A Decomposition of Trends in the Nonmarital Fertility Ratios of Blacks and Whites in the United States, 1960-1992

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A DECOMPOSITION OF TRENDS IN THE NONMARITAL FERTILITY RATIOS OF BLACKS AND WHITES IN THE UNITED STATES, 1960–1992*

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We use a method of standardization and decomposition developed by Das Gupta to update Smith and Cutright's analysis of demographic factors responsible for increases in the nonmarital fertility ratio (illegitimacy ratio) among blacks and whites in the United States. We create standardized rates for each year between 1960 and 1992, and consistent, exhaustive decompositions of the nonmarital fertility ratio for any interval during this period in terms of four components: (1) the age distribution of women of reproductive age, (2) the proportion of women unmarried at each age, (3) the age-specific birth rates of married women, and (4) the age-specific birth rates of unmarried women. Nonmarital fertility ratios are much higher among blacks than among whites, but both increased monotonically from 1960 to 1992. During the last 10 years, each increased by nearly 10 percentage points. Increases in the proportion of women not married, at all ages, account for the preponderance of the increase in black nonmarital fertility ratios. Increasing rates of unmarried childbearing, however, have played a role during the most recent decade (1983–1992). For whites, from 1960 until 1975, declines in marital fertility *were most important in producing increases in the proportion of children born out of wedlock. Since then, these proportions have increased primarily because of increases in unmarried women's birth rates, and secondarily because of declines in the proportion of women who are married. These trends are consistent with arguments that emphasize declining economic incentives to marry and reduced access to, and acceptability of, abortion.*

For much of the twentieth century, successive birth cohorts of American youths were increasingly advantaged with respect to background factors related to their life chances (Mare 1979). Because of the expansion of education, each cohort had successively better-educated parents. Upgrading of the occupational structure increased the proportion of children whose fathers had white-collar jobs, and declines in sibship size (Hauser 1989) reduced the competition for intrafamilial resources (Blake 1989).

In the last few decades, however, at a time when the incomes of (most) male wage earners have stagnated (Levy 1987) and changes in the occupational structure are of dubious advantage, one of the greatest changes in the family background of new cohorts of Americans is their parents' marital status at their birth (Figure 1). In the early 1960s, only one black child in four, and less than one white child in 20, was born out of wedlock.[1] By the early 1990s, two out of every three black children, and close to one white child in four, were born to unmarried mothers.[2]

The rapidity and the sweeping scale of this change have attracted at least as much interest among policy makers as among social scientists: The U.S. Department of Health and Human Services' (1995) *Report to Congress on Out-of-Wedlock Childbearing* was mandated by the Violent Crime Control and Law Enforcement Act of 1994! Two potential problems, however, accompany this attention and interest.

First, we know far less about the impact of a mother's marital status at birth on her child's future life chances than about the effects of a father's education. What we know suggests that the effects are moderate and are difficult to separate from concomitant increases in the proportion of childhood spent in single-parent homes; these increases arise from parents' increasing failure to marry, and from divorce (McLanahan 1995). The effects of an out of wedlock origin are also confounded with more traditional status measures (e.g., income, education, job prospects) that are implicated in the path to nonmarital fertility (U.S. Department of Health and Human Services 1995:39).

Second, variation across cohorts in the proportion of children born to unmarried mothers can have as much relation—if not more—to the proportion of women of reproductive age who are unmarried, and to married women's fertility levels, as to the chances that an unmarried woman will have a birth in a particular year. Knowledge of the micro-level behavioral phenomena that determine how an unmarried

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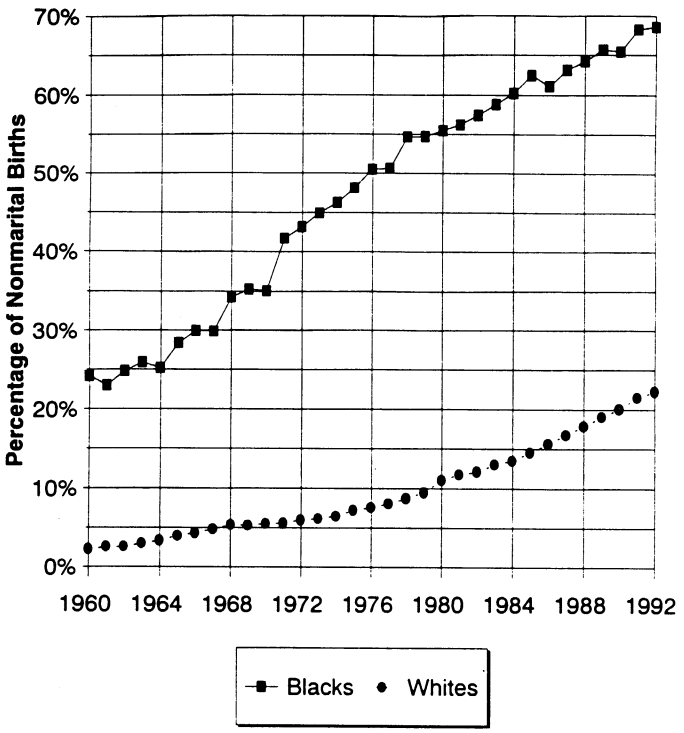
1. We use the terms white and black because they conform to the data as they were collected during most of the years that we cover.

2. The nonmarital fertility ratios in Figure 1 refer only to births to women ages 15–44. They are derived from data discussed in the Data section and the appendix of this paper.

