten years, after which time one tends to have a very high probability of remaining in that state for a long time.

4. Discussion

This paper has updated and extended the work of Clarke et al (1993) to examine the past impact of marital breakdown on the fertility of women aged 16 to 50 in England and Wales. Using data from the 1990-1993 rounds of the General Household Survey, the paper finds that in general marital breakdown has little impact on the ultimate childbearing, as a group, of women who experience marital breakdown as opposed to those who do not. However, divorced women who do not remarry are more likely to remain childless and there is certainly evidence that women who remarry with exactly two children from their first marriage have a high chance of having a third child with their new partner.

Although marital breakdown has little impact on ultimate fertility it has a marked impact on the timing of childbearing. Women who experience a marital breakdown certainly take a longer time from first marriage to completing their childbearing but it seems that this increase occurs entirely in the birth interval in which the marital breakdown occurs. In all other birth intervals there is no difference between those women who experience a marital breakdown and those who are continuously married. The discrete time hazards models demonstrate clearly that although divorce is
certainly an important factor in modern day England and Wales it is also true that at any time the average woman is much more likely to become a mother than a divorsee.
References


Table 5  Odds of having a third birth for women with two births ten years after their first marriage.

<table>
<thead>
<tr>
<th>Marital Status after Ten Years</th>
<th>Marital Status Regression</th>
<th>Regression also controlling for Socio-Economic and Demographic Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>First marriage</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>First divorce</td>
<td>2.28</td>
<td>2.04</td>
</tr>
<tr>
<td>Second divorce</td>
<td>7.95</td>
<td>3.30</td>
</tr>
<tr>
<td>Remarried (both children from first marriage)</td>
<td>5.81</td>
<td>6.45</td>
</tr>
<tr>
<td>Remarried (at least one child from current marriage)</td>
<td>1.69</td>
<td>1.82</td>
</tr>
</tbody>
</table>

Note 1. All the above odds ratios are statistically different for the reference category (First Marriage) at the 1% level.

Note 2. The socio-economic and demographic characteristics controlled for are social class, education, marriage cohort, age at first marriage and region of residence.