Ready, Willing, and Able? Bottlenecks to the Onset of Fertility Decline in the United States

J. David Hacker
University of Minnesota
Minnesota Population Center and Department of History

The total fertility rate in the late eighteenth-century United States was between 7 and 8 children per woman. By the mid-1930s, total fertility had fallen below the replacement rate. The decline, which began prior to significant industrialization, urbanization, and mortality decline, is an enduring puzzle in American demographic history. Unfortunately, the decline is poorly documented (the birth registration system in the United States was not completed until 1933). Drawing from limited and imperfect sources, researchers have reached different conclusions about the timing and causes of U.S. fertility decline.

This paper relies on new aggregate and individual-level census data to describe long-term trends and differentials in U.S. fertility and to evaluate correlates of marital fertility shortly its sustained decline in the mid nineteenth century. Because the decline varied dramatically by region—with some regions lagging the onset of marital fertility decline in other regions by three decades or more—the focus is on identifying bottleneck conditions that may have determined its onset, pace, and spatial differentials . Discussion follows Ansley Coale's "ready, willing, and able" preconditions for sustained fertility decline: (1) couples must perceive smaller families as economically advantageous (i.e., couples must be ready); (2) the practice of marital fertility control must be socially and ethically acceptable (i.e., couples must be willing); and (3) the means to control fertility must be known and available (i.e., couples must be able).

The datasets used in this study are well suited for testing couples' readiness, willingness, and ability to limit fertility. Individual-level data come from the 1850-1930 IPUMS census samples. Aggregate data come from newly refined county-level census data and from a compilation of state statutes regulating the practice of abortion. Analysis focuses on the 1860 and 1870 censuses, the only U.S. censuses to record real estate and personal estate wealth. When combined with county-level data on the average value of farms, wealth data can be used to test leading hypotheses of the U.S. fertility decline (e.g., Richard Easterlin's "farm land availability hypothesis") and to evaluate couples' readiness to limit family size. Parents' choice of biblical or secular names for their children and county-level data on religious denominations are used to construct proxies of parental religiosity and determine whether couples' lack of willingness was a significant bottleneck to the practice of marital fertility control. Finally, the wide variety of state legal restrictions on the practice of elective abortion in the mid nineteenth-century United States is used to test whether couples' ability to control family size via induced abortion was a significant factor in reducing family size. The paper concludes that couples' lack of willingness was the most significant bottleneck in the onset of the fertility transition in the United States.

Previous Research

The timing and causes of U.S. fertility decline are poorly understood. Since a national birth and death registration system was not completed until 1933, researchers have been forced to rely on census data

and genealogical records to estimate fertility rates and differentials during the years of most significant fertility decline. Early research drew heavily from the age structure of the population reported in the federal census. More recent studies rely on the IPUMS (Ruggles et al., 2010), which includes samples of the 1850-1880 and 1900-1930 censuses.

Readiness

Because the Census Office cross-tabulated the population by age, sex, state, and county between 1800 and 1860—together with various demographic, economic, and social statistics—child-woman ratios have proven useful in estimating geographic differentials in and correlates of antebellum fertility (Yasuba 1962; Forster and Tucker 1972; Easterlin 1976; Vinovskis 1976; Leet 1977; Easterlin, Alter, and Condran 1978; Smith 1987; Carter, Ransom and Sutch 2002; Haines and Hacker 2011). The dominant interpretation that has emerged from these studies is that fertility decline was an adaptation-adjustment process. According to this view, the long-term decline and spatial differentials in child-woman ratios was an adjustment to changes and spatial differentials in the cost of establishing new farms. Increasing population densities led to a long-term decline in the availability of good farm land and a long-term increase in the real cost of a viable farm, especially near the Atlantic coast and navigable rivers where population densities were highest. As parents increasingly found themselves unable to endow their children with adequate farmsteads nearby (a highly desired outcome in an era in which old age insurance was largely in the form of children to care for aged parents), they adapted by limiting their fertility. Couples in the Northeast, where relatively little undeveloped farmland remained after the turn of the nineteenth century, were the first to practice successful marital fertility control. Couples on the frontier, where land was cheap and readily available, were relatively late in limiting marital fertility (Easterlin 1976; Easterlin, Alter, and Condran 1978).