FIGURE 1. NONMARITAL FERTILITY RATIOS BY RACE, 1960–1992



woman comes to have a child translates poorly into understanding of the macro-level demographic phenomena that determine the proportion of a given birth cohort which is born to unmarried women.

Previous research, focusing on the period through the early 1980s, emphasized the strong effects of declining nuptiality and increasing divorce in creating larger numbers of women at risk of a nonmarital pregnancy, especially in the black subpopulation (Espenshade 1985; Jones et al. 1985). Rates of fertility among unmarried women were actually declining among blacks, even as the nonmarital fertility ratio rose (Smith and Cutright 1988). Since 1983, however, childbearing among nonmarried women, both black and white, has increased substantially at nearly all ages (Morgan forthcoming; Rindfuss 1991). Are the continued increases in the proportion of children in the population who are born out of wedlock now a function primarily of fertility changes among unmarried women?

We investigate this question using the general analytic framework of Smith and Cutright (1988), but improve on it in three ways. First, we extend the data series forward by 10 years, through 1992 (and backward for three years, to 1960). This makes it possible to compare factors implicated in the growth of the nonmarital fertility ratio during the 1980s and early 1990s with factors responsible for growth in the 1960s and 1970s.

Second, rather than presenting data at five-year intervals, we use data for all 33 years of the 1960–1992 period. This eliminates the possibility that transient changes in demographic rates, specific to certain years, will dominate calculations.

Third, we use the method of standardization and decomposition developed by Das Gupta (1993), which is a generalization of the relationship between standardization and decomposition devised by Kitagawa (1955). This method leads to the creation of tables and figures that allow us to calculate quickly the decomposition of change in the nonmarital fertility ratio into the unique effects of four components, for any interval of the 33-year period.

METHOD

The nonmarital fertility ratio (illegitimacy ratio) is the ratio of the total number of nonmarital births (I) to all births ($I+L$, where L is the total number of marital births). Following Smith and Cutright (1988), we expand this ratio as

$$\frac{I}{I+L}=\frac{\sum_{j=15-19}^{40-44}\frac{w_j}{W}\times\frac{u_j}{w_j}\times\frac{i_j}{u_j}}{\sum_{j=15-19}^{40-44}\frac{w_j}{W}\times\frac{u_j}{w_j}\times\frac{i_j}{u_j}+\sum_{j=15-19}^{40-44}\frac{w_j}{W}\times\frac{m_j}{w_j}\times\frac{l_j}{m_j}}, \quad (1)$$

where W is the total number of women of reproductive age (ages 15–44); w_j is the number of women age j (j = 15–19, 20–24, 25–29, 30–34, 35–39, and 40–44); u_j and m_j are respectively the number of nonmarried and married women at age j ($u_j + m_j = w_j$); i_j is the number of nonmarital births to women age j; and l_j is the number of marital births to women age j. These terms can be expressed as two proportions and two rates:

$$\frac{I}{I+L}=\frac{\sum_{j=15-19}^{40-44}A_j\times\left(1-P_j\right)\times N_j}{\sum_{j=15-19}^{40-44}A_j\times\left(1-P_j\right)\times N_j+\sum_{j=15-19}^{40-44}A_j\times P_j\times M_j}, \quad (2)$$

where A_j is the proportion of women of reproductive age who are age j; P_j is the proportion of women age j who are married; and N_j is the nonmarital fertility rate, and M_j is the marital fertility rate, for women age j.

Eq. (2) is an expression of the nonmarital fertility ratio as a function of four vector-factors (Das Gupta 1993). The factors are A, P, N, and M. They are vectors because they are valued over a range of age groups. For a specific year t, we represent eq. (2) in the following general form:

$$R_t = f\left(\overline{A}_t, \overline{P}_t, \overline{N}_t, \overline{M}_t\right), \quad (3)$$

where R is the nonmarital fertility ratio, $f(\bullet)$ is the function described by eq. (2), and the bar over the various compo-

nents indicates reference to their distribution over the six five-year age groups, j = 15–19,...,40–44.

Following Das Gupta (1993), consider the decomposition of the difference in nonmarital fertility rates between two years, $t = 1$ and $t = 0$. We must define a set of standardized nonmarital fertility ratios, $\{R_t(\overline{A}), R_t(\overline{P}), R_t(\overline{N}), R_t(\overline{M})\}$, such that

$$R_1 - R_0 = \left[R_1(\overline{A}) - R_0(\overline{A})\right] + \left[R_1(\overline{P}) - R_0(\overline{P})\right] + \left[R_1(\overline{N}) - R_0(\overline{N})\right] + \left[R_1(\overline{M}) - R_0(\overline{M})\right]; \quad (4)$$

that is, the differences between standardized ratios is equal to the sum of the differences between standardized ratios, for each of the four factors. The bracketed differences between standardized ratios are the *effects*, respectively, of age distribution, age-specific percentages of women married, age-specific nonmarital fertility rates, and age-specific marital fertility rates.

Standardized ratios conforming to the equality in eq. (4) are defined (Das Gupta 1993:app. A) for the first factor ($\overline{A}$) as

$$R_0(\overline{A}) = \frac{f(\overline{A}_0,\overline{P}_1,\overline{N}_1,\overline{M}_1) + f(\overline{A}_0,\overline{P}_0,\overline{N}_0,\overline{M}_0)}{4} + \frac{f(\overline{A}_0,\overline{P}_1,\overline{N}_1,\overline{M}_0) + f(\overline{A}_0,\overline{P}_1,\overline{N}_0,\overline{M}_1)}{12} + \frac{f(\overline{A}_0,\overline{P}_0,\overline{N}_1,\overline{M}_1) + f(\overline{A}_0,\overline{P}_0,\overline{N}_0,\overline{M}_1)}{12} + \frac{f(\overline{A}_0,\overline{P}_0,\overline{N}_1,\overline{M}_0) + f(\overline{A}_0,\overline{P}_1,\overline{N}_0,\overline{M}_0)}{12} \quad (5)$$

and

$$R_1(\overline{A}) = \frac{f(\overline{A}_1,\overline{P}_0,\overline{N}_0,\overline{M}_0) + f(\overline{A}_1,\overline{P}_1,\overline{N}_1,\overline{M}_1)}{4} + \frac{f(\overline{A}_1,\overline{P}_0,\overline{N}_0,\overline{M}_1) + f(\overline{A}_1,\overline{P}_1,\overline{N}_0,\overline{M}_0)}{12} + \frac{f(\overline{A}_1,\overline{P}_1,\overline{N}_0,\overline{M}_0) + f(\overline{A}_1,\overline{P}_0,\overline{N}_1,\overline{M}_1)}{12} + \frac{f(\overline{A}_1,\overline{P}_1,\overline{N}_0,\overline{M}_1) + f(\overline{A}_1,\overline{P}_0,\overline{N}_1,\overline{M}_0)}{12}. \quad (6)$$

Similar equations can be described for $(R_t(\overline{P})$, $(R_t(\overline{N})$, and $(R_t(\overline{M})$, for $t = 0,1$. The $2^4 = 16$ combinations of factors $\overline{A}_t$, $\overline{P}_t$, $\overline{N}_t$, and $\overline{M}_t$ ($t = 0,1$) are divided into those in which the age distribution ($\overline{A}_t$) is held constant at its vector of values for year 0, as in eq. (5), and those in which it is held constant at its vector of values for year 1, as in eq. (6). Within each equation, these functions are averaged according to whether they involve main effects (functions denominated by 4) or interactions (functions denominated by 12). Eqs. (5) and (6) are multiple-factor extensions of Kitagawa's (1955) classic decomposition of the difference in two rates into the effects of differences in subpopulation-specific rates and differences in population composition. Like Kitagawa's method, Das Gupta's (1993) method creates a decomposition in which interaction effects are partitioned among the four factors.

We are interested, however, in change in the nonmarital fertility ratio across the 33-year period 1960–1992, not in a comparison of any two specific years. In 33 years there are $\frac{33^2 - 33}{2}$ = 528 year-pair comparisons. Calculation of all year-pair comparisons is insufficient for two reasons:

First, the standardized ratios for a given factor for a given year depend on the other year with which it is being compared. Let $R_{0(1)}(\overline{A})$ denote the standardized nonmarital fertility ratio, holding the age distribution constant, for year 0, where the standardization is based on a comparison with year 1. Let $R_{0(2)}(\overline{A})$ denote another standardized nonmarital fertility ratio, holding the age distribution constant, for year 0, but now for a standardization based on a comparison with year 2. Then, in general, $R_{0(1)}(\overline{A}) \neq R_{0(2)}(\overline{A})$.

Second, given three years, the results are not *internally consistent* (Das Gupta 1993:97). Effects of a given factor across a given interval will generally *not* equal the sum of the effects attributable to that factor for exhaustive partitions of the interval; for example,

$$\left[R_{2(0)}(\overline{A}) - R_{0(2)}(\overline{A})\right] \neq \left[R_{1(0)}(\overline{A}) - R_{0(1)}(\overline{A})\right] + \left[R_{2(1)}(\overline{A}) - R_{1(2)}(\overline{A})\right].$$

Das Gupta (1993:ch. 6) describes a method by which the 1,056 factor-specific standardized nonmarital fertility ratios from the 528 pairwise comparisons (e.g., $R_{i(j)}(\overline{A})$ for $I = 1,\ldots, T$ and $j = 1,\ldots, T$, $i \neq j$) can be averaged to produce a single set of standardized nonmarital fertility ratios for each of the $T = 33$ years. For a given year t,

$$R_t(\overline{A})^* = \frac{\sum_{i=1, i\neq t}^{T} R_{t(i)}(\overline{A})}{T-1} + \frac{\sum_{i=1, i\neq t}^{T}\left[\sum_{j=1, j\neq t, i}^{T} R_{i(j)}(\overline{A}) - (T-2)R_{i(t)}(\overline{A})\right]}{T(T-1)}. \quad (7)$$

Similar equations can be described for $R_t(\overline{P})^*$, $R_t(\overline{N})^*$, and $R_t(\overline{M})^*$. For any pair of years t and u, these standardized ratios ensure an exhaustive four-factor partition of the observed nonmarital fertility ratios; that is,

$$R_u - R_t = \left[R_u(\overline{A})^* - R_t(\overline{A})^*\right] + \left[R_u(\overline{P})^* - R_t(\overline{P})^*\right] + \left[R_u(\overline{N})^* - R_t(\overline{N})^*\right] + \left[R_u(\overline{M})^* - R_t(\overline{M})^*\right]. \quad (8)$$

For any three years t, u, and v, they ensure internal consistency; for factor $\overline{A}$, for example,

$$\left[R_v(\overline{A})^* - R_t(\overline{A})^*\right] = \left[R_u(\overline{A})^* - R_t(\overline{A})^*\right] + \left[R_v(\overline{A})^* - R_u(\overline{A})^*\right]. \quad (9)$$

DATA

Data for the calculation of the nonmarital fertility ratio, and for its various standardizations, come from the U.S. Bureau of the Census (population estimates, by age, race, and marital status) and the National Center for Health Statistics (births, by age, race, and marital status). (See the appendix for details.) We summarize trends in the four component factors briefly, to conserve space, as they are tabulated elsewhere (e.g., U.S. Department of Health and Human Services 1995:app. A).