Many variations of and challenges to the “land availability/target-bequest” thesis have been posited, but all see fertility decline in the United States as an adaptation process driven by changing economic incentives. Sundstrom and David (1988) contend that the proximity of new alternatives for children, notably non-agricultural employment, is an effective explanation of fertility differentials. They suggested an intergenerational bargaining model, in which parents sought to reduce the risk of “child default” (that is, children moving far enough away to be unable to provide old age care to their parents). Parents in areas with a higher ratio of non-agricultural to agricultural wages faced a higher risk that their children would leave the area. Those at greatest risk needed to adapt by offering a larger “bribe” in terms of property, both real and personal estate. Meeting the requirements of the bribe required fewer children. Research in this area has most recently been extended by Carter, Ransom, and Sutch (2002), who incorporate family life cycle savings and wealth and the out-migration of children to the frontier in the model. Steckel’s analysis of rural couples linked between the 1850 and 1860 censuses indicated that access to financial institutions (banks per capita) was an important correlate of changes in net marital fertility (1992). A genealogical study of by Bean, Mineau and Anderton (1990) of the Mormon population migrating to frontier Utah also suggested the importance of adaptation-adjustment processes, with fertility rising shortly after settlement on the frontier and then slowly falling as couples

extended birth intervals and practiced parity-dependent fertility control in response to the developing economic environment.

Willingness

Although supported by robust associations between child-woman ratios and hypothesized covariates, the land availability and associated adaptation hypotheses generally ignore the research of social historians, who stress the importance of ideational factors in the onset of fertility decline. Rapid social, religious, and political change following the Revolution, it is argued, led to new ideas about sexuality, health, education, and the role of women in society and the family. Within this modernizing and increasingly secular context, American women redefined themselves as the moral guardians of society and exercised their authority within the domestic sphere to limit family size. Connections have been suggested between the decline of fertility and the emergence of moral reform groups, the symbolic idea of "Republican motherhood" and the virtues of prudence and self-restraint with which it was associated, secularization, and the promotion of sexual abstinence by health reformers such as Sylvester Graham and John Harvey Kellog (Smith 1974; Kerber 1980; Nissenbaum 1980; Degler 1980; Wright 2006; Klepp 2009). It is perhaps instructive that France, the only other nation to experience an earlier marital fertility decline than the United States, also experienced a late eighteenth-century Revolution that stressed individualist, egalitarian, and anti-patriarchal ideas (Binion 2001).

If practicing marital fertility control before the fertility transition was culturally "unthinkable," a possible reason was deeply-held traditional religious beliefs. The biblical account of Onan is a clear admonition to avoid coitus interruptus, the most accessible and effective method of birth control (other than abstinence) in the preindustrial era (Santow 1995). Tellingly, opponents of birth control in the late nineteenth century labeled the practice of withdrawal as "conjugal onanism" (Brodie 1994: 59). Also suggestive, early advocates for contraception, including Robert Dale Owen, Charles Knowlton, Abner Kneeland, Frederick Hollick, and Edward Bliss Foote in the United States, and John Stuart Mills, Francis Place, Charles Bradlaugh and Annie Besant in England, were religious "free thinkers" or atheists. This circumstantial evidence has led Daniel Scott Smith to conclude that "traditional religious sentiments were an obstacle to the public discussion and possibly the private means of family limitation" (1994).

Large differentials in twentieth-century fertility between Roman Catholics and Protestants were noted in the late nineteenth century and remained significant until Catholic adherence to the church's traditional position against contraception declined in the 1960s and 1970s (Groat, Neal, and Knisely 1975; Westoff and Jones 1979, Brodie 1994: 154). Other denominations noted for their conservative religious sentiments, including the Missouri Synod of the Lutheran church (Graebner 1969), the Anabaptist Hutterite sect (Eaton and Mayer 1954), and the Church of Latter Day Saints (Bean, Mineau, and Anderton 1990), had much higher fertility rates than the overall population, further suggesting that religiosity played a major role in couples' willingness to control marital fertility.