The Age Distributions of Women by Race ($\overline{A}_t$)

Trends in the age distribution of women largely reflect the influence of the baby boom cohorts, who were ages 15–19 from the mid-1960s through the mid-1970s. This very large cohort first produced a younger, then an older distribution of women of reproductive age. The shift to an older age distribution after 1980 is slightly greater for whites than for blacks. Such shifts are potentially important because women in their teens and twenties have higher rates of nonmarital fertility than do older women.

Percentage Not Married, by Age and Race ($\overline{P}_t$)

For both blacks and whites, the percentage not married has increased during the period of study, and remains higher for black than for white women. In the 1990s, marriage has become a minority status among black women of reproductive age, and teenage marriage has all but disappeared. In 1960, two out of three black women ages 20–24 were married; in 1992, less than one in five were married. Rising age at first marriage has also led to a large increase in the proportion of 20- to 24-year-old white women who are not married (from 30% in 1960 to 65% in 1992). At ages 25 and above, however—and in sharp contrast to the current situation among blacks—the large majority of white women are married.

Fertility Rates for Nonmarried Women, by Age and Race ($\overline{P}_t$)

Black nonmarital fertility rates declined substantially during the 1960s, were relatively stable until 1984, and increased modestly thereafter. White rates are much lower at all ages over the entire period, but show continuous increases beginning in the mid- to late 1970s. For both whites and blacks, the increase was particularly great during the 1984–1990 period.

Fertility Rates for Married Women, by Age and Race ($\overline{M}_t$)

Trends in marital fertility rates are very similar for whites and for blacks. Both groups show declines in fertility through the mid-1970s. Since then, rates have been level and/or have increased slowly. Increases are most apparent for older white women.

RESULTS

The results of the standardization procedure described above under Methods, are found in Table 1 (for blacks) and Table 2 (for whites). These tables list, for each year, the nonmarital fertility ratio (as depicted in Figure 1) and standardized nonmarital fertility ratios for each of the four factors. The standardized ratios can be used to decompose change over any interval, according to eq. (8).

Consider the increases in black and white nonmarital fertility ratios over the 10-year period 1983–1992. In 1983 the black nonmarital fertility ratio was 0.5884. In 1992 it was 0.6857, an increase of +.0973, or 9.73%. The distribution of black women of reproductive age was aging over this period, placing more women at ages with higher incidences of marriage. By subtracting the age distribution-standardized nonmarital fertility ratio for 1983 (0.4636) from that for 1992 (0.4458), we see that (all else being equal) changes in the age distribution of the reproductive-age population should have lowered the black nonmarital fertility ratio by –0.0178. A similar calculation involving the standardized ratios for the percentage of women who are married reveals that increases in proportions not married at all ages are chiefly responsible for the increase in nonmarital fertility ratios over this interval: 0.6906 – 0.6043 = +0.0863, which approximates the overall increase during this period (+0.0973). Calculations for effects of change in nonmarital and in marital fertility ratios yield respectively 0.4910 – 0.4364 = +0.0546 and 0.4768 –0.5027 = –0.0259. Thus, the increasing rates of nonmarital childbearing were partially offset by increases in rates of marital fertility.

The four effects can be summed to yield the overall change in the nonmarital fertility ratio: (–0.0178) + (+0.0863) + (0.0546) + (–0.0259) = (+0.0972). Table 3 includes these estimates along with parallel estimates for whites.

The decompositions in Table 3 motivate the following remarks:

> Increases in the percentage of children born to unmarried mothers were essentially the same for blacks and for whites during this recent 10-year period.
>
> Among blacks, declines in the proportion of women who are married remained the main factor contributing to this increase. Increases in nonmarital fertility rates also contributed to the recent rise in the nonmarital fertility ratio. Before 1983, declining rates of nonmarital fertility among blacks had been exerting downward pressure on this ratio.

TABLE 1. NONMARITAL FERTILITY RATIOS FOR BLACKS, 1960–1992: OBSERVED AND STANDARDIZED

Year	Nonmarital Fertility Ratio	Nonmarital Fertility Ratios, Standardized for All Factors Save:			
		Age Distribution	Percent Married	Nonmarital Fertility Rates	Marital Fertility Rates
1960	0.2420	0.4651	0.3010	0.5188	0.3757
1961	0.2302	0.4657	0.2842	0.5202	0.3788
1962	0.2482	0.4686	0.2975	0.5143	0.3865
1963	0.2590	0.4714	0.2983	0.5132	0.3947
1964	0.2521	0.4746	0.2825	0.5104	0.4032
1965	0.2844	0.4782	0.2969	0.5097	0.4182
1966	0.2997	0.4820	0.3065	0.4966	0.4333
1967	0.2996	0.4836	0.3037	0.4834	0.4475
1968	0.3420	0.4879	0.3440	0.4766	0.4521
1969	0.3525	0.4894	0.3612	0.4744	0.4461
1970	0.3504	0.4904	0.3495	0.4859	0.4432
1971	0.4175	0.4913	0.3984	0.4863	0.4601
1972	0.4318	0.4920	0.3951	0.4743	0.4891
1973	0.4497	0.4910	0.4009	0.4650	0.5114
1974	0.4631	0.4916	0.4096	0.4560	0.5245
1975	0.4815	0.4902	0.4318	0.4507	0.5274
1976	0.5055	0.4889	0.4646	0.4439	0.5267
1977	0.5065	0.4870	0.4840	0.4477	0.5064
1978	0.5471	0.4847	0.5334	0.4437	0.5038
1979	0.5476	0.4821	0.5394	0.4495	0.4952
1980	0.5557	0.4757	0.5444	0.4453	0.5088
1981	0.5626	0.4705	0.5581	0.4411	0.5115
1982	0.5745	0.4662	0.5819	0.4393	0.5057
1983	0.5884	0.4636	0.6043	0.4364	0.5027
1984	0.6021	0.4589	0.6300	0.4367	0.4951
1985	0.6247	0.4577	0.6500	0.4441	0.4915
1986	0.6107	0.4546	0.6237	0.4514	0.4996
1987	0.6310	0.4522	0.6267	0.4638	0.5070
1988	0.6418	0.4519	0.6330	0.4769	0.4986
1989	0.6568	0.4483	0.6450	0.4922	0.4899
1990	0.6538	0.4476	0.6478	0.4959	0.4811
1991	0.6825	0.4460	0.6782	0.4966	0.4803
1992	0.6857	0.4458	0.6906	0.4910	0.4768

Among whites, increases in nonmarital fertility rates are the major factor in the increase in the nonmarital fertility ratio.

Rates of *marital* fertility—one factor that could drastically change the percentage of children born to unmarried women in both populations—have increased in both populations, but only slightly, so that its retardant effects are little more than those attributable to the upward drift in the age structure.

Tables 1 and 2 can be used to decompose change in nonmarital fertility ratios across *any* interval during the 33-year period 1960–1992. More valuable, we believe, are the plots of these data: in Figure 2 for blacks and in Figure 3 for whites. In these figures, the overall *level* of any particular line, or the comparative levels of two lines in a given year, are of no real interest. Rather, these figures are useful for reading the *effects* of the various factors over different intervals. For any two given years on the x-axis, the effect of a

TABLE 2. NONMARITAL FERTILITY RATIOS FOR WHITES, 1960–1992: OBSERVED AND STANDARDIZED

Year	Nonmarital Fertility Ratio	Nonmarital Fertility Ratios, Standardized for All Factors Save: Age Distribution	Percent Married	Nonmarital Fertility Rates	Marital Fertility Rates
1960	0.0224	0.0967	0.0659	0.0673	0.0740
1961	0.0257	0.0972	0.0667	0.0697	0.0736
1962	0.0261	0.0987	0.0650	0.0686	0.0753
1963	0.0300	0.0995	0.0648	0.0708	0.0764
1964	0.0338	0.1005	0.0646	0.0726	0.0775
1965	0.0396	0.1015	0.0635	0.0738	0.0824
1966	0.0430	0.1026	0.0615	0.0744	0.0860
1967	0.0479	0.1024	0.0633	0.0745	0.0892
1968	0.0539	0.1025	0.0664	0.0760	0.0905
1969	0.0534	0.1023	0.0660	0.0766	0.0900
1970	0.0556	0.1024	0.0673	0.0776	0.0898
1971	0.0560	0.1025	0.0696	0.0700	0.0954
1972	0.0598	0.1024	0.0694	0.0653	0.1043
1973	0.0620	0.1020	0.0695	0.0629	0.1090
1974	0.0649	0.1016	0.0736	0.0615	0.1097
1975	0.0727	0.1013	0.0767	0.0641	0.1122
1976	0.0760	0.1007	0.0799	0.0644	0.1126
1977	0.0810	0.1001	0.0849	0.0684	0.1090
1978	0.0876	0.0995	0.0907	0.0696	0.1093
1979	0.0947	0.0987	0.0958	0.0758	0.1060
1980	0.1107	0.0969	0.0995	0.0920	0.1039
1981	0.1181	0.0949	0.1055	0.0950	0.1041
1982	0.1212	0.0933	0.1095	0.0985	0.1015
1983	0.1304	0.0917	0.1161	0.1018	0.1023
1984	0.1350	0.0901	0.1191	0.1065	0.1009
1985	0.1456	0.0888	0.1229	0.1164	0.0990
1986	0.1569	0.0875	0.1273	0.1242	0.0994
1987	0.1681	0.0860	0.1338	0.1326	0.0971
1988	0.1791	0.0846	0.1388	0.1433	0.0938
1989	0.1907	0.0828	0.1425	0.1568	0.0901
1990	0.2005	0.0815	0.1449	0.1695	0.0861
1991	0.2152	0.0799	0.1496	0.1793	0.0879
1992	0.2232	0.0794	0.1553	0.1831	0.0870

factor is the corresponding displacement along the y-axis, which is scaled in units of the nonmarital fertility ratio. A factor whose standardized ratio declines from $t = 0$ to $t = 1$ is exerting a negative effect on the nonmarital fertility ratio; that is, all else being equal, changes in this factor alone would have forced the nonmarital fertility ratio downward. A factor whose standardized ratio increases would have a positive effect—that is, increase the nonmarital fertility ratio. Thus inspections of slopes and of slope changes for the curves in Figures 2 and 3 can be used to identify the periods in which various factors did and did not contribute to the growth in nonmarital fertility ratios.