A few quantitative studies have attempted to assess the importance of religion in the U.S. fertility transition. Parkerson and Parkerson's analysis of a 1885 city directory for St. Charles, Illinois, which

recorded each woman's religious affiliation and number of children ever born, found significant differentials in fertility between women of "liturgical" and "pietistic" religious orientations. Pietists' belief in individual free will, they argued, "nurtured a secular individualism offering women both an alternative to the domestic environment and a realistic option to limit their fertility" (Parker and Parker 1988). Similarly, Leasure (1982) has proposed that greater adherence to "liberal" religious denominations that encouraged greater individualism and a positive role for women in the nineteenth century (e.g., Congregationalist, Unitarians, Universalist, Presbyterians, Society of Friends) would result in earlier and more rapid fertility declines, which he demonstrated with a state-level analysis of census data. Smith (1987) found further support for this argument with a county-level analysis of child-woman ratios in 1860. Hacker (1999) reported a negative correlation between marital fertility and couples' reliance on secular names for their children in the 1850 and 1880 IPUMS samples. Parental choices of biblical or secular names for their children's names, he argued, was a reasonable proxy of parental religiosity in the mid nineteenth-century United States, which was experiencing a rapid secularization of its naming pool and where parents were free, for the most part, to name their children without state or church restrictions. Haan reported similar results using 1881 Canadian census data. Removing the population self-identifying as members of the Church of England and Roman Catholic Church, both of which had strict naming conventions, increased the significance of the naming variable.

Ability

Nineteenth-century Americans were reticent to discuss matters related to sexuality and birth control, making it difficult to assess whether couples were able to control their fertility or whether their ability changed over time. There is evidence to suggest, however, that knowledge of the basic reproductive process and the effectiveness of abstinence and withdrawal (coitus interruptus) were widespread prior to the onset of marital fertility decline. In a divorce suit in 1710, a Massachusetts woman charged that her husband practiced Onan's "abominable sin because he feared the charge of children" (quoted in Smith 1994). A man convicted in a 1771 bastardry case in the same colony protested that he had minded his "pullbacks" (quoted in Freedman, p. 33). For motivated couples willing to ignore its biblical condemnation, withdrawal had the virtues of being readily available and reasonably effective. For more motivated couples, reduced coital frequency or periodic abstinence would have lengthened birth intervals.

In contrast, many of the newer and less familiar methods promoted by birth control advocates in the mid nineteenth century were ineffective or entailed prohibitive financial or psychic costs. The vulcanization of rubber in 1848 led to the manufacturing and sale of rubber diaphragms and cervical caps, which were advertised in "rubber goods" catalogs before the 1873 federal anti-obscenity law (the "Comstock Act") criminalized the advertising and sale of contraceptive products in the mail. Diaphragms and caps were not professionally fitted, however, and consequently much less effective than they would become in the twentieth-century. Rubber condoms were also manufactured, but were expensive,

associated with prostitution and the prevention of venereal disease, and rarely used as contraceptive devices by married couples until after World War I (Tone 2001). Many birth control advocates, responding to new medical research on the relationship between ovulation and menstruation in Europe, suggested various rhythm methods, although they disagreed on the safe period. Most advocates between the 1850s and 1870s encouraged women to wait 8-12 days after menstruation before having sex. Couples who followed this advice would have resumed having sex in a typical woman's most fertile period (Brodie, 1994: 80-85). Knowlton and several other reformers advocated douching after coitus as a method of birth control. Although there is some evidence to suggest that douching with a syringe was a popular means of birth control among wives of professional men at the end of the nineteenth century (David and Sanderson 1986), douching, even with modern spermicides, is now recognized as ineffective and occasionally dangerous. Middle and lower class women in the mid nineteenth century lacked private washing facilities and likely were reticent to practice the method in front of their husbands (see Fisher and Szreter 2003; Cook 2004; Fisher 2006 for the reluctance of early twentieth-century British women to engage in sexual behavior that might compromise their respectability). Although the rapid growth in the nineteenth-century marketplace for contraceptive goods suggests an increase in couples' ability to limit their fertility, the new contraceptive marketplace may tell us more about couples' readiness and willingness to control fertility than their ability to do so.