Figure 2 shows that declines in the percentage married fueled the rise in black nonmarital fertility ratios in the period 1968 to 1985. In fact, marriage changes alone can account for most of the observed change in the black nonmarital fertility ratio. Declines in marital fertility rates contributed to the increase in the nonmarital ratio through 1975. Since then, however, along with changes in the age distribution, they have exerted a small *downward* pressure

TABLE 3. DECOMPOSITION OF FACTORS AFFECTING THE INCREASE IN THE NONMARITAL FERTILITY RATIOS OF BLACKS AND WHITES, 1983 TO 1992

	Nonmarital Fertility Ratio, 1983	Nonmarital Fertility Ratio, 1992	Change, 1983–1992	Effect Due to Changes in:			
				Age Distribution	Percent Married	Nonmarital Fertility Rates	Marital Fertility Rates
Blacks	0.5884	0.6857	+0.0973	–0.0178	+0.0863	+0.0546	–0.0259
Whites	0.1304	0.2232	+0.0928	–0.0123	+0.0392	+0.0813	–0.0153

Note: The sum of the effects due to changes in the four factors does not precisely equal the change in nonmarital fertility ratios because of rounding.

on nonmarital fertility ratios. Trends in nonmarital fertility rates also pushed the ratio downward through 1984. In the period 1984–1990, however, increases in nonmarital fertility rates were the primary cause of the continued increase in the black nonmarital fertility ratio.

Figure 3 shows corresponding calculations for whites. During the 1960s, the white nonmarital fertility ratio increased by several percentage points (see Table 2) because of increases in nonmarital fertility, decreases in marital fertility, and an increasingly youthful age structure. By the early 1970s, the sharp declines in marital fertility exerted strong upward pressure on nonmarital ratios, but this upward pressure was counterbalanced by corresponding declines in nonmarital fertility. Thus increases in the nonmarital ratio were essentially equivalent to those caused solely by changes in marriage (e.g., declining proportion married). Since the mid-1970s, the aging of the population and declines in marital fertility have exerted modest downward pressure on the nonmarital ratio. Yet, the strong effects of declining marriage rates and (especially) increasing rates of nonmarital fertility have pushed the nonmarital fertility ratio sharply upward.

DISCUSSION

Why has the proportion of reproductive-age women who are not married continued to increase? Why have fertility rates for unmarried women increased in the last decade? Why have married women's fertility rates increased so little, especially in light of the ever-greater selection to marriage engendered by declines in the proportion of women who are married? The foregoing analytic standardization and decomposition are useful for identifying the proximate causes of the ongoing rise in the proportion of Americans born to unmarried mothers. These results, however, say nothing about the fundamental causes of this large change in the ascriptive social status of so many new citizens. As we ponder these causes, it becomes evident that the analytic partition provided by our decomposition understates the degree of connection between the forces that influence the timing of childbearing and marriage.

Substantial evidence and credible arguments link the increase in the proportion unmarried to the decline in economic incentive for (or gains to) marriage. These declining incentives increase the likelihood that persons will not marry or will not stay married, reduce the harshness of others' judgments of nonmarriage and marital disruption, and eventually undermine norms supporting marriage. Becker (1981) argues that male-female differences in labor market advantage produce strong incentives to marriage, just as Durkheim ([1893] 1960) observed that marital solidarity rests on the sexual division of labor. Economic and social change, however, appear to be undermining these economic incentives and sources of social solidarity. With increasing female education and the rise of the service economy, women's labor market behavior has become more like men's, "signify[ing] a reduction in the gain to marriage and... help[ing] account for the fading centrality of marriage in America today" (Espenshade 1985:222). Moreover, African-American women gain less from marriage than do white women, as indexed by the lower ratio of male to female wages for blacks than for whites (Farley 1988). This difference is consistent with racial differences in the propensity to marry and to stay married.

Nor is it essential to focus on gender specialization within marriage to argue that economic change has reduced incentives to marry. Oppenheimer (1994) calls attention to the deteriorating economic conditions of young men over the past two decades, particularly those with no more than a high school education. Such declines should influence the decision of whether and when to marry in a social context (i.e., the United States) where timing of marriage is linked normatively to the assumption of an "adult economic role—either via the inheritance of property or the achievement of stable employment at wages above some threshold level" (Oppenheimer 1994:322). Wilson (1987) makes a similar argument in his discussion of the most disadvantaged segments of the population.

Such economic changes may have altered the incentives to marry and thus may account for post-1970 increases in the proportions not married. They also can account for increases since 1980 in the rates of childbearing among

FIGURE 2. BLACK NONMARITAL FERTILITY RATIOS: STANDARDIZED EFFECTS, 1960–1992

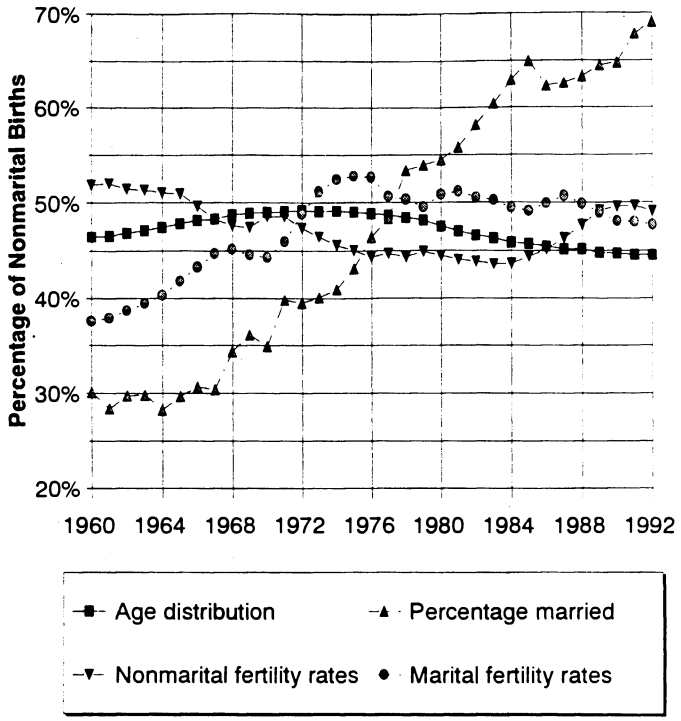
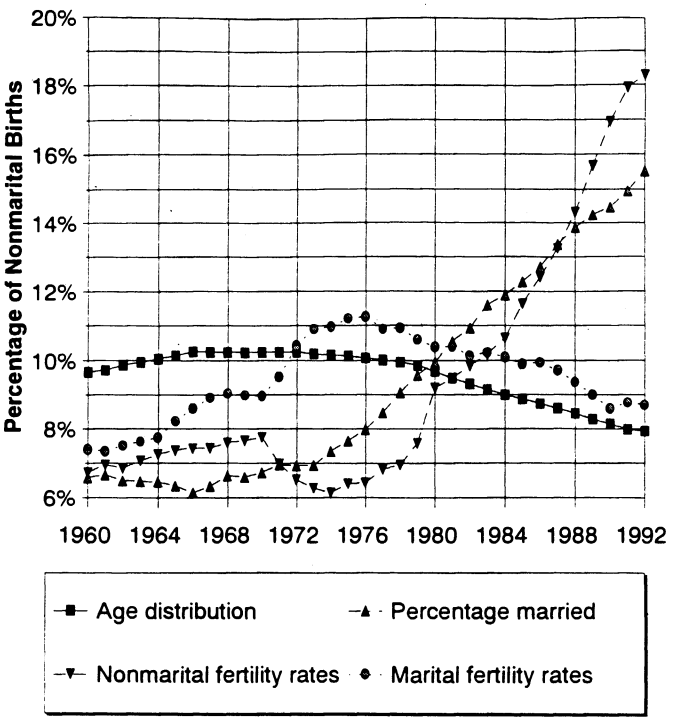


FIGURE 3. WHITE NONMARITAL FERTILITY RATIOS: STANDARDIZED EFFECTS, 1960–1992



nonmarried women. When unmarried women become pregnant, they face a set of choices including (1) marriage to legitimate the birth, (2) abortion, or (3) having the child without marrying.[3] Unmarried women, with increasing frequency, are choosing nonmarital birth. Morgan, Offutt, and Rindfuss (1995) show that roughly 60% of the recent increase in nonmarital fertility rates for *never-married women* is attributable to declines in marriage following pregnancy, before the birth of the child (also, see Parnell, Swicegood, and Stevens 1994). Economic factors implicated in the declining returns to marriage thus may explain why fewer and fewer men and women, when faced with a nonmarital pregnancy, are motivated to marry.

Abortion rates also have declined over the past decade (Henshaw and Van Vort 1994), especially among younger women and unmarried women (Ventura et al. 1995). Rates of induced abortions for unmarried women—that is, abortions per 1,000 unmarried women age 15–44—have declined from 54.4 in 1980 to 47.8 in 1991 (Ventura et al. 1995: table 4). The decline for white unmarried women was sharper (47.4 to 39.1) than for all other women (82.7 to 75.8). These declines cannot be attributed to fewer pregnancies; over this period, both pregnancy rates and birth rates increased (Ventura et al. 1995: table 1). The reported nonmarital fertility rates for black women in 1980 and 1991 were 29.4 and 45.2; for white women, they were 18.1 and 34.6. In the aggregate, an abortion averts less than one birth, but the number of births averted is quite high when average contraceptive effectiveness is high and when the mean length of breast-feeding is short (Bongaarts and Potter 1983). If we assume that an abortion lowers births among unmarried women by .75 birth, and that 25% of these births would be legitimated by marriage, we thereby estimate that 24% of the increase in nonmarital fertilty rates among blacks is directly attributable to declining rates of abortion. The comparable estimate for whites is 28%. Thus, declining abortion plays a substantial role in rising rates of childbearing among unmarried women.

Why has abortion declined? We believe that the efforts of anti-abortion activists are the key. Their efforts have influenced the number and location of abortion providers

3. Sometimes this set of choices includes relinquishment —that is, giving up the baby for adoption. This option, however, does not affect fertility rates or the categorization of the birth as marital or nonmarital. Adoption may be related to children s welfare if young unmarried women allow their children to be adopted by older women in stable marriages. Relinquishment rates for white women have declined dramatically over the past three decades; rates for black women have always been substantially lower than for whites (Bachrach, Stolley, and London 1992).

(Henshaw and Van Vort 1994) and have produced restrictive legislation at the state level, specifically with regard to Medicaid funding and parental involvement (Merz, Jackson, and Klerman 1995). Anti-abortion activists continually and vocally denounce abortion as immoral, and stress the virtue of carrying pregnancies to term. This message resonates with many.