Explicit state statutes criminalizing abortion, passed by most states in the mid to late nineteenth century, however, may have had some effect on couples' ability to limit family size. Prior to the new state statutes, abortion was legal under the common law if practiced in the four to five months before "quickening," when movement of the fetus was first detected. Social and feminist historians contend that abortion prior to quickening was reasonably safe and widely tolerated, and by the mid nineteenth century was routinely used by married women to control family size (Gordon 1974; Brodie 1994; Reagan 1997; Klepp 2009). Based on his reading of contemporary testimony and declining child-woman ratios in the nineteenth century, James Mohr speculated that abortion rates rose from about 1 in 25 or 30 live births in the first three decades of the nineteenth century to 1 in every 5 or 6 live births in the 1850s and 1860s (Mohr 1978, 50). More recently, Susan Klepp (1994, 2009) has stressed that early nineteenth-century emmenagogues such as tansy, rue, savin, and pennyroyal—ostensibly used to cure irregular or obstructed menses—were well known by women to act as abortifacients. Although Klepp conceded that failure rates were high, she contended that emmenagogic techniques were "effective in lengthening the intervals between births" (1994: 99). Intensification in the use of these old techniques, combined with a gradual use of new techniques, she argued, "initiated a long-term decline in fertility levels" (1994: 103).

As abortion and attempts to induce abortion became more noticeable, especially among married women, states passed legislation making medical and surgical procedures to procure an abortion an explicit statute offense. Connecticut was the first state to pass a statute in 1821. By 1868, thirty of the thirty seven states had enacted an abortion statute and all states had a law in place or enforced common law restrictions before 1900. Most were explicit in outlawing the use of medicines or instruments to abort a fetus regardless of the term, but a few applied only to the period after quickening (Dellapenna, 2006, p. 315). Although criminalization of abortion runs counter to trends in marital fertility—most states enacted legal restrictions before the onset of marital fertility decline—

state-differentials in legal access to abortion may have been an important factor in couples' ability to control family size.

Data

Despite the rich theorizing evident in studies of early U.S. fertility decline, early empirical models have been hampered by poor data. Models relying on the child-woman ratio as the dependent variable suffer from an inability to distinguish the relative contributions of nuptiality and marital fertility control. Indeed, although most theoretical models emphasize the importance of fertility control within marriage, many of the proposed mechanisms may act as simple Malthusian adjustments to nuptiality rather than neo-Malthusian adjustments of marital fertility. Because family formation in nineteenth-century American was neo-local, with young couples setting up a new household upon marriage rather than living as dependents in a parent's or sibling's household, young men and women had to acquire sufficient resources, either through the wage labor market or by inheritance, to purchase a farm. As a result, low land availability and high farm prices may have reduced fertility by causing potential marriage partners to delay marriage rather than causing married couples to practice marital fertility control.

New IPUMS samples of the 1850-1880, 1900 and 1910 censuses represent a major increase in the quality of data available for description and analysis of nineteenth-century fertility. Rather than relying on child-woman ratios, researchers can estimate age-specific general and marital fertility estimates and, from them, popular indexes of fertility. Figures 1, 2, and 3 show new national and regional estimates of the total fertility rate, index of martial fertility (Ig), and Coale and Trussell's m parameter for the white population of the United States between 1850 and 1880. The estimates were made using the 1850-1880 IPUMS samples, own-child methods, new decennial life tables (Hacker, 2010) and new estimates of census under-enumeration (Hacker, 2013). The figures indicate that the total fertility rate for the white population in the nation as a whole declined 26 percent in the 30-year period, from 6.1 children per woman in 1850 to 4.5 in 1880 (marital fertility fell 22 percent in the same period, from 8.3 children per married woman to 6.5). With the exception of the short-term recovery in the late 1860s from the birth deficit caused by the American Civil War (1861-65), the decline was slow and relentless. Although marital fertility declined at all ages, the proportionate decline was larger in older age groups. Martial fertility among women age 40-44 fell 55 percent; among women age 20-24 the decline was only 16 percent. The increasing tendency of couples to stop or reduce childbearing at older ages is reflected in the Coale and Trussell m parameter, which increased from approximately 0.13 in 1850 to 0.30 in 1880.

Continues… descriptions of readiness, wiliness, and ability proxy variables, fixed effects models of recent fertility among currently married women in 1860 and 1870, results, conclusion.