Given fewer incentives to marry, and the diminishing access to and acceptability of abortion, larger proportions of pregnant, nonmarried women will "choose," virtually by definition, to have nonmarital births. Whether as cause or as consequence—we believe both—nonmarital fertility is becoming increasingly acceptable among both black and white Americans (Pagnini and Rindfuss 1993). Behavioral change has led to normative and attitudinal changes that support the new behaviors (Davis and van den Oever 1982). The broadest argument is that the increased acceptance of nonmarital childbearing is part of a normative shift toward acceptance of nontraditional family forms, or, more generally, toward greater individualism (Bumpass 1990; Goode 1963; Lesthaeghe 1983). Or it may simply be, as Smith and Cutright (1988:245) speculate, that when "the proportion of individuals in a given cohort who are born out of wedlock rises, the sense of deviance associated with this status is likely to decline."

CONCLUSION

We used U.S. Census and vital registration data, and a new method of standardization and decomposition, to provide a purely demographic explanation for the increasing proportion of births born to unmarried women. We did so to "increase the precision with which we can formulate the questions for which answers are required from the substantive disciplines underlying the terrain of mere demography" (Ryder 1980:15). Specifically, nonmarital fertility ratios have increased because fewer women marry and stay married, and, in the last decade, because unmarried women are increasingly likely to have children.

Credible explanations link declines in marriage and increases in divorce to declining economic incentives to marry and subsequently to increased acceptance of nonmarriage and divorce. Recent increases in nonmarital fertility rates reflect changes in responses to premarital pregnancy: legitimation of premarital pregnancies via marriage has declined, probably for the same reasons as the decline in the overall popularity of marriage; abortion rates also have declined, probably because of reduced access to abortion and growing qualms about its acceptability. Much of the popular (and policy) discussion of the growing proportions of children born outside marriage has a moralistic and individualistic tenor; that is, people today are perceived as somehow behaving in "unacceptable ways," at least in comparison with previous eras.

Although data such as these cannot hope to counter this line of argument, we reiterate that even with increases during the period 1984–1990, black nonmarital fertility rates (except among teenagers) are almost universally below those which obtained three decades before—*a time when the proportion of black children born outside marriage was little different from that current among white children*. At best our findings call attention to the changed environment in which marriage and fertility decisions are being made. Policy makers concerned about unmarried women's "behavior" should be at least equally concerned about the declining feasibility of marriage and the reduced desire for children within marriage.

APPENDIX: SOURCES OF DATA

Age Distribution and Marital Status

Race-specific counts of the female population by five-year age groups by marital status are from the U.S. Bureau of the Census (1960, 1962, 1963, 1965a, 1965b, 1967, 1968, 1969, 1970, 1971a, 1971b, 1972, 1973, 1974b, 1975, 1977, 1978, 1979, 1980, 1981, 1982a, 1983, 1984, 1985, 1986a, 1986b, 1988, 1989, 1990, 1991, 1992a, 1992b). We used the standard definitions of marital status employed by the Census Bureau, with unmarried women defined as never married, divorced, or widowed. Married women were those who were married and living with spouse or married with spouse absent (separated).

For the years 1960–1979, marital status counts in the P-20 reports begin with age 14 instead of age 15. The population estimates in the Census Bureau P-25 reports for each of these years were used to subtract the number of 14-year-olds from the youngest age group. The very small number of marriages in this youngest age group led us to use the number married for 14- to 19-year-olds as our estimate of the number of married females age 15–19.

For the years 1960–1968, the marital status figures for women age 35–44 were combined in the P-20 reports. To maintain the five-year age groups, we estimated the marital status counts for white and for nonwhite women'separately, using the following procedure: For white and for nonwhite women, we employed population counts for 35- to 39- and 40- to 44-year-olds from the P-25 reports for each year. We then used data broken down by five-year age groups for 1969–1979 to calculate the proportions married in each age and race group and to estimate an odds ratio for each year. For white women, we chose the average odds ratio for 1968–1972 as an estimator value for estimating the proportions married for white 35- to 39- and 40- to 44-year-olds based on the known population counts for these age groups and the reported total proportion of married women age 35–44. For nonwhite women, we used the average odds ratio for 1969–1974 as an estimator.

For 1960–1967, marital status data were not reported separately for black females. We used nonwhite data to estimate black marital status proportions for each age group, using the following procedure: For 1968–1979 we calculated a constant multiplier for each year and age group using the formula (married nonwhite) $\times k$ = (married black women). We averaged the k values for the last 3 to 7 years for each age group, depending on the trends in k values over time. (We did not use data from after 1974 because of the increase in nonblack, nonwhite immigrants that began around that time.) We then used this averaged k value to calculate the number

of black married women in each age group. The same procedure was used to estimate the number of nonmarried black women, and we then adjusted the figures for the known total of black women in each age group and year (from U.S. Bureau of the Census 1974a, 1982b, 1993).

Fertility

We obtained the number of births for each year by race, age, and marital status, for 1960–1990, from the National Center for Health Statistics (NCHS 1994), and, for 1991 and 1992, from unpublished tabulations provded directly by NCHS. The race categorization in these data is by child's race for years 1960–1979, and by mother s race beginning in 1980.

For 1960–1967, the fertility data on black females are not reported separately. Therefore we estimated these data for married and for unmarried females separately, using data for the aggregate group of nonwhite women in the following procedure: We employed data from 1968–1979 to calculate the relative numbers of births to black and to nonwhite women, which resulted in a multiplier for each age group, marital status, and year. Within age and marital status groups, we averaged the multipliers for each year (over 3 to 7 years, depending on the trends in the k values) to produce an estimator value. This value then was used to calculate the numbers of births to black women in each age group, marital status, and year for 1960–67, with the formula (nonwhite births) $\times k$ = (black births).

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